# Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task C.26

**GCREC Mound Draft Site Summary and Close-out Report**

March 2015

HAZEN AND SAWYER
Environmental Engineers & Scientists

In association with:

AET

Otis Environmental Consultants, LLC

# Florida Onsite Sewage Nitrogen Reduction Strategies Study

## TASK C.26

## GCREC Mound Draft Site Summary and Close-out Report

**Prepared for:**

Florida Department of Health
Division of Disease Control and Health Protection
Bureau of Environmental Health
Onsite Sewage Programs
4042 Bald Cypress Way Bin #A-08
Tallahassee, FL  32399-1713

FDOH Contract CORCL

**March 2015**

**Prepared by:**

HAZEN AND SAWYER
Environmental Engineers & Scientists

In Association With:

SCHOOL OF MINES
1874
COLORADO

# Task C.26: GCREC Mound Draft Site Summary and Close-out Report

## 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 Task C.5 QAPP documents the objectives, monitoring framework, sample frequency and duration, and analytical methods to be used at the field sites. The Task C.20 Instrumentation of the GCREC Mound 50% progress report dated June 2010 and 100% progress report dated November 2010 documents the test area design, number and location of monitoring points, and preliminary field parameters from monitoring points for this field site. Four sample events were conducted at this site: December 2010, April 2011, June 2011 and September 2011 and these were documented in the Task C.22 GCREC Mound Data Summary Reports.

## 2.0 Purpose

This report documents the close-out of the GCREC Mound site including: description of the abandonment of monitoring points, summarization of the data collected during site monitoring, and analysis of the sample events conducted December 2010 through September 2011. The monitoring events consisted of measurement of household water meters, groundwater elevation measured within the standpipe piezometers, measurement of field parameters, and collection of effluent and groundwater samples and their analyses in a NELAC certified laboratory.

## 3.0 Site and Monitoring Network Description

### 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. Wastewater from the GCREC research offices and onsite dormitories flow to an existing onsite sewage

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treatment and disposal system (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 $ft^2$ of infiltrative area (design hydraulic loading rate of 0.65 $gpd/ft^2$) with each half of the drainfield receiving alternating doses.

## 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. Standpipe piezometers consist of either ¾-in., 1¼-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.

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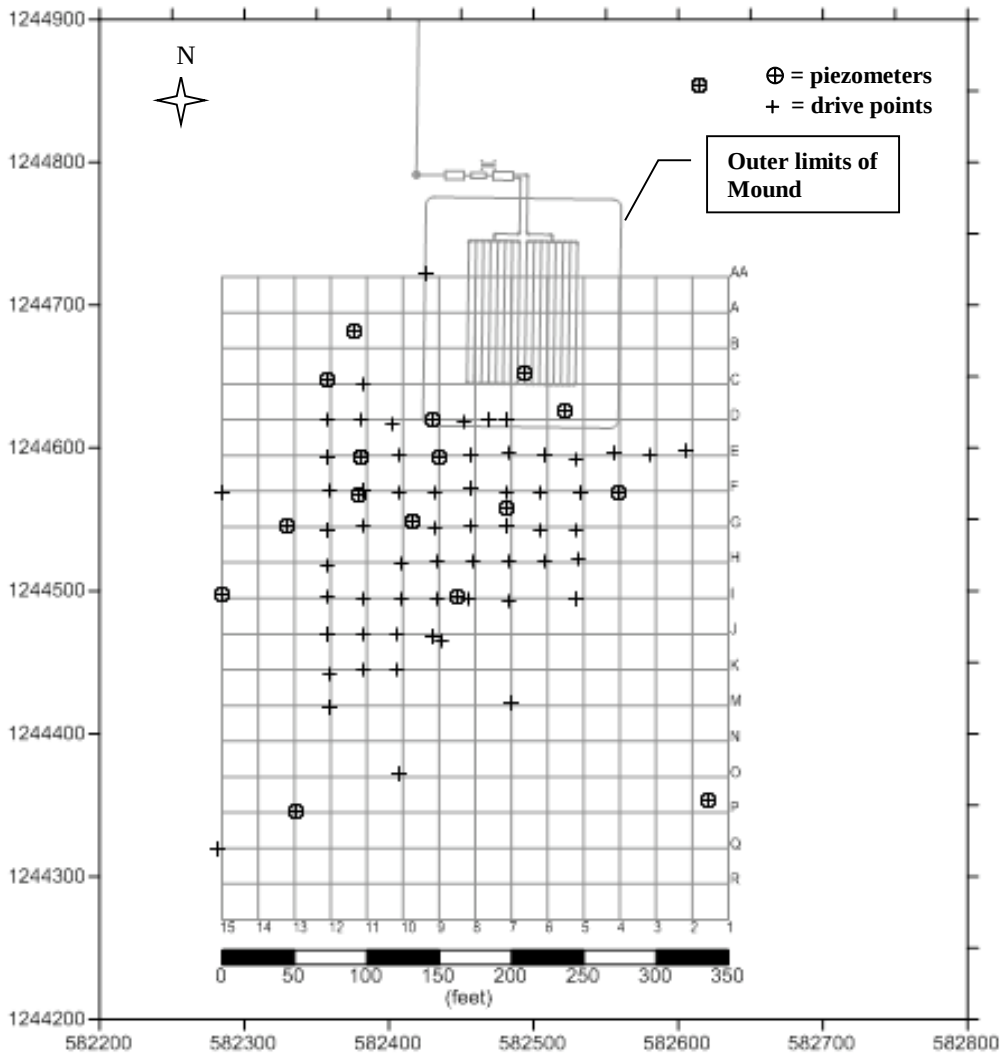


**Figure 1**
**Schematic of GCREC Monitoring Network (UTM coordinates are used)**
**⊕ denotes piezometers and + denotes drive points**

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## 4.0 Site Close-out

As outlined in the memorandum of agreement (MOU) between the DOH and GCREC, DOH agreed to properly abandon the research facility, if desired by GCREC. As indicated in the DOH agreement with Hazen and Sawyer, P.C. (H&S), H&S is responsible to determine if the test facility infrastructure will be transferred to the property owner or the site restored as desired by GCREC. GCREC did not wish to take ownership and responsibility of the monitoring points (stainless steel drivepoints and monitoring groundwater wells). Since no modifications were made to the drainfield or septic system, the site close-out consisted of the proper abandonment of all the monitoring points and restoring the site to its original configuration. Over 145 specific monitoring points were abandoned during the site close-out conducted February and March 2015. Table 1 lists the monitoring points that were abandoned. Some of the monitoring equipment was protected by plastic covers which were dug up and removed. All holes were backfilled using native soil.

**Table 1**
**Site GCREC Mound Monitoring Points Removed or Abandoned**

| | Grid Location | Sample Identification | Notes | Bottom Elevation (ft) |
|---|---|---|---|---|
| 1 | Bkgd, North | PZ01-BKG-9 | 1 1/4” Standpipe Piezometer, 4’ screen | 120.33 |
| 2 | Bkgd, North | PZ04-BKG-9 | 1 1/4” Standpipe Piezometer, 4’ screen | 118.66 |
| 3 | Bkgd, North | PZ24-BKG-26 | 2" Standpipe Piezometer, 5' screen | 101.41 |
| 4 | Bkgd, East | PZ05-BKG-9 | 1 1/4" Standpipe Piezometer, 4' screen | 117.39 |
| 5 | Bkgd, NW | PZ06-BKG-12 | 1 1/4" Standpipe Piezometer, 4' screen | 118.10 |
| 6 | AA9 | DP-AA9-14 | SST Drive Point | 110.68 |
| 7 | AA9 | DP-AA9-22 | SST Drive Point | 103.08 |
| 8 | AA9 | DP-AA9-27 | SST Drive Point | 98.28 |
| 9 | A6.5 | PZ25-A6.5-10 | 3/4" Standpipe Piezometer, 3.5' screen | 119.62 |
| 10 | A11 | PZ15-A11-6 | 3/4" Standpipe Piezometer, 5' screen | 118.84 |
| 11 | CD6.5 | PZ10-CD6-13 | 3/4" Standpipe Piezometer, 5' screen | 116.03 |
| 12 | C11 | DP-C11-8 | SST Drive Point | 116.18 |
| 13 | C12 | PZ16-C12-28 | 3/4" Standpipe Piezometer, 1' screen | 94.75 |
| 14 | D5.5 | PZ07-D05-7 | 1 1/4" Standpipe Piezometer, 4' screen | 118.89 |
| 15 | D7 | DP-D07-5 | SST Drive Point | 120.82 |
| 16 | D7 | DP-D07-7 | SST Drive Point | 118.86 |
| 17 | D7 | DP-D07-9 | SST Drive Point | 116.79 |
| 18 | D7.5 | DP-D7.5-14 | SST Drive Point | 111.24 |
| 19 | D7.5 | DP-D7.5-20 | SST Drive Point | 105.31 |
| 20 | D7.5 | DP-D7.5-26 | SST Drive Point | 99.24 |
| 21 | D8 | DP-D08-9 | SST Drive Point | 116.31 |
| 22 | D9 | DP-D09-6 | SST Drive Point | 118.35 |
| 23 | D9 | DP-D09-8 | SST Drive Point | 116.45 |

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**Table 1 (continued)**
**Site GCREC Mound Monitoring Points Removed or Abandoned**

| | Grid Location | Sample Identification | Notes | Bottom Elevation (ft) |
|---|---|---|---|---|
| 24 | D9 | DP-D09-15 | SST Drive Point, taped to PZ riser | 109.45 |
| 25 | D9 | DP-D09-21 | SST Drive Point, taped to PZ riser | 103.45 |
| 26 | D9 | DP-D09-27 | SST Drive Point, taped to PZ riser | 97.45 |
| 27 | D9 | PZ23-D09-27 | 2" Standpipe Piezometer, 5' screen | 97.41 |
| 28 | D10 | DP-D10-8 | SST Drive Point | 116.31 |
| 29 | D11 | DP-D11-11 | SST Drive Point | 113.29 |
| 30 | D12 | DP-D12-11 | SST Drive Point | 112.46 |
| 31 | E2 | DP-E02-6 | SST Drive Point | 119.55 |
| 32 | E2 | DP-E02-8 | SST Drive Point | 117.55 |
| 33 | E3 | DP-E03-10 | SST Drive Point | 115.26 |
| 34 | E4 | DP-E04-6 | SST Drive Point | 119.71 |
| 35 | E4 | DP-E04-8 | SST Drive Point | 117.71 |
| 36 | E5 | DP-E05-6 | SST Drive Point | 118.58 |
| 37 | E6 | DP-E06-6 | SST Drive Point | 118.86 |
| 38 | E6 | DP-E06-8 | SST Drive Point | 116.86 |
| 39 | E7 | DP-E07-10 | SST Drive Point | 114.74 |
| 40 | E8 | DP-E08-6 | SST Drive Point | 118.41 |
| 41 | E8 | DP-E08-8 | SST Drive Point | 116.41 |
| 42 | E9 | PZ11-E09-10 | 3/4" Standpipe Piezometer, 5' screen | 114.56 |
| 43 | E10 | DP-E10-6 | SST Drive Point | 118.21 |
| 44 | E11 | DP-E11-12 | SST Drive Point | 111.98 |
| 45 | E11 | PZ21-E11-26 | 2" Standpipe Piezometer, 5' screen | 111.98 |
| 46 | E11 | PZ22-E11-15 | 3/4" Standpipe Piezometer, 10' screen | 111.98 |
| 47 | E12 | DP-E12-10 | SST Drive Point | 113.22 |
| 48 | E12 | DP-E12-15 | SST Drive Point | 107.75 |
| 49 | E12 | DP-E12-22 | SST Drive Point | 101.65 |
| 50 | E12 | DP-E12-28 | SST Drive Point | 95.80 |
| 51 | F3 | DP-F03-8 | SST Drive Point | 116.44 |
| 52 | F4 | PZ13-F04-8 | 3/4" Standpipe Piezometer, 5' screen | 116.31 |
| 53 | F4 | DP-F04-17 | SST Drive Point | 108.06 |
| 54 | F4 | DP-F04-22 | SST Drive Point | 102.95 |
| 55 | F4 | DP-F04-32 | SST Drive Point | 92.85 |
| 56 | F5 | DP-F05-5 | SST Drive Point | 119.94 |
| 57 | F5 | DP-F05-31 | SST Drive Point | 93.89 |
| 58 | F6 | DP-F06-10 | SST Drive Point | 115.03 |
| 59 | F7 | DP-F07-6 | SST Drive Point | 118.25 |
| 60 | FG7 | PZ08-FG7-6 | 1 1/4" Standpipe Piezometer, 4' screen | 118.25 |
| 61 | F8 | DP-F08-14 | SST Drive Point | 110.43 |
| 62 | F8 | DP-F08-20 | SST Drive Point | 103.96 |

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**Table 1 (continued)**
**Site GCREC Mound Monitoring Points Removed or Abandoned**

| | Grid Location | Sample Identification | Notes | Bottom Elevation (ft) |
|---|---|---|---|---|
| 63 | F8 | DP-F08-28 | SST Drive Point | 96.18 |
| 64 | F9 | DP-F09-5 | SST Drive Point | 118.98 |
| 65 | F10 | DP-F10-11 | SST Drive Point | 112.93 |
| 66 | F11 | DP-F11-11 | SST Drive Point | 112.68 |
| 67 | F11 | DP-F11-15 | SST Drive Point | 108.88 |
| 68 | F11 | DP-F11-18 | SST Drive Point | 105.73 |
| 69 | F11 | DP-F11-21 | SST Drive Point | 102.93 |
| 70 | F11 | DP-F11-24 | SST Drive Point | 99.88 |
| 71 | F11 | DP-F11-27 | SST Drive Point | 96.73 |
| 72 | F12 | DP-F12-10 | SST Drive Point | 112.77 |
| 73 | F15 | DP-F15-14 | SST Drive Point | 108.81 |
| 74 | F15 | DP-F15-20 | SST Drive Point | 102.84 |
| 75 | F15 | DP-F15-26 | SST Drive Point | 97.00 |
| 76 | G5 | DP-G05-6 | SST Drive Point | 118.51 |
| 77 | G6 | DP-G06-7 | SST Drive Point | 116.95 |
| 78 | G7 | DP-G07-13 | SST Drive Point | 111.63 |
| 79 | G7 | DP-G07-15 | SST Drive Point | 109.56 |
| 80 | G7 | DP-G07-17 | SST Drive Point | 106.76 |
| 81 | G7 | DP-G07-21 | SST Drive Point | 103.31 |
| 82 | G7 | DP-G07-24 | SST Drive Point | 100.51 |
| 83 | G7 | DP-G07-27 | SST Drive Point | 97.61 |
| 84 | G8 | DP-G08-5 | SST Drive Point | 119.54 |
| 85 | G9 | DP-G09-11 | SST Drive Point | 112.99 |
| 86 | G9.75 | PZ19-G10-26 | 2" Standpipe Piezometer, 5' screen | 97.55 |
| 87 | G9.75 | PZ20-G10-15 | 3/4" Standpipe Piezometer, 10' screen | 108.50 |
| 88 | G11 | DP-G11-8 | SST Drive Point | 115.27 |
| 89 | G12 | DP-G12-9 | SST Drive Point | 114.44 |
| 90 | G12 | DP-G12-15 | SST Drive Point | 108.37 |
| 91 | G12 | DP-G12-18 | SST Drive Point | 105.27 |
| 92 | G12 | DP-G12-21 | SST Drive Point | 102.32 |
| 93 | G12 | DP-G12-24 | SST Drive Point | 99.72 |
| 94 | G12 | DP-G12-27 | SST Drive Point | 96.37 |
| 95 | G13 | PZ14-G13-7 | 1 1/4" Standpipe Piezometer, 4' screen | 115.11 |
| 96 | H5 | DP-H05-7 | SST Drive Point | 117.13 |
| 97 | H6 | DP-H06-7 | SST Drive Point | 117.33 |
| 98 | H7 | DP-H07-8 | SST Drive Point | 116.32 |
| 99 | H8 | DP-H08-10 | SST Drive Point | 113.84 |
| 100 | H9 | DP-H09-12 | SST Drive Point | 111.74 |
| 101 | H10 | DP-H10-11 | SST Drive Point | 112.68 |
| 102 | H11 | PZ03-H11-6 | 1 1/4" Standpipe Piezometer, 4' screen | 121.47 |

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**Table 1 (continued)**
**Site GCREC Mound Monitoring Points Removed or Abandoned**

| | Grid Location | Sample Identification | Notes | Bottom Elevation (ft) |
|---|---|---|---|---|
| 103 | H12 | DP-H12-5 | SST Drive Point | 118.01 |
| 104 | I6 | DP-I06-14 | SST Drive Point | 110.24 |
| 105 | I6 | DP-I06-20 | SST Drive Point | 103.99 |
| 106 | I6 | DP-I06-26 | SST Drive Point | 97.94 |
| 107 | I7 | DP-I07-8 | SST Drive Point | 115.67 |
| 108 | I8 | DP-I08-5 | SST Drive Point | 118.56 |
| 109 | I8.5 | PZ09-I08-5 | 1 1/4" Standpipe Piezometer, 4' screen | 118.93 |
| 110 | I9 | DP-I09-11 | SST Drive Point | 112.96 |
| 111 | I10 | DP-I10-6 | SST Drive Point | 117.72 |
| 112 | I11 | DP-I11-10 | SST Drive Point | 113.50 |
| 113 | I12 | DP-I12-6 | SST Drive Point | 117.54 |
| 114 | I15 | PZ17-I15-26 | 3/4" Standpipe Piezometer,1' screen | 97.09 |
| 115 | J8 | DP-J08-6 | SST Drive Point | 118.02 |
| 116 | J9 | DP-J09-12 | SST Drive Point | 112.05 |
| 117 | J9 | DP-J09-14 | SST Drive Point | 109.61 |
| 118 | J9 | DP-J09-20 | SST Drive Point | 103.36 |
| 119 | J9 | DP-J09-26 | SST Drive Point | 97.11 |
| 120 | J10 | DP-J10-6 | SST Drive Point | 117.32 |
| 121 | J11 | DP-J11-12 | SST Drive Point | 111.99 |
| 122 | J12 | DP-J12-13 | SST Drive Point | 110.44 |
| 123 | J12 | DP-J12-15 | SST Drive Point | 108.26 |
| 124 | J12 | DP-J12-20 | SST Drive Point | 102.61 |
| 125 | J12 | DP-J12-27 | SST Drive Point | 96.36 |
| 126 | K10 | DP-K10-7 | SST Drive Point | 116.41 |
| 127 | K11 | DP-K11-13 | SST Drive Point | 110.43 |
| 128 | K12 | DP-K12-5 | SST Drive Point | 117.68 |
| 129 | M7 | DP-M07-15 | SST Drive Point | 108.98 |
| 130 | M7 | DP-M07-21 | SST Drive Point | 102.65 |
| 131 | M7 | DP-M07-27 | SST Drive Point | 96.95 |
| 132 | M12 | DP-M12-10 | SST Drive Point | 112.79 |
| 133 | N12 | DP-N12-14 | SST Drive Point | 108.40 |
| 134 | N12 | DP-N12-18 | SST Drive Point | 104.75 |
| 135 | N12 | DP-N12-21 | SST Drive Point | 101.73 |
| 136 | N12 | DP-N12-24 | SST Drive Point | 98.75 |
| 137 | N12 | DP-N12-27 | SST Drive Point | 95.63 |
| 138 | O10 | DP-O10-12 | SST Drive Point | 110.71 |
| 139 | O10 | DP-O10-18 | SST Drive Point | 104.56 |
| 140 | O10 | DP-O10-24 | SST Drive Point | 98.56 |
| 141 | PQ1.75 | PZ02-P02-9 | 1 1/4" Standpipe Piezometer, 4' screen | 115.24 |
| 142 | Q15 | DP-Q15-15 | SST Drive Point | 108.20 |

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**Table 1 (continued)**
**Site GCREC Mound Monitoring Points Removed or Abandoned**

| | Grid Location | Sample Identification | Notes | Bottom Elevation (ft) |
|---|---|---|---|---|
| 143 | Q15 | DP-Q15-21 | SST Drive Point | 102.29 |
| 144 | Q15 | DP-Q15-26 | SST Drive Point | 96.40 |
| 145 | R12 | PZ18-R12-26 | 3/4" Standpipe Piezometer, 1' screen | 96.56 |
| | N/A | | Tracer Test No. 1 SST Drive Points and Standpipe Piezometers | Varies |

[1]Elevation above mean sea level based on NGVD 1929

## 5.0 Data Summary

Sample collection materials and methods are described in the Task C.22 GCREC Mound Data Summary Reports.

### 5.1 Operational Data and Site Conditions

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 A 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. Appendix B provides summary tables of the average monthly recorded meteorological data.

### 5.2 Groundwater Levels

Figures 2 through 5 illustrate the surficial groundwater contours as measured within the standpipe piezometers on dates representative of the four sample events (December 9, 2010, April 1, 2011, June 28, 2011 and October 10, 2011). Based on the output illustrated in these plots the direction of flow is generally to the southwest, and the gradient is estimated to range from 0.0047 to 0.011. Clearly variations in gradient are apparent in Figure 2 through 5 across the site as well as between seasons. A summary of all recorded groundwater elevations taken at the standpipe piezometers within the grid is presented in Appendix C.

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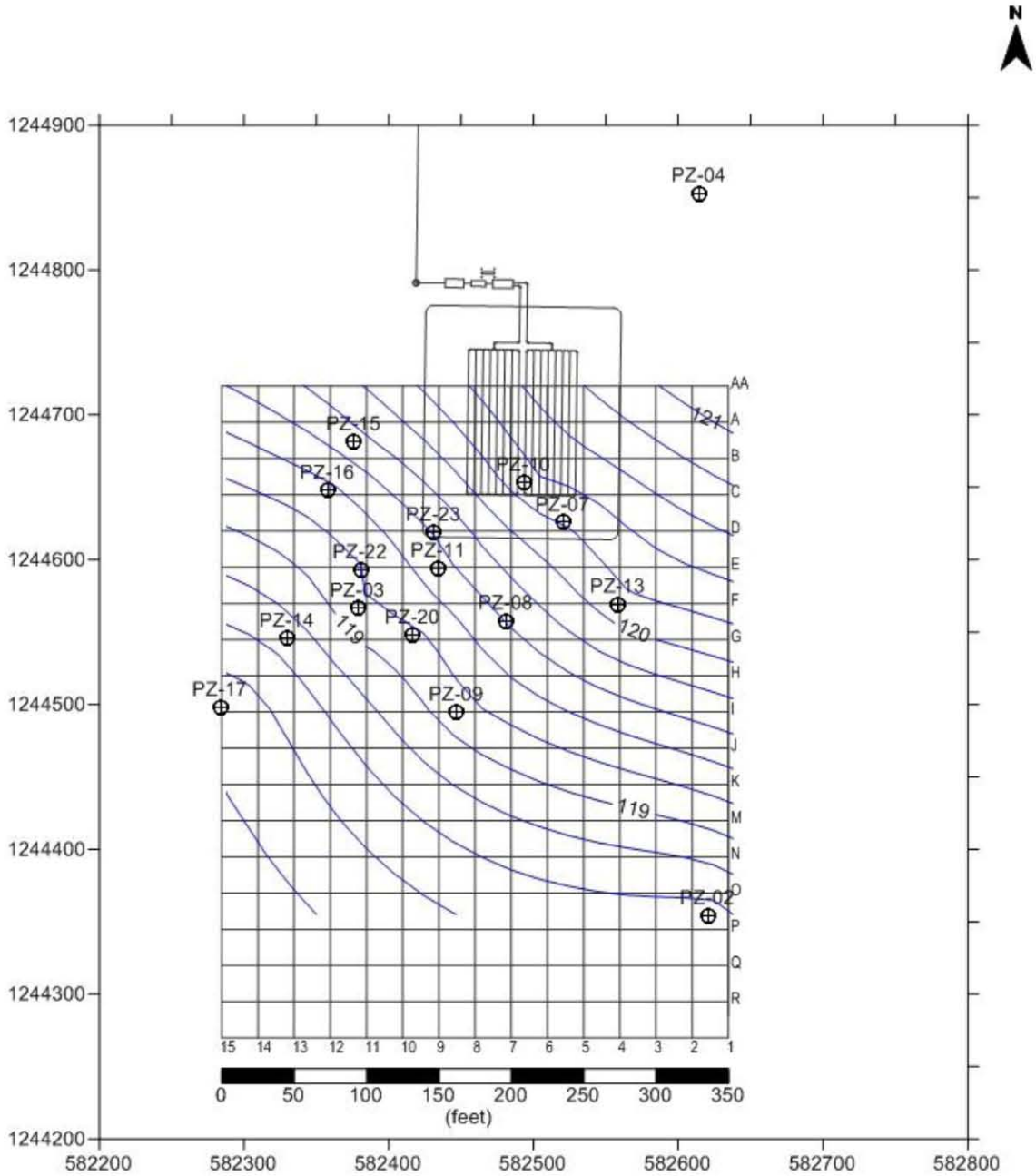


**Figure 2**

**Surficial Groundwater Contours on December 9, 2010, representative of SE No. 1**

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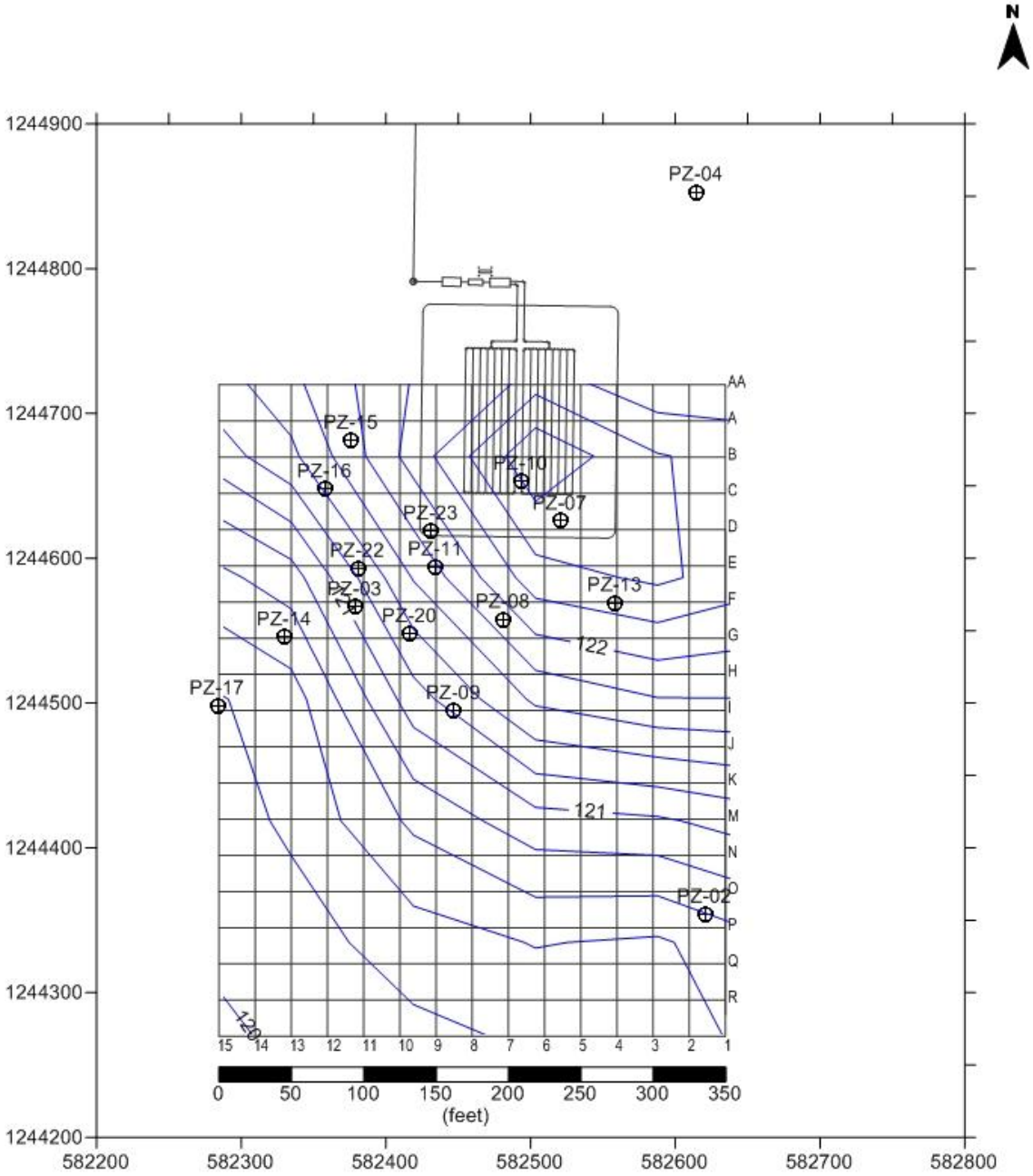


**Figure 3**

**Surficial Groundwater Contours on April 1, 2011, representative of SE No. 2**

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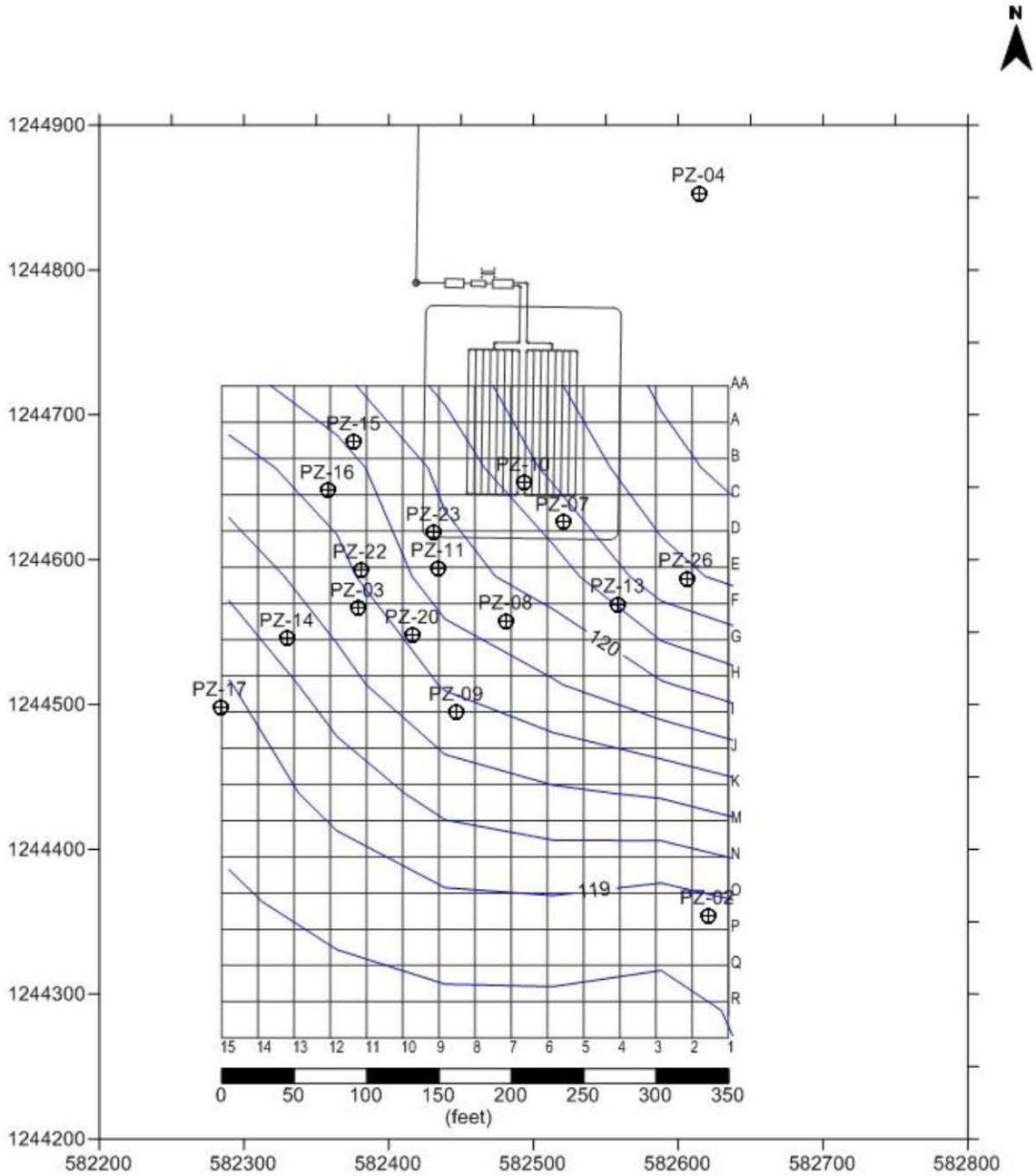


**Figure 4**

**Surficial Groundwater Contours on June 28, 2011, representative of SE No. 3**

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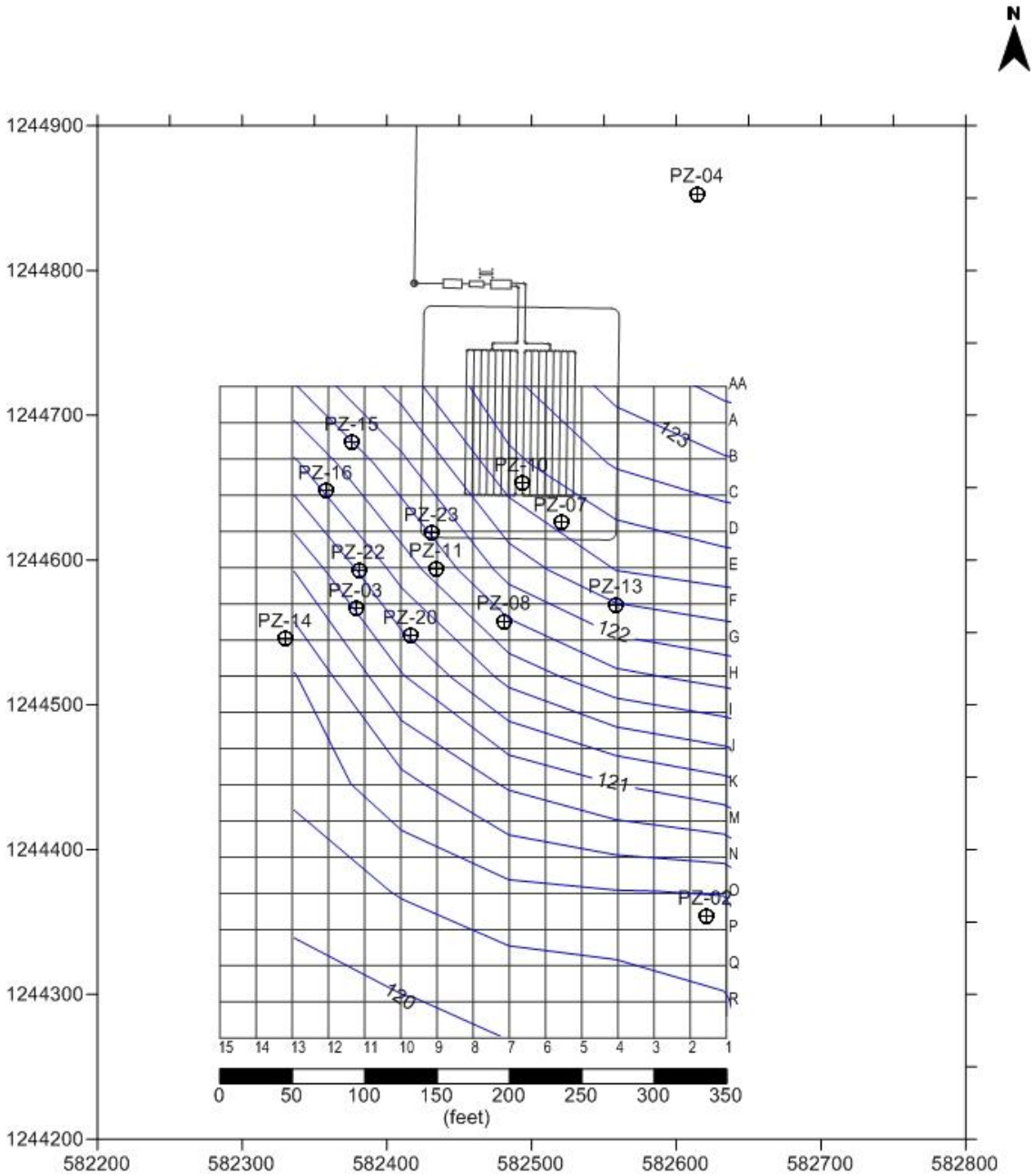


**Figure 5**

**Surficial Groundwater Contours on October 10, 2011, representative of SE No. 4**

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## 5.3 Water Quality Analyses

The complete water quality analytical results for the four sample events are listed in Tables D.1 through D.4 of Appendix D. The summary of the water quality is presented in Table E.1 of Appendix E. To allow for a better visualization of the data collected at the site the mapping program **Surfer** was utilized. **Surfer** is a grid-based mapping program that interpolates irregularly spaced XYZ data into a regularly spaced grid. Although there are several methods used in Surfer to fill in areas where data is missing, the "kriging" gridding method was used as the output gave the most informative graphs.

The general trend of the nitrogen plume at the site can be determined with the data collected. Although **Surfer** is an informative tool for mapping the information from the site, it cannot project a 3-dimensional view of concentrations with depth. Based on the distribution of points with depth, five "slices" were created separated into five-foot intervals as shown in Figures 6 through 8. The five slices were separated by elevation above sea level (NGVD29 datum).

The maximum concentrations of NOX, chloride and specific conductance measured throughout the monitoring period at all locations where groundwater samples were obtained are illustrated in Figures 6, 7, and 8, respectively. For comparative purposes, Figure 9 presents the maximum NOX contours measured at each location, regardless of depth, across the site, and shows a plume similar to the Figure 6 NOX data. Figure 10 depicts two cross sections A-A' (includes grid locations I15, F15, G13, G12, F12, E12, H11, F11, E11, F10, E10, E09, D09, E08, D08, D07.5, D07, CD06, D05) and B-B' (includes grid locations A11, C12, C11, D11, E11, E10, F11, F10, G10, G09, H09, I09, I08, J09, J08, M07). Figure 11 illustrates the maximum concentrations of NOX along the two cross sections at the various depths. Similar plots of specific conductance (Figures 12 and 13), chloride (Figures 14 and 15) and pH (Figures 16 and 17) concentrations were created.

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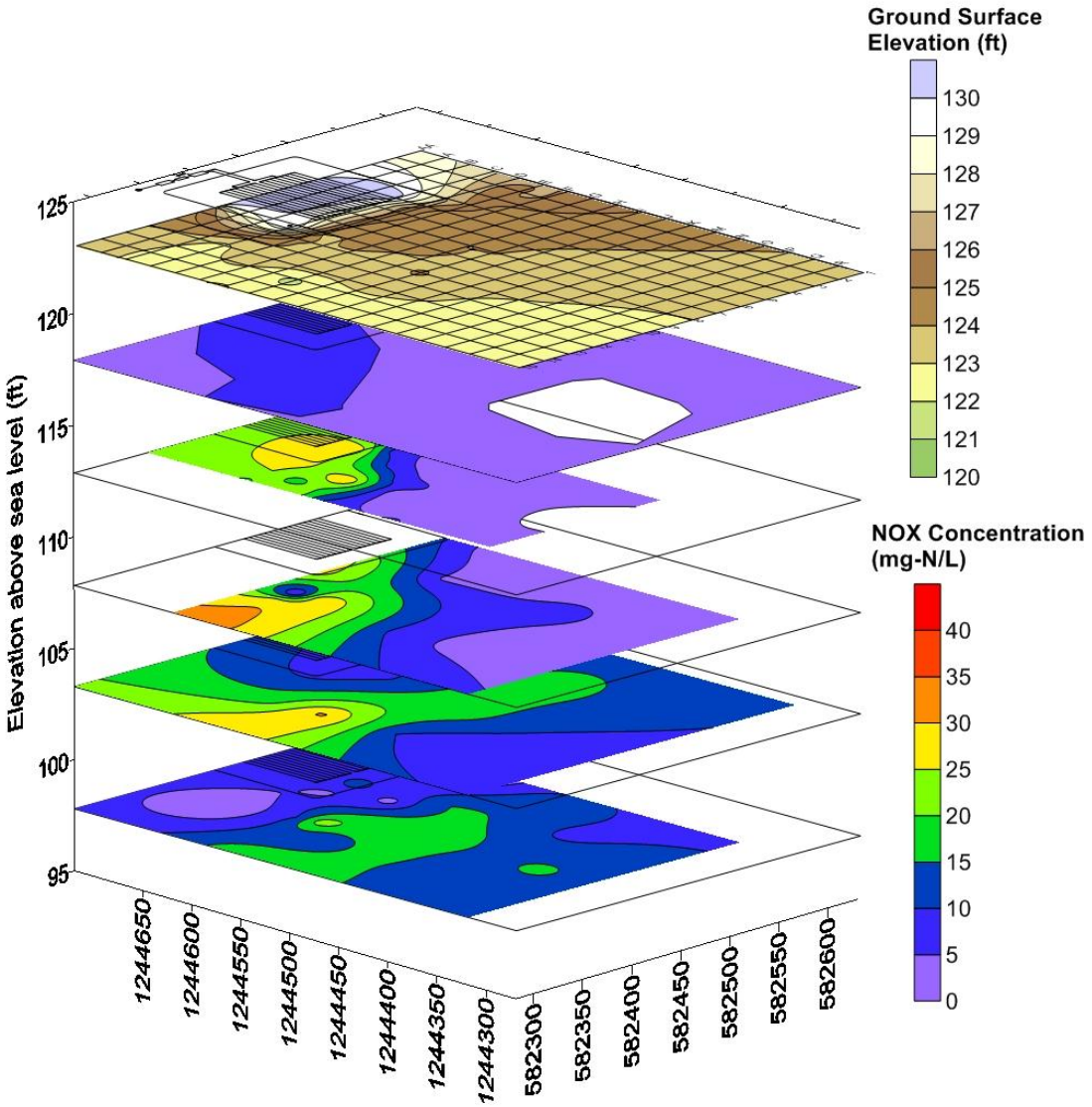


**Figure 6**
**Maximum NOX-N**
**Schematic (using Surfer) illustrating NOX concentrations in the subsurface**

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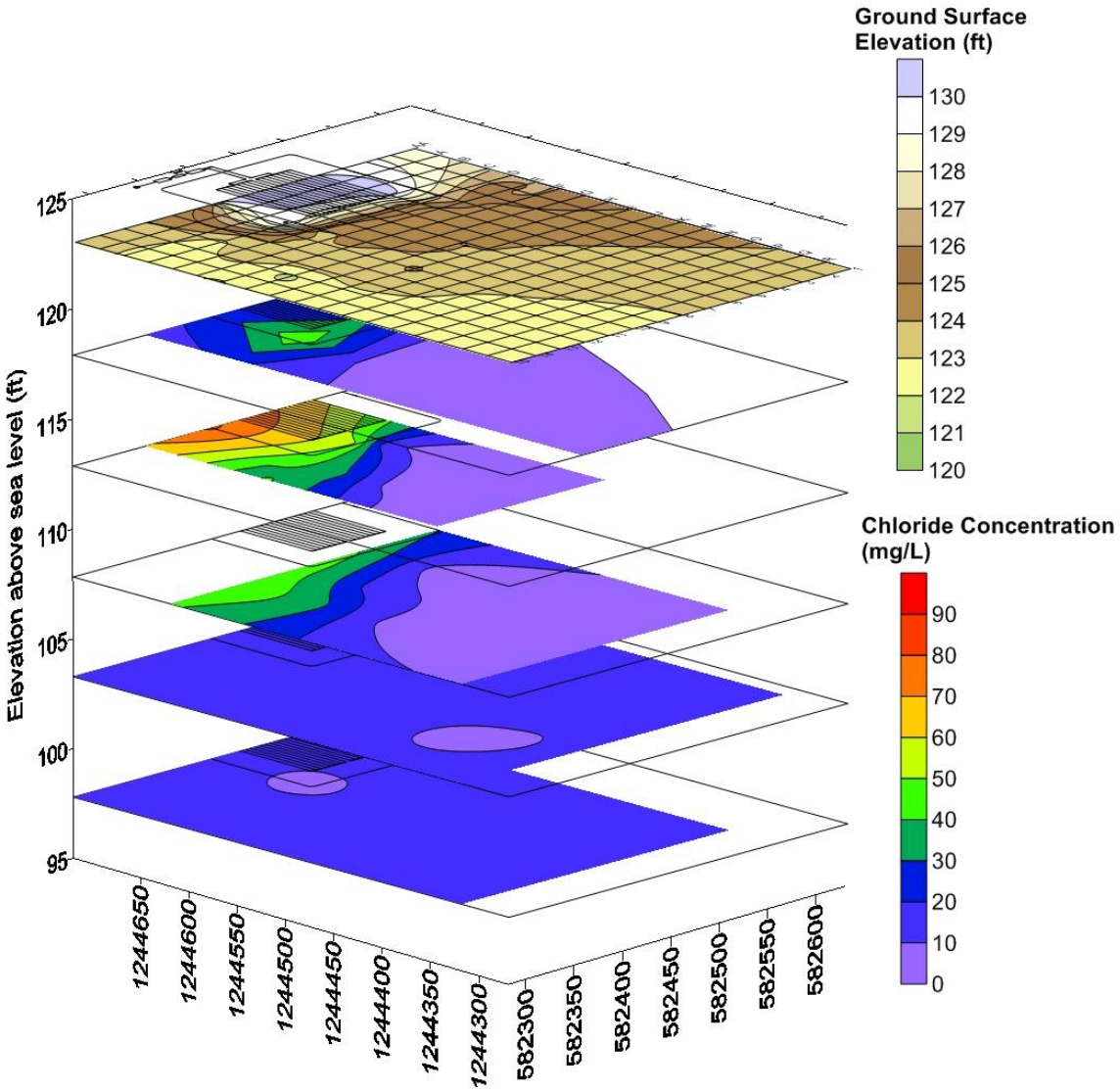


**Figure 7**
**Maximum Chloride**
**Schematic (using Surfer) illustrating chloride concentrations in the subsurface**

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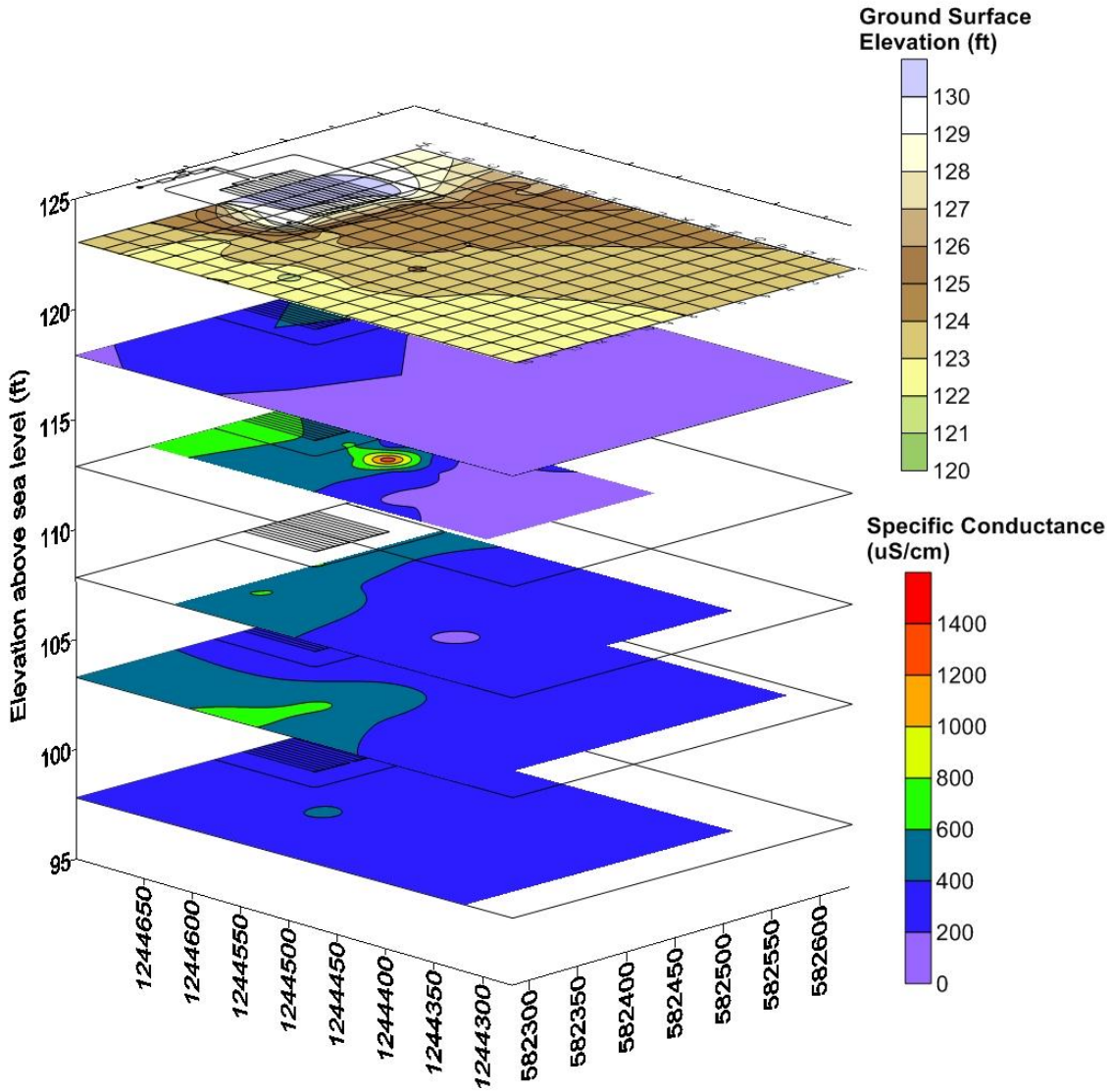


**Figure 8**
**Maximum Specific Conductance**
**Schematic (using Surfer) illustrating specific conductance concentrations in the subsurface**

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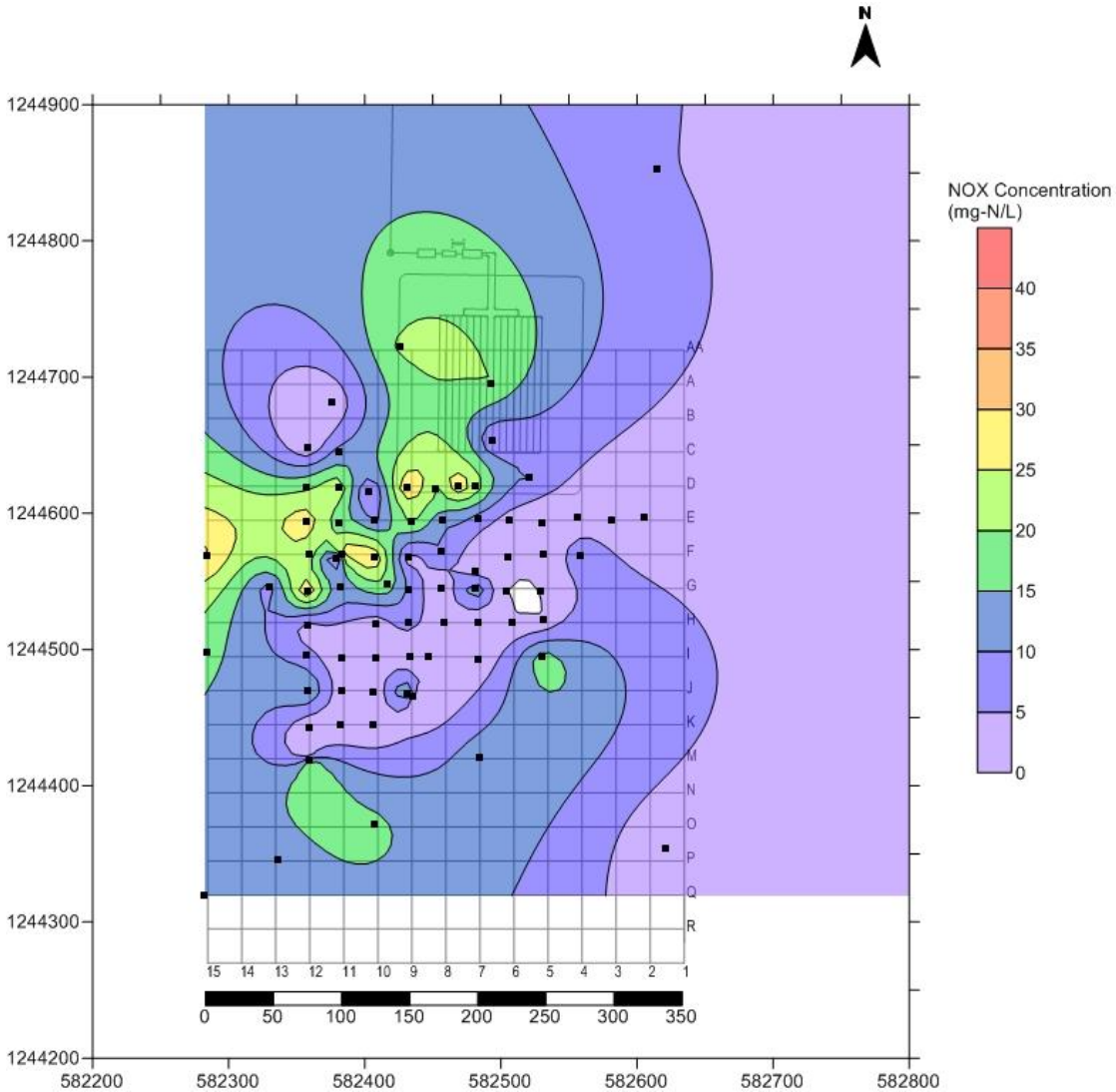


**Figure 9**
**Maximum NOX-N[1] Site Plan**
**Schematic (using Surfer) illustrating NOX concentrations in the subsurface**
**[1]Maximum at each location considering all depths**

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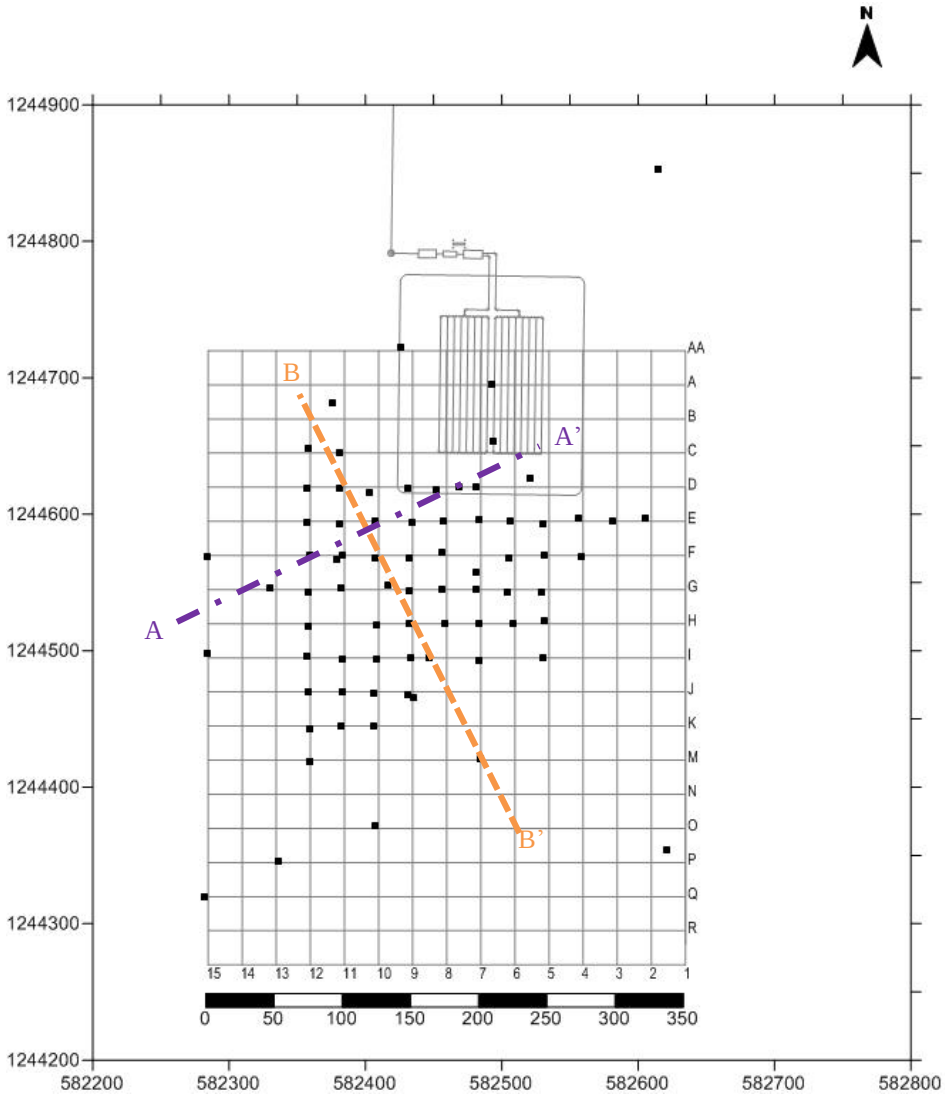


**Figure 10**
**Cross Section Locations, plan view**

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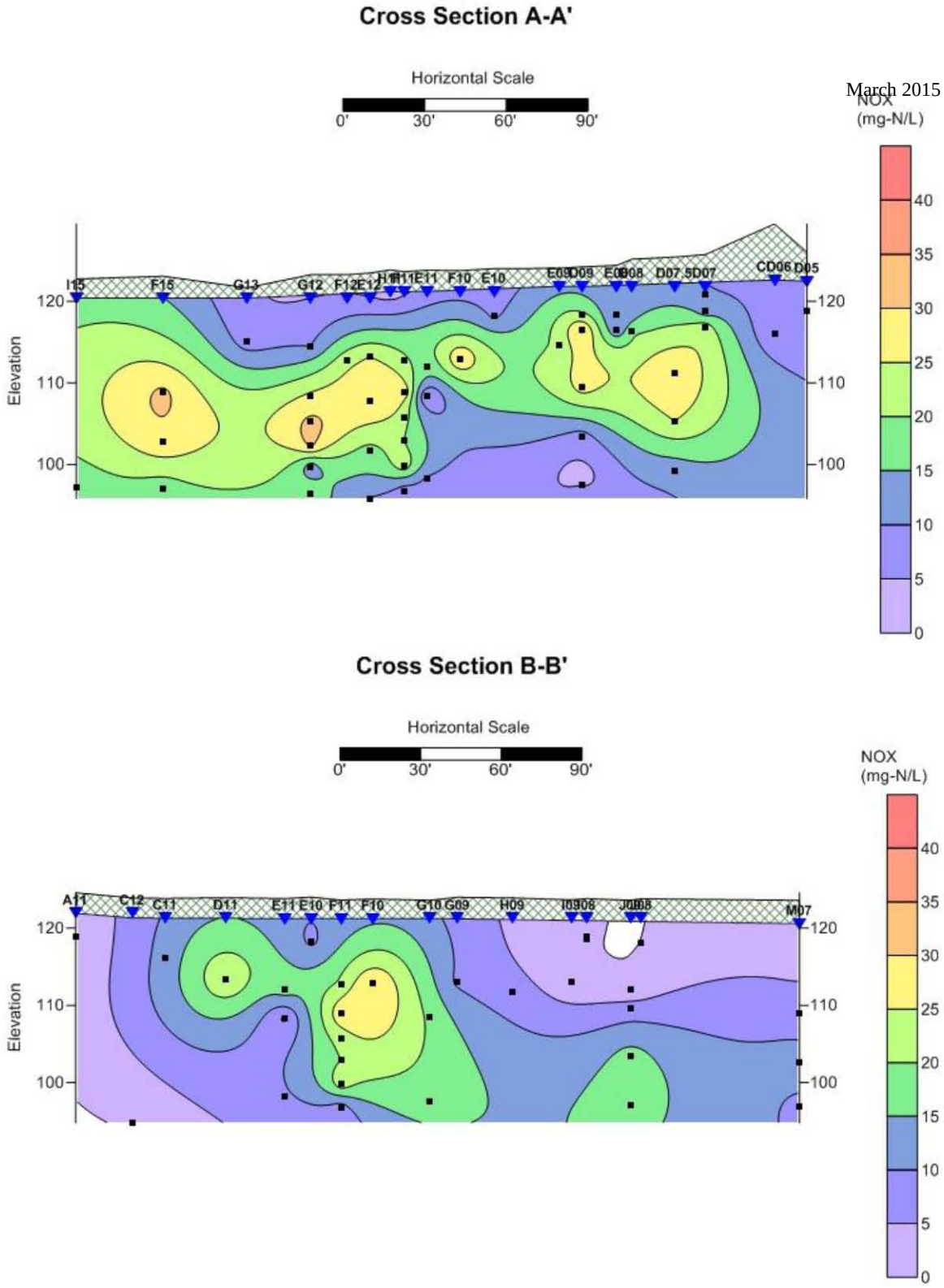


**Figure 11**
**Maximum NOX-N, Cross Sections**

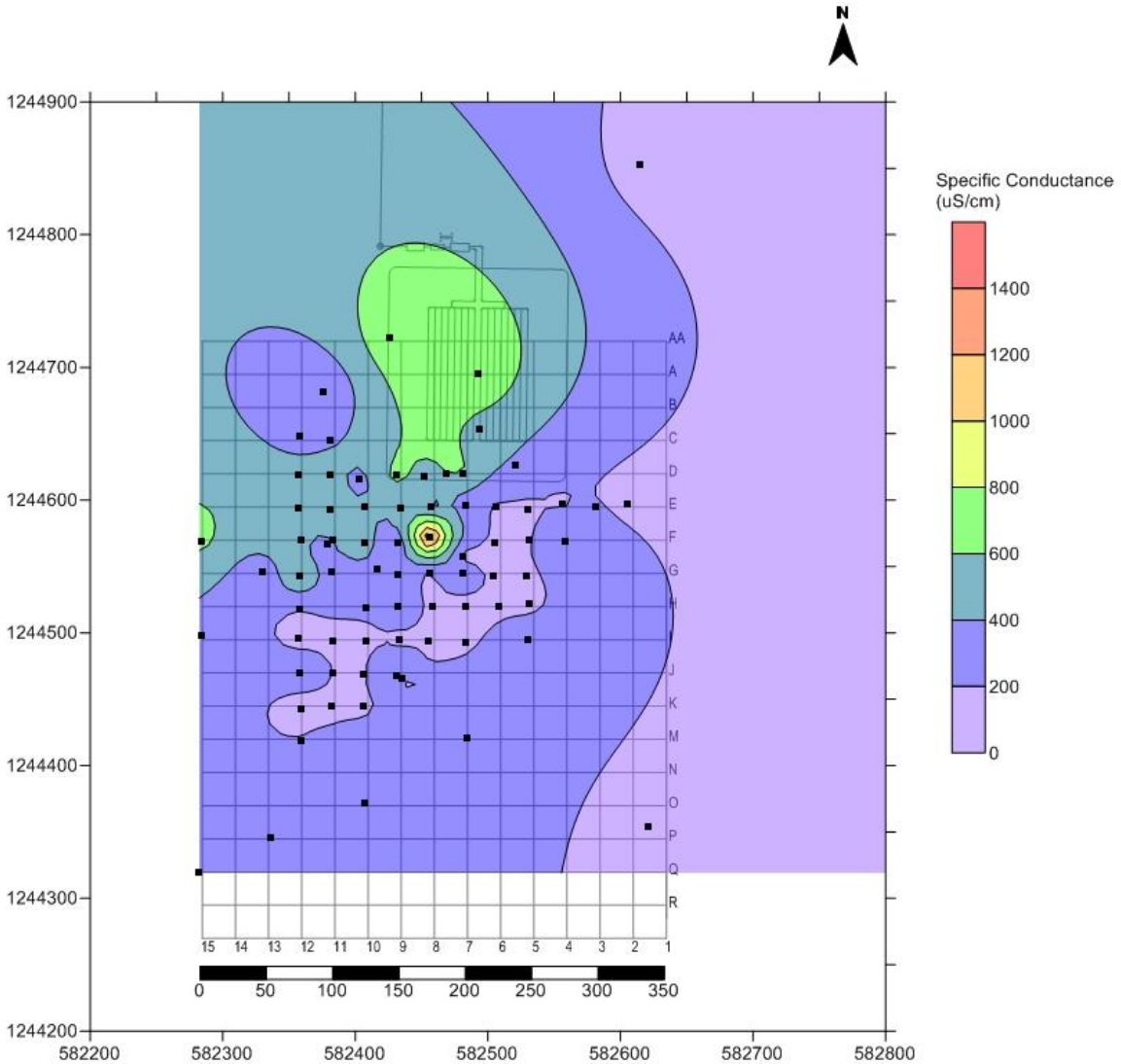


**Figure 12**
**Maximum Specific Conductance[1] Site Plan**
**Schematic (using Surfer) illustrating SC concentrations in the subsurface**
**[1]Maximum at each location considering all depths**

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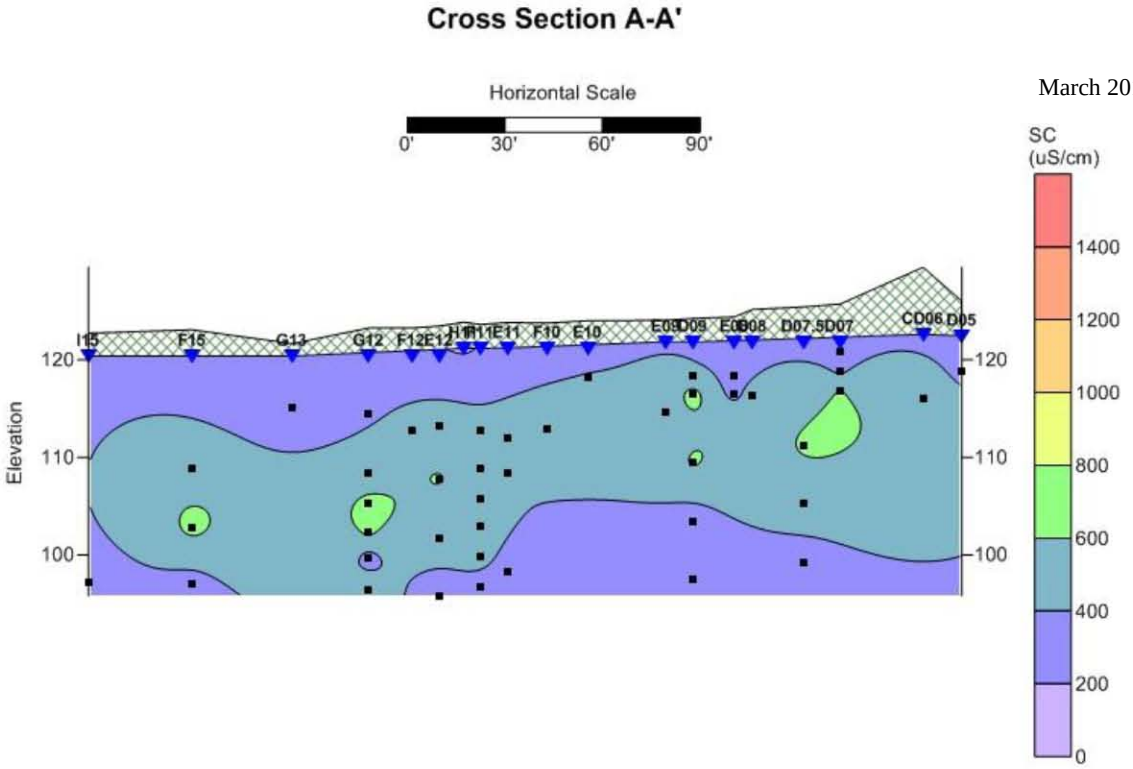


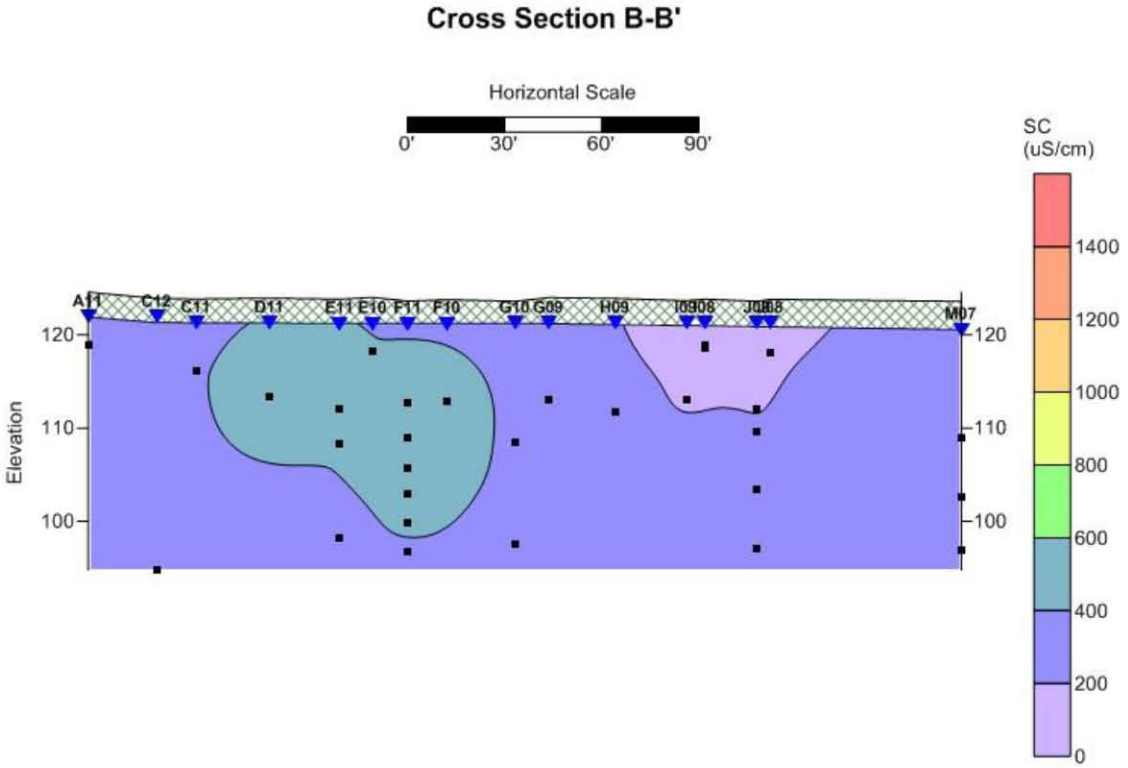


**Figure 13**
**Maximum Specific Conductance, Cross Sections**

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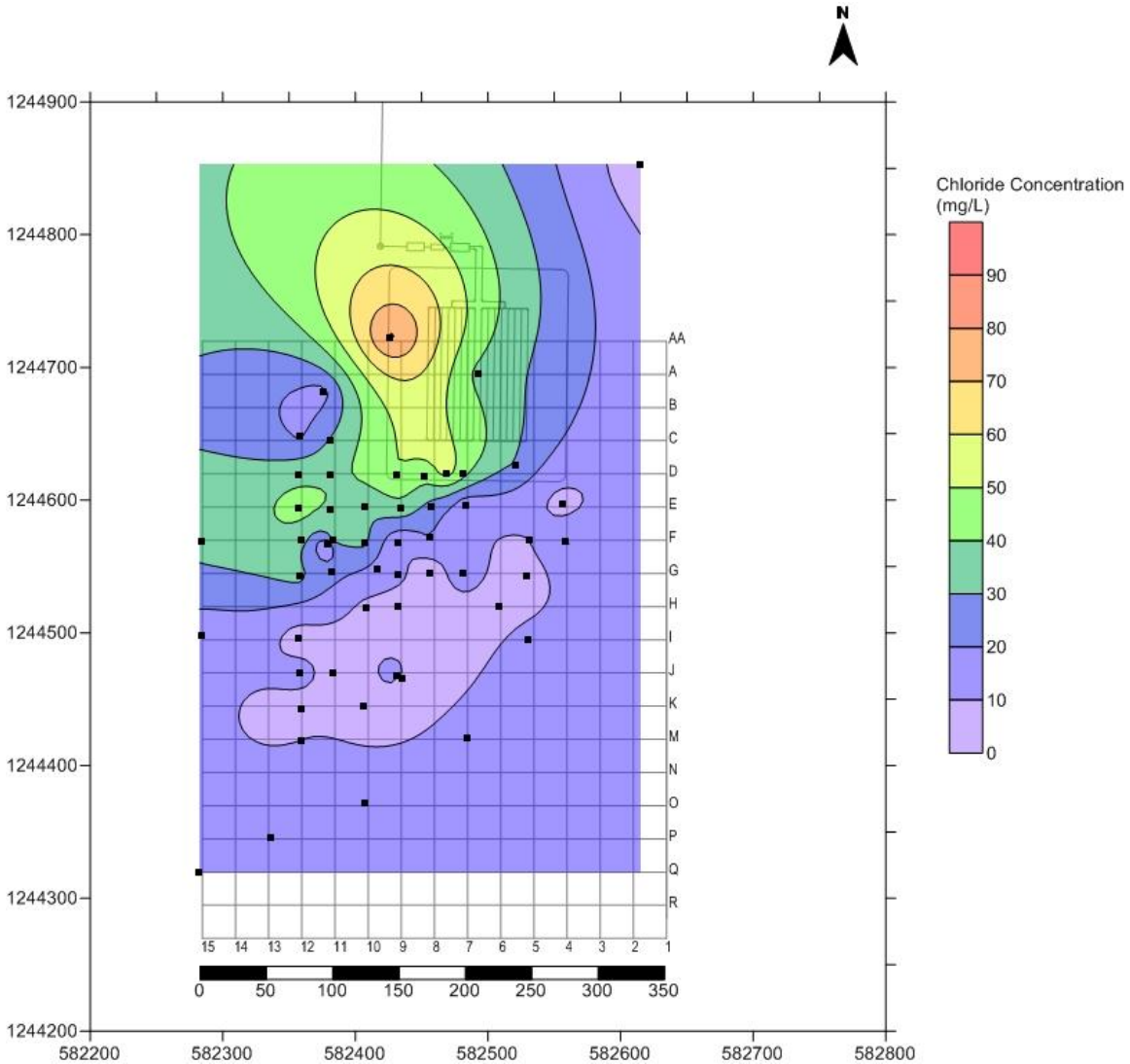


**Figure 14**
**Maximum Chloride[1] Site Plan**
**Schematic (using Surfer) illustrating chloride concentrations in the subsurface**
**[1]Maximum at each location considering all depths**

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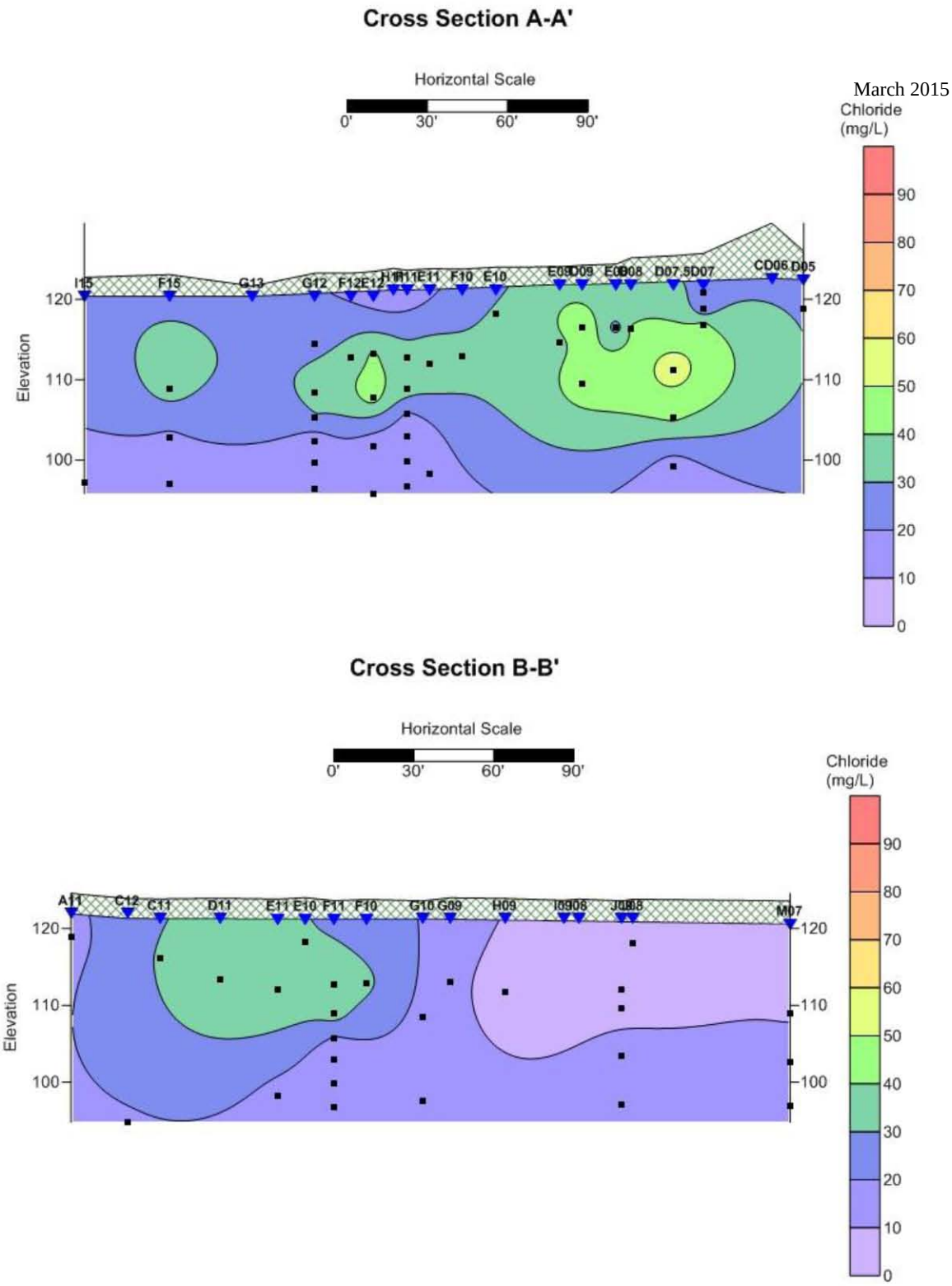


**Figure 15**
**Maximum Chloride, Cross Sections**

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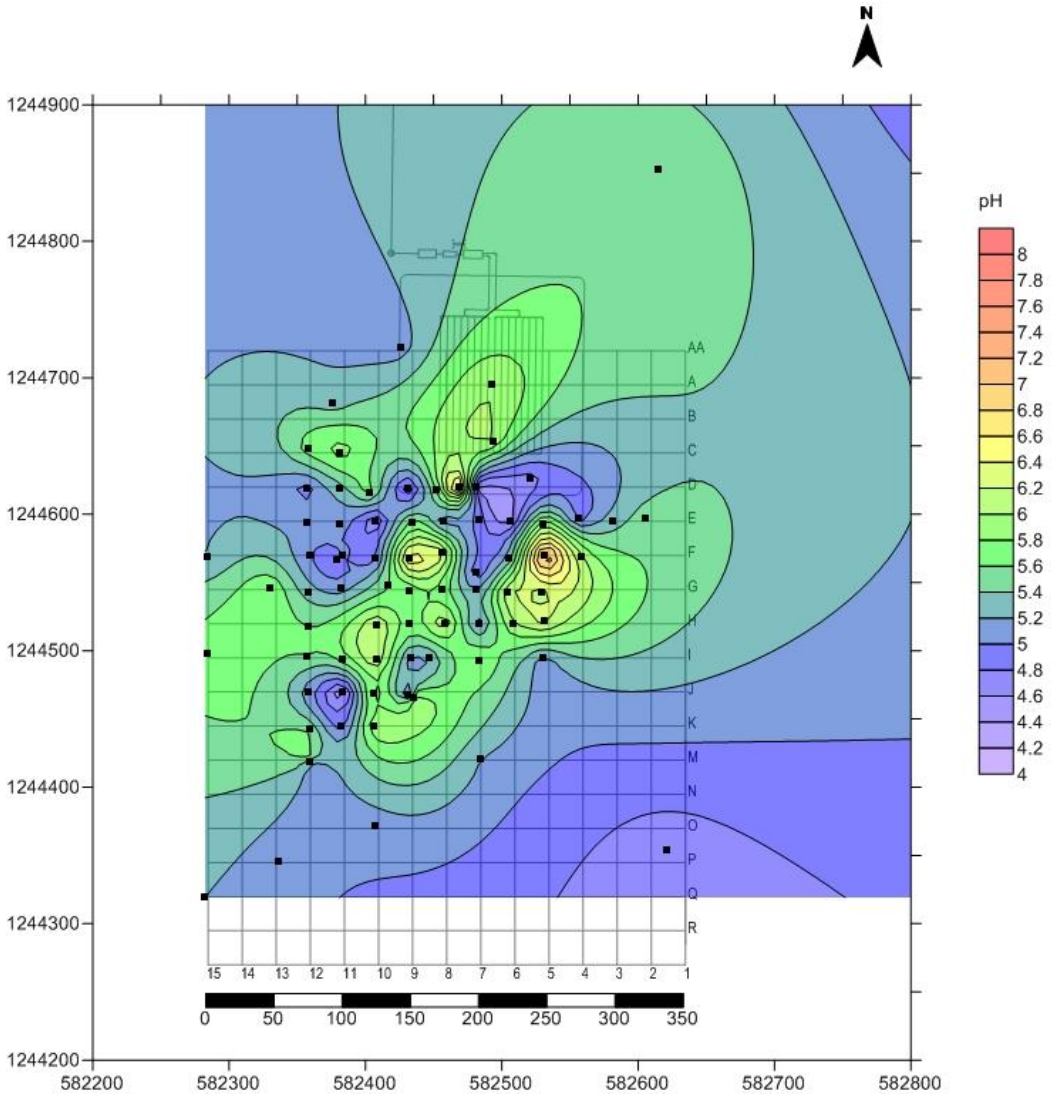


**Figure 16**
**Maximum pH[1] Site Plan**
**Schematic (using Surfer) illustrating pH concentrations in the subsurface**
**[1]Maximum pH at maximum NOX depth**

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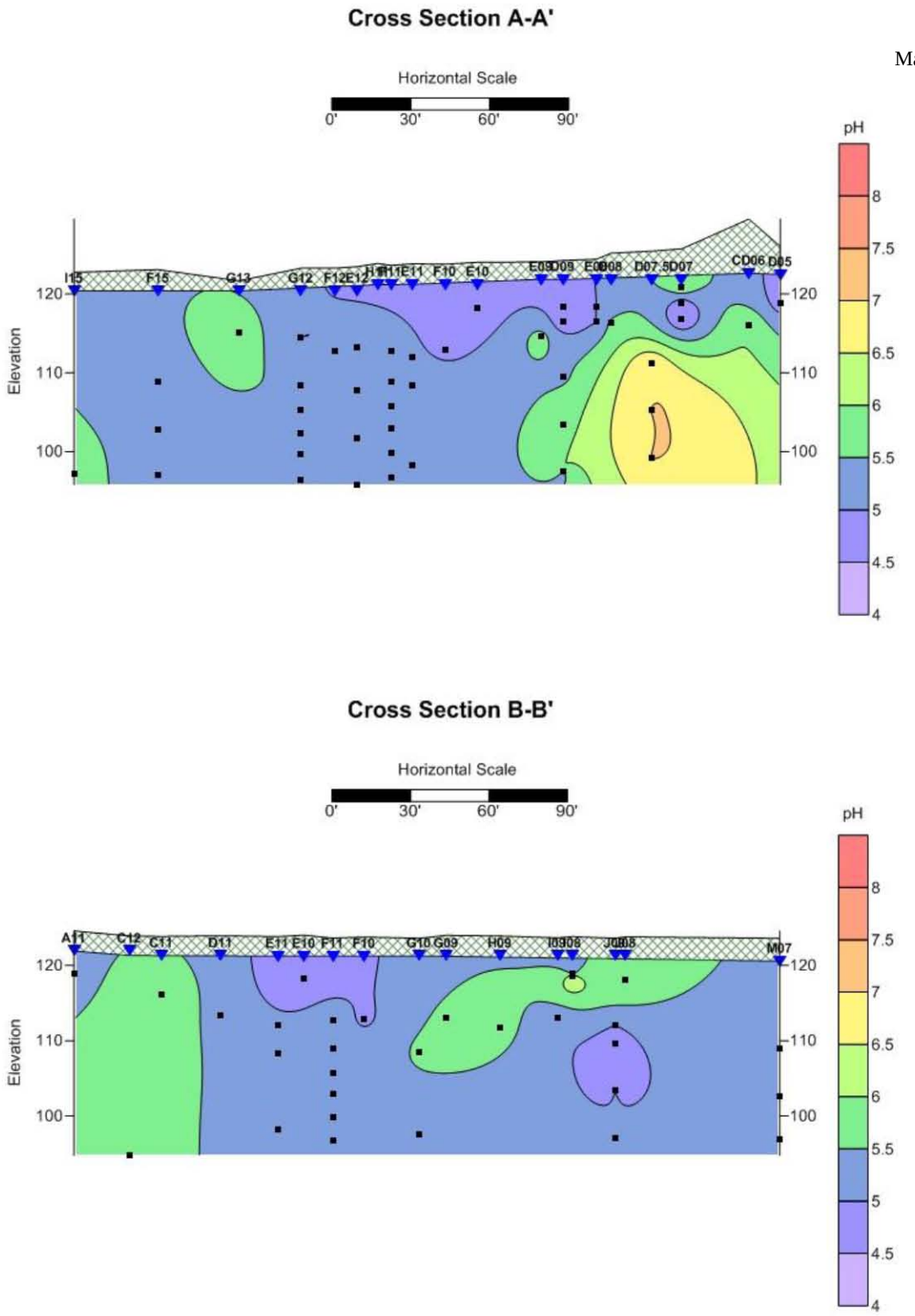


**Figure 17**
**Maximum pH, Cross Sections**

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## 5.4 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 soil descriptions are provided in Appendix F, Table F.1. A few soil samples were submitted to the University of Florida IFAS Analytical Services Laboratory and University of Florida SWS Mineralogy Core Laboratory for analysis. The soil samples were analyzed for particle size distribution (see Table F.2), pH, organic matter, cation exchange capacity (CEC), ammonia, nitrate, TKN, phosphorus, potassium, calcium, magnesium, and sodium concentrations (see Table F.3). The complete soil data set is included in Appendix F.

# 6.0 Summary

The results of the monitoring are documented in the Task C.22 GCREC Mound Data Summary Reports (Appendix G). Further analysis of the results obtained at this site will occur as Task C results are compiled and summarized for use in Task D. The insight gained from monitoring the GCREC Mound plume will provide information needed for the development of the groundwater model in Task D.

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# Appendix A: GCREC Agreement

PRELIMINARY

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HAZEN AND SAWYER
Environmental Engineers & Scientists

Hazen and Sawyer, P.C.
10002 Princess Palm Avenue
Registry One Building, Suite 200
Tampa, Florida 33619
(813) 630-4498
Fax: (813) 630-1967

Florida Onsite Sewage Nitrogen Reduction Strategies Study

ABANDONMENT OF ONSITE WASTEWATER RESEARCH AND TESTING FACILITY

Location (City/County): Wimauma, Florida; Hillsborough County

Property ID #: U-29-31-21ZZZ-000004-47620.0

As part of the Florida Department of Health Onsite Sewage Nitrogen Reduction Strategies Study, during the period June 2010 through March 2015, an onsite wastewater research and testing facility was designed, constructed, operated, and up kept at 14625 County Road 672, Wimauma, Florida 33598 as outlined in the Memorandum of Agreement between The Florida Department of Health (DOH) and The University of Florida Board of Trustees. The DOH study period for the onsite wastewater research and testing facility has now ended. As indicated in the agreement, FDOH contracted Hazen and Sawyer, P.C. (H&S) to properly abandon the research facility before the MOA expires. This document formalizes the test facility abandonment completed March 2015.

OWNER: I (We) DDS hereby do agree that the wastewater research and testing facility was properly abandoned and to the transfer of complete ownership and operational responsibilities for the referenced DOH onsite wastewater system. I hereby release DOH and Hazen and Sawyer, P.C. from any and all responsibility or liability for the performance or non-performance of this system after the date this acceptance of system agreement is signed by both parties below.

By signing below, both parties agree to the terms and conditions contained herein:

**HAZEN AND SAWYER, P.C.**

Damann Anderson — 3/23/15
Damann Anderson — date
Vice President, Hazen and Sawyer, P.C.

**GULF COAST RESEARCH AND EDUCATION CENTER**

3/23/15

Dr. Craig Stanley
Associate GCREC Director, University of Florida, IFAS — date

# Appendix B: GCREC Mound Wastewater Flow Data

**Table B.1**
**GCREC Mound Metered Wastewater Flow Data**

| Date Range | 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) |
|---|---|---|---|
| **Before A/C Condensate Diversion** | | | |
| 12/21/09 – 7/16/10 | 1,650 | 591 | 2,241 |
| **After A/C Condensate Diversion** | | | |
| 7/19/10 – 10/10/11 | 1,147 | 1,463 | 2,610 |

**Table B.2**
**Summary of Daily Wastewater Flows (PLC Recorded)**

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

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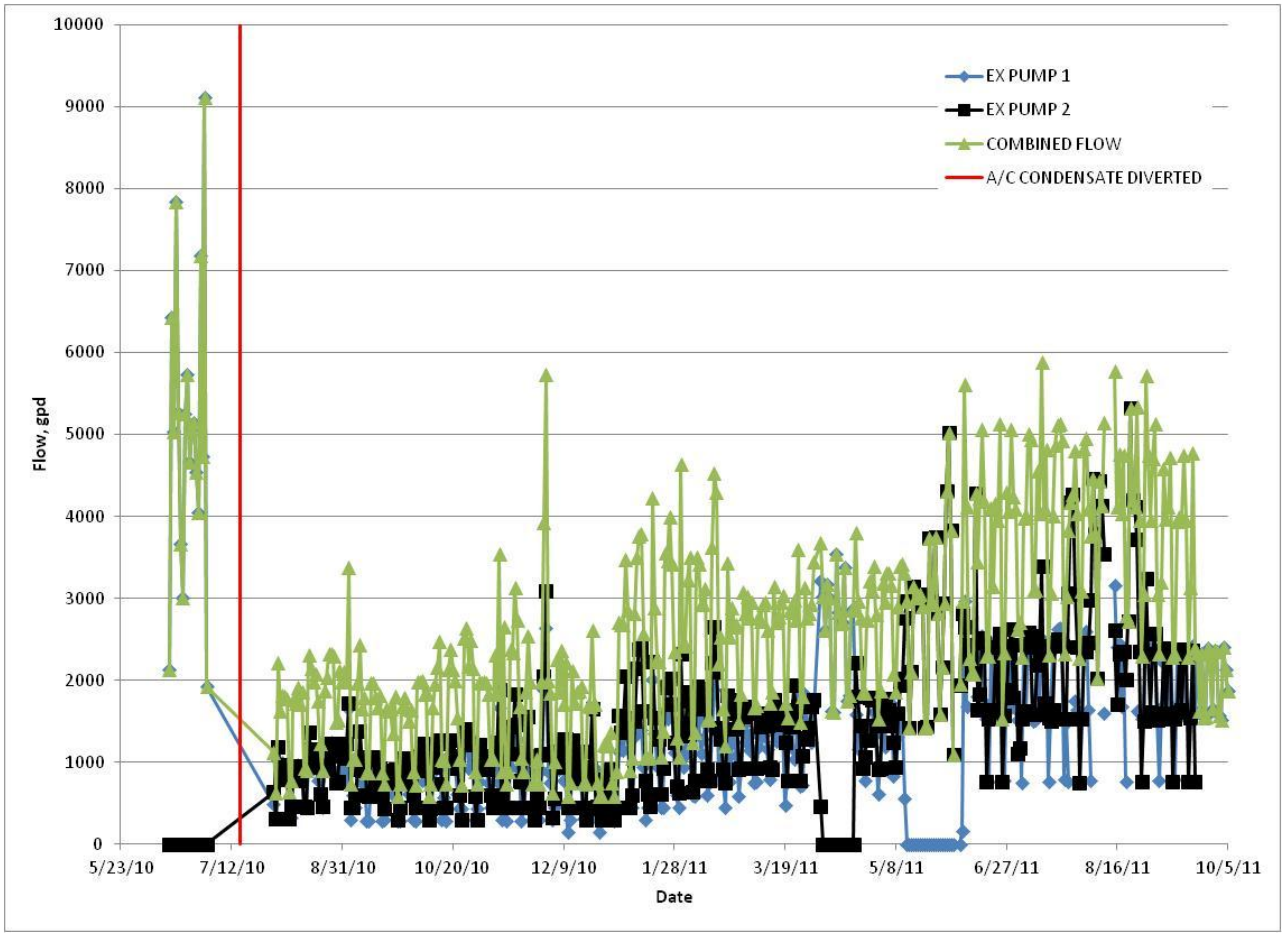


**Figure B.1**
**PLC Recorded Daily Wastewater Flows**
**(6/14/10 – 10/05/11)**

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# Appendix C: GCREC Weather Station Data

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## Table C.1
## Monthly Recorded Meteorological Data

| 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/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |

# Appendix D: Groundwater Elevations

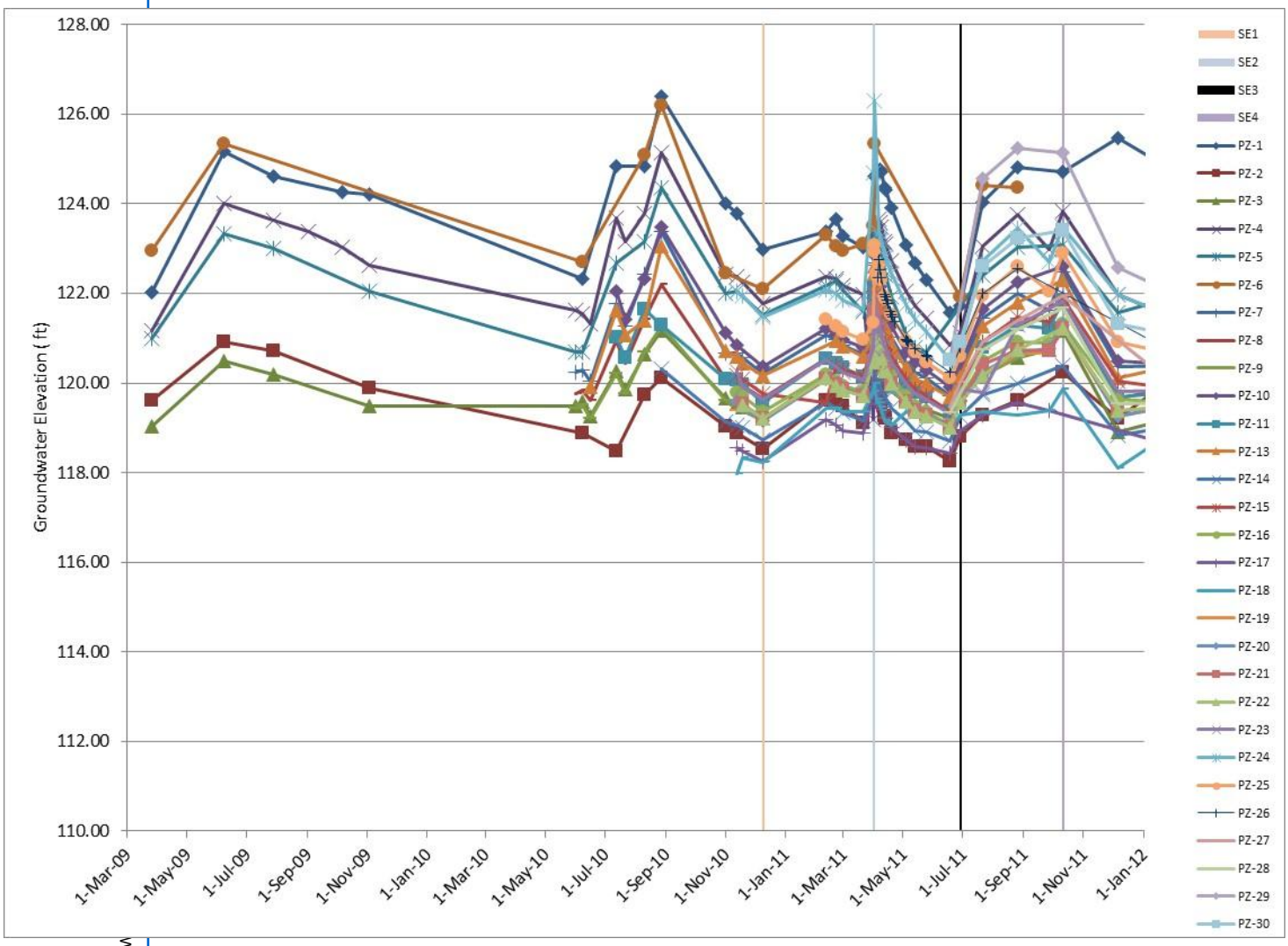


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**Figure D.1**
**Groundwater Elevations**

# Table D.1
## Groundwater Elevations

| ID | PZ-1 | PZ-2 | PZ-3 | PZ-4 | PZ-5 | PZ-6 | PZ-7 | PZ-8 | PZ-9 | PZ-10 | PZ-11 | PZ-13 | PZ-14 | PZ-15 | PZ-16 | PZ-17 | PZ-18 | PZ-19 | PZ-20 | PZ-21 | PZ-22 | PZ-23 | PZ-24 | PZ-25 | PZ-26 | PZ-27 | PZ-28 | PZ-29 | PZ-30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | BKG, N | PG1.75 | H11 | BKG, N | BKG, E | BKG, NW | D5.5 | FG7 | I8.5 | CD6.5 | E9 | F4 | G13 | A11 | C12 | I15 | R12 | G9.75 | G9.75 | E11 | E11 | D9 | BKG, N | C-Mound | EF2 | D08 | D11 | BKG | A0 |
| 3/26/2009 | 122.02 | 119.61 | 119.04 | 121.17 | 121.00 | 122.95 | | | | | | | | | | | | | | | | | | | | | | | |
| 6/8/2009 | 125.16 | 120.92 | 120.50 | 124.01 | 123.34 | 125.33 | | | | | | | | | | | | | | | | | | | | | | | |
| 7/28/2009 | 124.62 | 120.72 | 120.20 | 123.64 | 123.00 | | | | | | | | | | | | | | | | | | | | | | | | |
| 9/2/2009 | | | | 123.37 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10/6/2009 | 124.26 | | | 123.04 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11/3/2009 | 124.22 | 119.88 | 119.48 | 122.63 | 122.06 | | | | | | | | | | | | | | | | | | | | | | | | |
| 6/1/2010 | | | 119.49 | 121.63 | 120.69 | | 120.23 | 119.76 | 119.44 | | | | | | | | | | | | | | | | | | | | |
| 6/8/2010 | 122.32 | 118.87 | 119.58 | 121.55 | 120.68 | 122.70 | 120.29 | 119.84 | 119.52 | | | | | | | | | | | | | | | | | | | | |
| 6/16/2010 | | | 119.26 | 121.31 | | | 120.03 | 119.61 | 119.22 | | | 119.91 | | | | | | | | | | | | | | | | | |
| 7/12/2010 | 124.83 | 118.47 | 120.27 | 123.68 | 122.67 | | 121.77 | 120.94 | 120.22 | 122.06 | 121.01 | 121.63 | | | | | | | | | | | | | | | | | |
| 7/21/2010 | | | 119.87 | 123.16 | | | 121.28 | 120.44 | 119.77 | 121.43 | 120.56 | 121.06 | | | | | | | | | | | | | | | | | |
| 8/10/2010 | 124.85 | 119.74 | 120.64 | 123.79 | 123.15 | 125.10 | 122.42 | 121.42 | 120.70 | 122.33 | 121.64 | 121.40 | | | | | | | | | | | | | | | | | |
| 8/27/2010 | 126.39 | 120.12 | 121.16 | 125.14 | 124.35 | 126.19 | 123.39 | 122.21 | 121.28 | 123.49 | 121.29 | 123.05 | 120.32 | | | | | | | | | | | | | | | | |
| 11/1/2010 | 124.02 | 119.03 | 119.65 | 122.43 | 122.01 | 122.46 | 120.67 | 120.10 | 119.62 | 121.12 | 120.10 | 120.71 | 119.13 | | | | | | | | | | | | | | | | |
| 11/12/2010 | 123.79 | 118.87 | 119.54 | 122.37 | 122.05 | | 120.67 | 120.04 | 119.49 | 120.83 | 120.07 | 120.59 | 119.07 | 120.16 | 119.78 | 118.56 | 117.98 | 119.38 | 119.58 | | | 120.27 | 122.05 | | | | | | |
| 11/18/2010 | | | 119.45 | 122.26 | | | 120.56 | 119.93 | 119.38 | | 119.96 | 120.45 | 119.01 | 120.09 | 119.71 | 118.49 | 118.34 | 119.45 | 119.45 | 119.53 | 119.51 | 119.91 | 121.96 | | | | | | |
| 12/9/2010 | 122.97 | 118.52 | 119.21 | 121.76 | 121.53 | 122.09 | 120.22 | 119.65 | 119.15 | 120.37 | 119.57 | 120.16 | 118.72 | 119.77 | 119.37 | 118.26 | 118.22 | 119.18 | 119.17 | 119.22 | 119.21 | 119.64 | 121.46 | | | | | | |
| 2/11/2011 | 123.38 | 119.60 | 120.13 | 122.38 | 122.18 | 123.30 | 121.06 | 120.54 | 120.08 | 121.22 | 120.55 | | 119.55 | 119.56 | 120.20 | 119.19 | 119.44 | 120.08 | 120.10 | 120.10 | 120.11 | 120.51 | 122.07 | 121.42 | | | | | |
| 2/21/2011 | 123.66 | 119.62 | 120.01 | 122.33 | 122.27 | 123.05 | 120.98 | 120.45 | 120.03 | 121.10 | 120.44 | 120.95 | 119.44 | 120.40 | 120.03 | 119.06 | 119.44 | 119.97 | 119.98 | 119.96 | 119.94 | 120.37 | 122.01 | 121.28 | | | | | |
| 2/28/2011 | 123.27 | 119.48 | 119.90 | 122.17 | 122.08 | 122.95 | 120.85 | 120.33 | 119.90 | 120.98 | 120.33 | 120.82 | 119.34 | 120.28 | 119.93 | 118.94 | 119.35 | 119.85 | 119.86 | 119.85 | 119.83 | 120.24 | 121.86 | 121.15 | | | | | |
| 3/21/2011 | 123.04 | 119.11 | 119.80 | 121.97 | 121.60 | 123.10 | 120.64 | 120.14 | 119.75 | 120.79 | 120.15 | 120.58 | 119.17 | 120.16 | 119.81 | 118.88 | 119.37 | 119.73 | 119.76 | 119.71 | 119.71 | 120.07 | 121.65 | 120.97 | | | | | |
| 3/31/2011 | 123.24 | 119.78 | 120.60 | 119.19 | 121.87 | 123.50 | 121.10 | 120.81 | 120.53 | 121.21 | 120.85 | 121.12 | 119.99 | 120.82 | 120.53 | 119.82 | 119.82 | 120.48 | 120.49 | 120.48 | 120.47 | 120.77 | 124.70 | 121.35 | | | | | |
| 4/1/2011 | | | | | | | 122.67 | 122.17 | 121.68 | 122.86 | 122.13 | 122.60 | | 122.10 | 121.41 | | | 121.58 | 121.61 | 121.60 | 121.48 | 121.98 | | 122.92 | | | | | |
| 4/1/2011 | 124.62 | 120.37 | 121.24 | 120.73 | 123.32 | 125.33 | 122.63 | 121.98 | 121.39 | 122.92 | 121.91 | 122.45 | 120.28 | 121.96 | 121.36 | 120.10 | 119.99 | 121.35 | 121.37 | 121.27 | 121.28 | 121.90 | 126.30 | 123.08 | | | | | |
| 4/4/2011 | | 119.74 | 120.60 | | | | 121.96 | 121.25 | 120.64 | 122.17 | 121.25 | 121.82 | 119.93 | 121.36 | 120.91 | 119.57 | 119.57 | 120.66 | 120.67 | 120.69 | 120.68 | 121.25 | | 122.46 | | | | | |
| 4/4/2011 | | 119.68 | 120.54 | | | | 121.90 | 121.18 | 120.56 | 122.14 | 121.20 | 121.75 | 119.90 | 121.33 | 120.81 | 119.51 | 119.63 | 120.59 | 120.57 | 120.63 | 120.63 | 121.20 | | 122.44 | | | | | |
| 4/5/2011 | | | 120.50 | | | | 121.82 | 121.11 | 120.51 | 122.04 | 121.10 | 121.65 | 119.86 | 121.25 | 120.76 | | | 120.55 | 120.57 | 120.58 | 120.57 | 121.11 | | 122.34 | 122.36 | | | | |
| 4/6/2011 | 124.73 | 119.90 | 120.79 | 123.67 | 123.17 | | 122.17 | 121.49 | 120.86 | 122.36 | 121.48 | 122.06 | 120.08 | 121.56 | 121.04 | 119.78 | 119.55 | 120.88 | 120.89 | 120.89 | 120.88 | 121.46 | 123.36 | 122.62 | 122.76 | | | | |
| 4/7/2011 | 124.76 | 119.66 | 120.55 | 123.58 | 123.03 | | 121.94 | 121.21 | 120.57 | 122.15 | 121.22 | 121.80 | 119.92 | 121.35 | 120.86 | 119.54 | 119.45 | 120.62 | 120.63 | 120.66 | 120.65 | 121.21 | 123.26 | 122.43 | 122.52 | | | | |
| 4/8/2011 | 124.71 | 119.56 | 120.45 | 123.49 | 122.90 | | 121.80 | 121.08 | 120.46 | 122.02 | 121.11 | 121.65 | 119.85 | 121.23 | 120.73 | 119.45 | 119.39 | 120.50 | 120.53 | 120.56 | 120.54 | 121.10 | 123.18 | 122.31 | 122.35 | | | | |
| 4/12/2011 | 124.37 | 119.27 | 120.19 | 123.15 | 122.49 | | 121.46 | 120.77 | 120.17 | 121.67 | 120.81 | 121.28 | 119.69 | 120.92 | 120.47 | 119.24 | 119.15 | 120.25 | 120.27 | 120.31 | 120.31 | 120.81 | 122.85 | 121.93 | 121.98 | | | | |
| 4/13/2011 | 124.32 | 119.22 | 120.18 | 123.10 | 122.41 | | 121.40 | 120.71 | 120.12 | 121.61 | 120.76 | 121.23 | 119.66 | 120.89 | 120.43 | 119.22 | 119.13 | 120.20 | 120.21 | 120.28 | 120.26 | 120.77 | 122.80 | 121.88 | 121.93 | | | | |
| 4/14/2011 | | | | | | | 121.33 | | | | | 121.16 | | | | | | | | | | | | | 121.85 | | | | |
| 4/15/2011 | | | | | | | | | | | | 121.09 | | | | | | | | | | | | | 121.77 | | | | |
| 4/18/2011 | | | | | | | | | | | | 120.91 | | | | | | | | | | | | | 121.60 | | | | |
| 4/19/2011 | 123.92 | 118.87 | 119.93 | 122.73 | 121.92 | | 121.03 | 120.37 | 119.82 | 121.27 | 120.44 | 120.84 | 119.44 | 120.60 | 120.16 | 119.01 | 119.05 | 119.91 | 119.90 | 119.99 | 119.98 | 120.46 | 122.44 | 121.52 | 121.52 | | | | |
| 4/20/2011 | | | | | | | | | | | | 120.77 | | | | | | | | | | | | | 121.48 | | | | |
| 4/22/2011 | | | | | | | | | | | | 120.68 | | | | | | | | | | | | | 121.36 | | | | |
| 5/4/2011 | 123.08 | 118.73 | 119.65 | 122.04 | 121.10 | | 120.47 | 119.95 | 119.55 | 120.69 | 120.00 | 120.33 | 119.15 | 120.09 | 119.70 | 118.74 | 119.35 | 119.56 | 119.55 | 119.59 | 119.58 | 119.99 | 121.74 | 120.94 | 120.96 | | | | |
| 5/5/2011 | | | | | | | | | | | | 120.30 | | | | | | | | | | | | | 120.95 | | | | |
| 5/6/2011 | | | | | | | | | | | | 120.29 | | | | | | | | | | | | | 120.92 | | | | |
| 5/13/2011 | 122.67 | 118.59 | 119.49 | 121.72 | 120.80 | | 120.25 | 119.75 | 119.40 | 120.46 | 119.79 | 120.09 | 118.94 | 119.87 | 119.49 | 118.57 | 119.28 | 119.37 | 119.38 | 119.39 | 119.37 | 119.76 | 121.43 | 120.68 | 120.77 | | | | |
| 5/24/2011 | 122.31 | 118.57 | 119.42 | 121.45 | 120.68 | | 120.12 | 119.66 | 119.34 | 120.28 | 119.68 | 119.99 | 118.90 | 119.72 | 119.36 | 118.56 | 119.29 | 119.29 | 119.30 | 119.29 | 119.27 | 119.64 | 121.14 | 120.46 | 120.62 | | | | |
| 5/26/2011 | | | | | | | | | | | | 119.97 | | | | | | | | | | | | | 120.58 | | | | |
| 6/17/2011 | 121.56 | 118.26 | 119.20 | 120.85 | | | 119.72 | 119.33 | 119.06 | 119.90 | 119.36 | 119.68 | 118.71 | 119.36 | 119.07 | 118.42 | 119.01 | 119.02 | 119.03 | 119.01 | 119.00 | 119.31 | 120.52 | 120.12 | 120.25 | 119.45 | 119.34 | 120.51 | 120.52 |
| 6/28/2011 | 121.73 | 118.80 | 119.74 | 121.11 | | 121.92 | 120.26 | 119.93 | 119.63 | 120.40 | 119.96 | 120.15 | 119.26 | 119.88 | 119.63 | 118.93 | 119.28 | 119.60 | 119.62 | 119.58 | 119.57 | 119.85 | 120.80 | 120.58 | 120.78 | 120.01 | | | 120.91 |
| 7/21/2011 | 124.04 | 119.29 | 120.21 | 123.06 | 122.39 | 124.41 | 121.44 | 120.75 | 120.17 | 121.65 | 120.79 | 121.28 | 119.73 | 120.91 | 120.48 | 119.29 | 119.35 | 120.22 | 120.25 | 120.42 | 120.17 | 119.78 | 122.74 | 121.96 | 122.01 | 120.91 | 120.73 | 124.56 | 122.60 |
| 8/25/2011 | 124.82 | 119.62 | 120.57 | 123.77 | 123.03 | 124.35 | 122.01 | 121.24 | 120.57 | 122.25 | 121.29 | 121.80 | 119.99 | 121.47 | 120.91 | 119.57 | 119.28 | 120.65 | 120.68 | 120.73 | 120.74 | 121.30 | 123.45 | 122.60 | 122.56 | 121.39 | 121.19 | 125.24 | 123.24 |
| 9/26/2011 | | | 120.75 | 122.99 | | | 121.63 | | | | 121.21 | | | 121.36 | 120.89 | 119.39 | 119.38 | 120.70 | 120.76 | 120.72 | | | 122.71 | 122.04 | | | | | |
| 10/10/2011 | 124.71 | 120.23 | 121.17 | 123.84 | 123.09 | | 122.47 | 121.85 | | 122.61 | 121.85 | 122.29 | 120.39 | 121.91 | 121.31 | | 119.85 | 121.25 | 121.29 | 121.23 | 121.22 | 121.82 | 123.47 | 122.90 | | 121.96 | 121.68 | 125.14 | 123.41 |
| 12/6/2011 | 123.12 | 118.11 | 119.27 | 122.03 | 121.18 | | 120.34 | 119.68 | | 120.57 | 119.77 | 120.10 | 118.86 | 120.04 | 119.61 | | 118.16 | 119.24 | 119.25 | 119.38 | 119.37 | 119.82 | 121.71 | 120.92 | | | 119.80 | 123.53 | 121.45 |

# Appendix E: Water Quality Analytical Results

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Table E.1
Water Quality Analytical Results
(December 9-10, 2010)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TN (mg/L N) | TKN (mg/L N) | Organic N (mg/L N) | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N) | TOC (mg/L) | DOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **STE Sample** | | | | | | | | | | | | | | | |
| STE-EX Pump Tank | 12/10/10 9:55 | G | 19.90 | 7.33 | 410 | 0.1 | 1,273 | 56.01 | 56 | 21.00 | 35 | 0.01 | 35.01 | | |
| STE-EX Pump Tank-D | 12/10/10 9:55 | G | 19.90 | 7.33 | 410 | 0.1 | 1,273 | 64.01 | 64.00 | 3.00 | 61 | 0.01 | 61.01 | | |
| **Drivepoints** | | | | | | | | | | | | | | | |
| DPAA9-14 | 12/9/10 7:45 | G | 21.50 | 5.10 | 11 | 0.89 | 282 | 6.83 | 0.93 | 0.92 | 0.006 | 5.9 | 5.91 | | |
| DPAA9-22 | 12/9/10 7:55 | G | 23.30 | 4.90 | 2 | 1.06 | 319 | 10.82 | 0.82 | 0.81 | 0.013 | 10 | 10.01 | | |
| DPAA9-27 | 12/9/10 8:12 | G | 22.70 | 4.80 | 2 | 0.84 | 293 | 7.90 | 1.0 | 0.97 | 0.028 | 6.9 | 6.93 | | |
| DPD7.5-14 | 12/9/10 8:20 | G | 21.20 | 7.01 | 2 | 1.10 | 432 | 22.68 | 0.68 | 0.56 | 0.12 | 22 | 22.12 | 2.9 | 1.2 |
| DPD7.5-20 | 12/9/10 8:35 | G | 22.20 | 7.01 | 2 | 2.55 | 258 | 8.20 | 0.80 | 0.78 | 0.022 | 7.4 | 7.42 | | |
| DPD7.5-26 | 12/9/10 8:46 | G | 21.30 | 7.01 | 2 | 2.01 | 295 | 12.99 | 0.99 | 0.95 | 0.038 | 12 | 12.04 | | |
| DPD09-6 | 12/9/10 9:05 | G | 17.00 | 4.82 | 2 | 5.59 | 363 | 11.84 | 0.84 | 0.81 | 0.028 | 11 | 11.03 | | |
| DPD09-8 | 12/9/10 9:20 | G | 18.40 | 4.65 | 2 | 3.52 | 380 | 12.91 | 0.91 | 0.89 | 0.022 | 12 | 12.02 | | |
| DPD09-15 | 12/9/10 9:30 | G | 19.10 | 5.30 | 2 | 3.20 | 433 | 13.43 | 0.43 | 0.34 | 0.086 | 13 | 13.09 | 5.3 | 2.5 |
| DPD09-15-D | 12/9/10 9:30 | G | 19.10 | 5.30 | 14 | 3.20 | 433 | 12.41 | 0.41 | 0.41 | 0.005 | 12 | 12.01 | | |
| DPD09-21 | 12/9/10 9:50 | G | 21.70 | 5.78 | 2 | 1.35 | 300 | 7.67 | 0.27 | 0.22 | 0.053 | 7.4 | 7.45 | | |
| DPD09-27 | 12/9/10 10:05 | G | 20.20 | 5.97 | 3 | 2.26 | 270 | 1.43 | 1.10 | 1.09 | 0.01 | 0.33 | 0.34 | | |
| DPE12-10 | 12/9/10 10:45 | G | 19.20 | 5.48 | 2 | 4.68 | 491 | 27.30 | 2.30 | 2.07 | 0.23 | 25 | 25.23 | | |
| DPE12-15 | 12/9/10 10:50 | G | 22.20 | 4.88 | 2 | 2.47 | 550 | 26.88 | 0.88 | 0.63 | 0.25 | 26 | 26.25 | | |
| DPE12-22 | 12/9/10 11:05 | G | 20.40 | 5.00 | 2 | 1.95 | 464 | 19.00 | 1.00 | 0.95 | 0.049 | 18 | 18.05 | 2.3 | 1.5 |
| DPE12-28 | 12/9/10 11:20 | G | 21.90 | 5.17 | 2 | 2.01 | 297 | 10.20 | 2.30 | 2.23 | 0.069 | 7.9 | 7.97 | | |
| DPF08-14 | 12/9/10 11:45 | G | 22.40 | 7.04 | 310 | 6.09 | 1,412 | 9.40 | 0.90 | 0.71 | 0.19 | 8.5 | 8.69 | | |
| DPF08-20 | 12/9/10 12:00 | G | 23.20 | 6.34 | 3 | 1.77 | 368 | 10.87 | 0.87 | 0.83 | 0.036 | 10 | 10.04 | 3 | 2.4 |
| DPF08-20-D | 12/9/10 12:00 | G | 23.20 | 6.34 | 20 | 1.77 | 368 | 11.91 | 0.91 | 0.91 | 0.005 | 11 | 11.01 | | |
| DPF08-28 | 12/9/10 12:15 | G | 23.10 | 6.11 | 35 | 1.73 | 332 | 3.93 | 0.63 | 0.48 | 0.15 | 3.3 | 3.45 | | |
| DPF11-11 | 12/9/10 12:30 | G | 19.50 | 5.35 | 2 | 5.26 | 366 | 14.70 | 1.70 | 0.20 | 1.50 | 13 | 14.50 | | |
| DPF11-15 | 12/9/10 12:55 | G | 22.80 | 5.00 | 2 | 3.64 | 547 | 30.10 | 1.10 | 0.72 | 0.38 | 29 | 29.38 | | |
| DPF11-18 | 12/9/10 13:05 | G | 23.10 | 5.02 | 2 | 2.48 | 497 | 22.55 | 0.55 | 0.53 | 0.024 | 22 | 22.02 | 4.1 | 1.3 |
| DPF11-21 | 12/9/10 13:25 | G | 22.70 | 5.02 | 2 | 2.10 | 458 | 19.64 | 0.64 | 0.62 | 0.018 | 19 | 19.02 | | |
| DPF11-24 | 12/9/10 13:45 | G | 22.90 | 5.00 | 2 | 1.15 | 475 | 23.47 | 0.47 | 0.45 | 0.022 | 23 | 23.02 | | |
| DPF11-27 | 12/9/10 14:00 | G | 23.30 | 5.19 | 2 | 0.82 | 297 | 4.53 | 0.83 | 0.80 | 0.026 | 3.7 | 3.73 | | |
| DPF15-14 | 12/10/10 6:52 | G | 21.50 | 5.10 | 22 | 1.11 | 409 | 17.26 | 0.26 | 0.07 | 0.19 | 17 | 17.19 | | |
| DPF15-20 | 12/10/10 7:15 | G | 22.10 | 4.90 | 11 | 0.62 | 649 | 29.31 | 0.31 | 0.29 | 0.019 | 29 | 29.02 | 1.1 | 1.2 |
| DPF15-20-D | 12/10/10 7:20 | G | 22.10 | 4.90 | 7.1 | 0.62 | 649 | 29.29 | 0.29 | 0.29 | 0.005 | 29 | 29.01 | | |
| DPF15-26 | 12/10/10 7:41 | G | 21.80 | 4.90 | 2 | 0.52 | 291 | 11.54 | 0.54 | 0.52 | 0.016 | 11 | 11.02 | | |
| DPG07-15 | 12/10/10 8:25 | G | 21.40 | 5.53 | 6.1 | 3.33 | 271 | 4.79 | 0.49 | 0.45 | 0.039 | 4.3 | 4.34 | | |
| DPG07-17 | 12/10/10 8:35 | G | 21.90 | 5.36 | 5.1 | 2.19 | 312 | 7.01 | 0.31 | 0.31 | 0.005 | 6.7 | 6.71 | | |
| DPG07-21 | 12/10/10 8:50 | G | 22.90 | 5.37 | 6.1 | 1.66 | 343 | 12.51 | 0.51 | 0.51 | 0.005 | 12 | 12.01 | | |
| DPG07-24 | 12/10/10 9:00 | G | 22.90 | 5.26 | 7.1 | 1.13 | 300 | 14.50 | 0.50 | 0.50 | 0.005 | 14 | 14.01 | | |
| DPG07-27 | 12/10/10 9:15 | G | 22.50 | 5.19 | 5.1 | 1.37 | 293 | 8.44 | 0.74 | 0.74 | 0.005 | 7.7 | 7.71 | | |



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Table E.1 (continued)
Water Quality Analytical Results
(December 9-10, 2010)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TN (mg/L N) | TKN (mg/L N) | Organic N (mg/L N) | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N) | TOC (mg/L) | DOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DPG12-15 | 12/10/10 9:06 | G | 22.30 | 4.70 | 5.1 | 0.89 | 508 | 25.00 | 1.0 | 0.78 | 0.22 | 24 | 24.22 | | |
| DPG12-15-D | 12/10/10 9:38 | G | 22.30 | 4.70 | 4.1 | 0.89 | 508 | 25.10 | 1.10 | 0.91 | 0.19 | 24 | 24.19 | | |
| DPG12-21 | 12/10/10 9:52 | G | 22.70 | 4.90 | 4.1 | 0.99 | 636 | 31.06 | 0.06 | 0.06 | 0.005 | 31 | 31.01 | | |
| DPG12-27 | 12/10/10 10:08 | G | 23.10 | 4.70 | 6.1 | 0.45 | 509 | 19.68 | 0.68 | 0.46 | 0.22 | 19 | 19.22 | | |
| DPI06-14 | 12/10/10 7:10 | G | 20.40 | 5.25 | 6.1 | 1.66 | 240 | 4.30 | 1.1 | 1.10 | 0.005 | 3.2 | 3.21 | | |
| DPI06-20 | 12/10/10 7:25 | G | 21.40 | 5.03 | 2.0 | 1.80 | 367 | 15.46 | 0.46 | 0.46 | 0.005 | 15 | 15.01 | | |
| DPI06-26 | 12/10/10 7:46 | G | 21.30 | 5.01 | 2.0 | 2.36 | 302 | 10.38 | 0.38 | 0.38 | 0.005 | 10 | 10.01 | 0.75 | 1.0 |
| DPJ09-14 | 12/9/10 13:20 | G | 21.90 | 4.50 | 2.0 | 3.29 | 232 | 3.92 | 0.42 | 0.42 | 0.005 | 3.5 | 3.51 | | |
| DPJ09-20 | 12/9/10 13:36 | G | 23.20 | 4.90 | 2.0 | 1.57 | 338 | 8.15 | 0.05 | 0.05 | 0.005 | 8.1 | 8.11 | | |
| DPJ09-26 | 12/9/10 13:58 | G | 23.00 | 4.90 | 2.0 | 2.51 | 298 | 10.40 | 1.1 | 1.10 | 0.005 | 9.3 | 9.31 | | |
| DPJ12-15 | 12/9/10 12:28 | G | 22.10 | 4.80 | 2.0 | 1.50 | 288 | 5.05 | 0.05 | 0.05 | 0.005 | 5 | 5.01 | | |
| DPJ12-20 | 12/9/10 12:39 | G | 22.90 | 5.00 | 2.0 | 1.13 | 343 | 8.63 | 0.83 | 0.83 | 0.005 | 7.8 | 7.81 | 2.6 | 1.5 |
| DPJ12-20-D | 12/9/10 12:44 | G | 22.90 | 5.00 | 5.1 | 1.13 | 343 | 9.95 | 0.85 | 0.84 | 0.014 | 9.1 | 9.11 | | |
| DPJ12-27 | 12/9/10 13:00 | G | 22.60 | 4.80 | 2.0 | 1.14 | 307 | 13.10 | 1.1 | 1.10 | 0.005 | 12 | 12.01 | | |
| DPM07-15 | 12/9/10 11:32 | G | 22.20 | 4.80 | 2.0 | 0.80 | 304 | 6.62 | 0.42 | 0.42 | 0.005 | 6.2 | 6.21 | | |
| DPM07-21 | 12/9/10 11:47 | G | 22.50 | 4.90 | 2.0 | 0.58 | 375 | 13.86 | 0.86 | 0.86 | 0.005 | 13 | 13.01 | | |
| DPM07-27 | 12/9/10 12:07 | G | 22.50 | 4.80 | 2.0 | 0.49 | 302 | 9.34 | 0.74 | 0.74 | 0.005 | 8.6 | 8.61 | | |
| DPN12-14 | 12/9/10 10:36 | G | 22.10 | 5.00 | 2.0 | 1.28 | 163 | 1.03 | 0.26 | 0.26 | 0.005 | 0.77 | 0.78 | | |
| DPN12-21 | 12/9/10 10:52 | G | 22.30 | 4.90 | 2.0 | 1.91 | 304 | 4.70 | 0.60 | 0.60 | 0.005 | 4.1 | 4.11 | | |
| DPN12-27 | 12/9/10 11:14 | G | 21.60 | 5.00 | 2.0 | 2.45 | 332 | 11.99 | 0.99 | 0.99 | 0.005 | 11 | 11.01 | 1.5 | 2.0 |
| DPO10-12 | 12/9/10 9:45 | G | 21.10 | 4.30 | 2.0 | 1.31 | 186 | 0.16 | 0.10 | 0.10 | 0.005 | 0.06 | 0.07 | | |
| DPO10-18 | 12/9/10 9:58 | G | 22.20 | 4.80 | 2.0 | 0.77 | 299 | 4.54 | 0.54 | 0.54 | 0.005 | 4.0 | 4.01 | | |
| DPO10-24 | 12/9/10 10:14 | G | 21.80 | 4.20 | 2.0 | 0.69 | 182 | 0.16 | 0.09 | 0.09 | 0.005 | 0.07 | 0.08 | | |
| DPQ15-15 | 12/9/10 8:53 | G | 20.70 | 4.70 | 2.0 | 2.31 | 303 | 1.79 | 0.29 | 0.29 | 0.005 | 1.5 | 1.51 | | |
| DPQ15-21 | 12/9/10 9:05 | G | 22.60 | 5.00 | 2.0 | 1.44 | 324 | 5.90 | 0.90 | 0.90 | 0.005 | 5.0 | 5.01 | | |
| DPQ15-26 | 12/9/10 9:23 | G | 21.50 | 5.10 | 2.0 | 0.96 | 324 | 9.00 | 0.70 | 0.70 | 0.005 | 8.3 | 8.31 | | |
| **Standpipe Piezometers** | | | | | | | | | | | | | | | |
| PZ16-C12-28 | 12/9/10 8:30 | G | 27.60 | 5.60 | 11 | 0.7 | 292 | 0.29 | 0.12 | 0.10 | 0.017 | 0.17 | 0.19 | | |
| PZ04-BKG-9 | 12/10/10 8:40 | G | 21.60 | 5.30 | 8.1 | 1.1 | 73 | 0.12 | 0.11 | 0.11 | 0.005 | 0.01 | 0.02 | 2.9 | 2.8 |
| PZ24-BKG-26 | 12/10/10 8:20 | G | 24.10 | 5.10 | 4.1 | 0.7 | 296 | 12.60 | 0.60 | 0.60 | 0.005 | 12 | 12.01 | 1.3 | 1.1 |
| PZ17-I15-26 | 12/10/10 9:16 | G | 22.10 | 5.70 | 4.1 | 0.5 | 294 | 10.30 | 0.60 | 0.60 | 0.005 | 9.7 | 9.71 | 4.0 | 1.0 |
| **Blanks** | | | | | | | | | | | | | | | |
| Field Blank-DI | 12/10/10 7:53 | G | 12.10 | 5.71 | 2.0 | 9.4 | 1 | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | |
| Field Blank-TAP | 12/10/10 8:00 | G | 9.60 | 6.97 | 140 | 11.1 | 445 | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | |
| Equipment Rinsate | 12/10/10 9:42 | G | 11.90 | 7.20 | 2.0 | 2.3 | 13 | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | |

Notes
DO - Dissolved oxygen
G - Grab sample
Gray - Shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.
Yellow shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.



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Table E.2
Water Quality Analytical Results
(March 29 – April 4, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg-N/L) | NH3-N (mg-N/L) | Nox-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| **STE Sample** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STE-EX Pump Tank | 04-Apr-11 11:40 | G | 26.4 | 6.8 | 270 | 0.30 | 830 | 18 | 0.03 | 83 | | 41.03 | 41 | 8.00 | 33 | 0.03 | 33.03 | 5.9 | 200 | | | 4.6 | 47 | 0.03 | 0.01 | 3.2 | 21 | 0.15 | 58 | 7 | 18 | 0.081 | 15 | 43 |
| STE-EX Pump Tank-D | 04-Apr-11 11:50 | G | 26.4 | 6.8 | 290 | 0.30 | 830 | 18 | 0.04 | 87 | | 43.03 | 43 | 7.00 | 36 | 0.03 | 36.03 | 5.1 | 200 | | | 4.4 | 48 | 0.03 | 0.01 | 3.2 | 22 | 0.15 | 53 | 1.2 | 16 | 0.070 | 14 | 39 |
| **Drivepoints** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DP-AA9-14 | 30-Mar-11 08:55 | G | 23.0 | 5.0 | 4.9 | 0.99 | 699 | | | | | 48.60 | 2.6 | 2.58 | 0.021 | 46 | 46.02 | | | | | | | | | | | | | | | | | |
| DP-AA9-22 | 30-Mar-11 09:10 | G | 23.8 | 5.3 | 6.9 | 0.77 | 286 | | | | | 9.10 | 1.2 | 1.16 | 0.041 | 7.9 | 7.94 | | | | | | | | | | | | | | | | | |
| DP-AA9-27 | 30-Mar-11 09:30 | G | 23.9 | 5.2 | 3.0 | 0.82 | 288 | | | | | 11.10 | 1.1 | 1.06 | 0.044 | 10 | 10.04 | | | | | | | | | | | | | | | | | |
| DP-AA9-27-D | 30-Mar-11 09:35 | G | 23.9 | 5.2 | 4.0 | 0.82 | 288 | | | | | 10.46 | 0.46 | 0.46 | 0.005 | 10 | 10.01 | | | | | | | | | | | | | | | | | |
| DP-C11-8 | 30-Mar-11 08:30 | G | 21.8 | 5.9 | 35 | 3.50 | 319 | | | | | 4.60 | 1.5 | 1.41 | 0.09 | 3.1 | 3.19 | | | | | | | | | | | | | | | | | |
| DP-D07-5 | 30-Mar-11 11:20 | G | 24.1 | 6.0 | 14 | 4.86 | 326 | | | | | 13.00 | 2.0 | 2.00 | 0.005 | 11 | 11.01 | | | | | | | | | | | | | | | | | |
| DP-D07-5-D | 30-Mar-11 11:15 | G | 24.1 | 6.0 | 11 | 4.86 | 326 | | | | | 12.60 | 1.6 | 1.60 | 0.005 | 11 | 11.01 | | | | | | | | | | | | | | | | | |
| DP-D07-7 | 30-Mar-11 11:45 | G | 23.3 | 4.7 | 2.0 | 0.77 | 365 | | | | 20 | 13.60 | 1.6 | 1.59 | 0.011 | 12 | 12.01 | 0.015 | | 1.7 | 1.4 | 0.12 | 23 | 12 | 0.01 | 0.010 | 53 | 0.096 | 27 | 0.054 | 5.4 | 0.008 | 8.0 | 20 |
| DP-D07-9 | 30-Mar-11 12:05 | G | 24 | 4.5 | 2.0 | 4.50 | 392 | | | | | 23.80 | 1.8 | 1.79 | 0.007 | 22 | 22.01 | | | | | | | | | | | | | | | | | |
| DP-D7.5-14 | 30-Mar-11 11:10 | G | 23.8 | 5.0 | 4.0 | 0.67 | 514 | | | | | 32.20 | 3.2 | 3.19 | 0.009 | 29 | 29.01 | | | | | | | | | | | | | | | | | |
| DP-D7.5-20 | 30-Mar-11 11:40 | G | 25 | 5.3 | 5.9 | 1.26 | 296 | | | | 10 | 8.90 | 1.3 | 1.30 | 0.005 | 7.6 | 7.61 | 0.16 | | 1.8 | 1.3 | 0.041 | 10 | 7.6 | 0.01 | 0.16 | 67 | 0.050 | 28 | 0.022 | 6.5 | 0.21 | 16 | 6.7 |
| DP-D7.5-26 | 30-Mar-11 12:10 | G | 25 | 5.3 | 4.0 | 1.47 | 292 | | | | | 8.70 | 1.3 | 1.30 | 0.005 | 7.4 | 7.41 | | | | | | | | | | | | | | | | | |
| DP-D08-9 | 30-Mar-11 10:25 | G | 24.6 | 5.6 | 20 | 1.36 | 502 | | | | 16 | 21.00 | 2.0 | 1.88 | 0.12 | 19 | 19.12 | 0.16 | | | 3.5 | 0.056 | 42 | 19 | 0.01 | 0.15 | 52 | 0.094 | 33 | 11 | 10 | 0.33 | 8.0 | 35 |
| DP-D09-6 | 30-Mar-11 09:50 | G | 22.6 | 4.5 | 2.0 | 4.50 | 456 | | | | | 21.84 | 0.84 | 0.83 | 0.008 | 21 | 21.01 | | | | | | | | | | | | | | | | | |
| DP-D09-8 | 30-Mar-11 10:05 | G | 22.6 | 4.6 | 2.0 | 1.01 | 487 | | | | | 29.80 | 2.8 | 2.80 | 0.005 | 27 | 27.01 | | | | | | | | | | | | | | | | | |
| DP-D09-15 | 30-Mar-11 10:20 | G | 23.3 | 5.4 | 15 | 1.16 | 470 | | | | | 20.00 | 2.0 | 2.00 | 0.005 | 18 | 18.01 | | | | | | | | | | | | | | | | | |
| DP-D09-21 | 30-Mar-11 10:35 | G | 24.2 | 5.3 | 4.9 | 0.80 | 298 | | | | | 8.30 | 0.4 | 0.40 | 0.005 | 7.9 | 7.91 | | | | | | | | | | | | | | | | | |
| DP-D09-27 | 30-Mar-11 10:55 | G | 24.5 | 6.0 | 11 | 0.76 | 309 | | | | | 2.15 | 0.25 | 0.20 | 0.048 | 1.9 | 1.95 | | | | | | | | | | | | | | | | | |
| DP-D10-8 | 30-Mar-11 09:40 | G | 23.8 | 5.7 | 23 | 1.45 | 337 | | | | | 4.10 | 1.9 | 1.88 | 0.025 | 2.2 | 2.23 | | | | | | | | | | | | | | | | | |
| DP-D11-11 | 30-Mar-11 08:00 | G | 21.7 | 5.3 | 9.9 | 1.39 | 479 | | | | | 26.80 | 1.8 | 1.72 | 0.080 | 25 | 25.08 | | | | | | | | | | | | | | | | | |
| DP-D12-11 | 29-Mar-11 13:45 | G | 22.3 | 4.8 | 6.9 | 0.65 | 477 | | | | | 12.30 | 2.8 | 2.06 | 0.74 | 9.5 | 10.24 | | | | | | | | | | | | | | | | | |
| DP-E02-6 | 29-Mar-11 08:35 | G | 21.3 | 5.5 | 4.9 | 2.41 | 98.5 | | | | | 2.02 | 0.42 | 0.40 | 0.022 | 1.6 | 1.62 | | | | | | | | | | | | | | | | | |
| DP-E02-8 | 29-Mar-11 08:45 | G | 21.3 | 5.1 | 5.0 | 0.46 | 158.9 | | | | | 0.64 | 0.22 | 0.21 | 0.006 | 0.42 | 0.43 | | | | | | | | | | | | | | | | | |
| DP-E03-10 | 29-Mar-11 09:15 | G | 21.3 | 5.3 | 6.9 | 2.21 | 211.3 | | | | | 2.61 | 0.81 | 0.74 | 0.075 | 1.8 | 1.88 | | | | | | | | | | | | | | | | | |
| DP-E03-10-D | 29-Mar-11 09:20 | G | 21.3 | 5.3 | 7.9 | 2.21 | 211.3 | | | | | 2.60 | 0.7 | 0.67 | 0.029 | 1.9 | 1.93 | | | | | | | | | | | | | | | | | |
| DP-E04-6 | 29-Mar-11 09:50 | G | 22.3 | 4.7 | 2.0 | 3.49 | 90.6 | | | | 39 | 1.13 | 0.67 | 0.65 | 0.018 | 0.46 | 0.48 | 2.5 | | | 3.2 | 0.076 | 2.7 | 0.46 | 0.01 | 0.010 | 21 | 0.050 | 7.5 | 0.33 | 1.8 | 0.049 | 0.94 | 2.3 |
| DP-E04-8 | 29-Mar-11 10:15 | G | 22 | 4.9 | 4.9 | 1.43 | 171.1 | | | | | 3.80 | 1.0 | 0.98 | 0.024 | 2.8 | 2.82 | | | | | | | | | | | | | | | | | |
| DP-E05-6 | 29-Mar-11 10:40 | G | 24.8 | 6.0 | 33 | 2.96 | 171.8 | | | | | 3.16 | 3.1 | 0.50 | 2.6 | 0.06 | 2.66 | | | | | | | | | | | | | | | | | |
| DP-E06-6 | 29-Mar-11 11:00 | G | 22.8 | 4.4 | 2.0 | 1.89 | 162.8 | | | | | 3.20 | 1.3 | 1.29 | 0.013 | 1.9 | 1.91 | | | | | | | | | | | | | | | | | |
| DP-E06-8 | 29-Mar-11 11:55 | G | 22.7 | 4.5 | 2.0 | 10.90 | 180.6 | | | | | 3.22 | 0.82 | 0.81 | 0.007 | 2.4 | 2.41 | | | | | | | | | | | | | | | | | |
| DP-E07-10 | 29-Mar-11 11:25 | G | 22.5 | 4.9 | 5.9 | 1.19 | 289 | | | | | 10.10 | 2.3 | 2.25 | 0.052 | 7.8 | 7.85 | | | | | | | | | | | | | | | | | |
| DP-E08-6 | 29-Mar-11 12:00 | G | 22.4 | 5.0 | 3.0 | 1.83 | 326 | | | | | 12.00 | 2.1 | 2.09 | 0.014 | 9.9 | 9.91 | | | | | | | | | | | | | | | | | |
| DP-E08-8 | 29-Mar-11 12:30 | G | 22.6 | 5.0 | 3.0 | 1.52 | 348 | | | | | 12.60 | 1.6 | 1.60 | 0.005 | 11 | 11.01 | | | | | | | | | | | | | | | | | |
| DP-E10-6 | 29-Mar-11 12:40 | G | 23 | 4.6 | 3.0 | 0.60 | 407 | | | | | 9.70 | 1.2 | 1.20 | 0.005 | 8.5 | 8.51 | | | | | | | | | | | | | | | | | |
| DP-E11-12 | 29-Mar-11 13:00 | G | 23 | 5.1 | 8.9 | 0.99 | 441 | | | | | 14.60 | 1.6 | 1.58 | 0.018 | 13 | 13.02 | | | | | | | | | | | | | | | | | |
| DP-E12-10 | 29-Mar-11 13:30 | G | 23.9 | 5.1 | 8.9 | 0.35 | 520 | | | | 24 | 23.20 | 1.2 | 1.04 | 0.16 | 22 | 22.16 | 0.026 | | 1.2 | 0.88 | 0.010 | 41 | 22 | 0.01 | 0.010 | 47 | 0.075 | 39 | 0.089 | 9.9 | 0.21 | 11 | 33 |
| DP-E12-15 | 30-Mar-11 07:35 | G | 21.9 | 5.0 | 8.9 | 0.60 | 460 | | | | 14 | 19.50 | 2.5 | 2.50 | 0.005 | 17 | 17.01 | 0.012 | | | 0.92 | 0.029 | 36 | 17 | 0.01 | 0.18 | 54 | 0.1 | 35 | 0.032 | 7.1 | 0.045 | 12 | 33 |
| DP-E12-15-D | 30-Mar-11 07:55 | G | 21.9 | 5.0 | 8.9 | 0.60 | 460 | | | | 10 | 18.30 | 1.3 | 1.30 | 0.005 | 17 | 17.01 | 0.12 | | | 0.50 | 0.035 | 38 | 17 | 0.01 | 0.088 | 54 | 0.1 | 35 | 0.063 | 7.5 | 0.047 | 11 | 33 |
| DP-E12-22 | 30-Mar-11 08:20 | G | 22.5 | 5.3 | 5.9 | 0.59 | 297 | | | | 10 | 12.00 | 2.9 | 2.61 | 0.29 | 9.1 | 9.39 | 0.035 | | 1.2 | 0.83 | 0.017 | 12 | 9.1 | 0.01 | 0.24 | 56 | 0.1 | 29 | 0.037 | 6.1 | 0.16 | 10 | 8.4 |
| DP-E12-28 | 30-Mar-11 08:45 | G | 22.8 | 5.3 | 4.0 | 0.57 | 310 | | | | 10 | 11.70 | 1.9 | 1.89 | 0.013 | 9.8 | 9.81 | 0.069 | | | 0.50 | 0.019 | 15 | 9.8 | 0.01 | 0.065 | 59 | 0.050 | 27 | 0.023 | 9.5 | 0.11 | 15 | 5.3 |
| DP-F03-8 | 29-Mar-11 10:00 | G | 21.7 | 6.2 | 18 | 1.22 | 145.6 | | | | | 3.30 | 1.6 | 1.21 | 0.39 | 1.7 | 2.09 | | | | | | | | | | | | | | | | | |
| DP-F04-17 | 29-Mar-11 10:25 | G | 22 | 7.3 | 90 | 0.57 | 415.7 | | | | | 2.15 | 0.35 | 0.32 | 0.028 | 1.8 | 1.83 | | | | | | | | | | | | | | | | | |
| DP-F04-22 | 29-Mar-11 10:45 | G | 22.8 | 6.0 | 9.9 | 0.72 | 314.1 | | | | | 10.90 | 2.7 | 2.68 | 0.017 | 8.2 | 8.22 | | | | | | | | | | | | | | | | | |
| DP-F04-32 | 29-Mar-11 11:00 | G | 23.1 | 6.9 | 69 | 1.04 | 345.6 | | | | | 0.96 | 0.25 | 0.21 | 0.042 | 0.71 | 0.75 | | | | | | | | | | | | | | | | | |
| DP-F05-5 | 30-Mar-11 13:25 | G | 27.7 | 5.8 | 6.9 | 7.36 | 173.3 | | | | | 2.41 | 2.4 | 2.27 | 0.13 | 0.01 | 0.14 | | | | | | | | | | | | | | | | | |
| DP-F05-31 | 29-Mar-11 11:15 | G | 24.1 | 7.3 | 69 | 1.70 | 187.1 | | | | 18 | 2.02 | 0.62 | 0.55 | 0.07 | 1.4 | 1.47 | 0.29 | | | 1.7 | 0.58 | 10 | 1.3 | 0.11 | 0.010 | 23 | 0.050 | 31 | 1.5 | 6.4 | 0.063 | 2.9 | 11 |
| DP-F06-10 | 29-Mar-11 11:40 | G | 21.8 | 5.2 | 4.0 | 0.30 | 190.6 | | | | | 1.83 | 0.33 | 0.27 | 0.056 | 1.5 | 1.56 | | | | | | | | | | | | | | | | | |
| DP-F07-6 | 29-Mar-11 12:00 | dry | dry | | | | | | | | | 0.00 | | 0.00 | | | 0.00 | | | | | | | | | | | | | | | | | |
| DP-F08-14 | 29-Mar-11 12:15 | G | 22.5 | 7.6 | 140 | 1.28 | 501 | | | | | 4.70 | 1.2 | 1.11 | 0.090 | 3.5 | 3.59 | | | | | | | | | | | | | | | | | |
| DP-F08-20 | 29-Mar-11 12:30 | G | 23.1 | 6.0 | 9.9 | 0.41 | 335.6 | | | | 10 | 10.70 | 2.1 | 2.07 | 0.03 | 8.6 | 8.63 | 0.33 | | | 0.80 | 0.032 | 11 | 8.6 | 0.01 | 0.010 | 65 | 0.050 | 32 | 0.067 | 7.3 | 0.22 | 14 | 6.4 |
| DP-F08-28 | 29-Mar-11 12:45 | G | 23.4 | 6.3 | 18 | 0.37 | 323.9 | | | | | 4.00 | 1.1 | 1.09 | 0.012 | 2.9 | 2.91 | | | | | | | | | | | | | | | | | |
| DP-F09-5 | 29-Mar-11 13:15 | G | 24.8 | 6.6 | 22 | 1.15 | 141.1 | | | | 22 | 3.40 | 1.3 | 1.12 | 0.18 | 1.9 | 2.13 | 0.27 | | | 7.7 | 0.1 | 10 | 1.9 | 0.01 | 0.026 | 26 | 0.050 | 14 | 5.8 | 3.5 | 0.37 | 4.7 | 9.1 |
| DP-F09-5-D | 29-Mar-11 13:30 | G | 24.8 | 6.6 | 22 | 1.15 | 141.1 | | | | 22 | 3.30 | 1.3 | 1.08 | 0.22 | 2 | 2.22 | 0.33 | | | 7.7 | 0.11 | 10 | 2.0 | 0.01 | 0.026 | 27 | 0.050 | 14 | 5.7 | 3.5 | 0.35 | 4.7 | 11 |
| DP-F10-11 | 30-Mar-11 07:45 | G | 21.3 | 4.7 | 2.0 | 0.80 | 475.9 | | | | | 32.30 | 2.3 | 1.20 | 1.1 | 30 | 31.10 | | | | | | | | | | | | | | | | | |

Table E.2 (continued)
Water Quality Analytical Results
(March 29 – April 4, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg- | NH3-N (mg-N/L) | Nox-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-F11-11 | 30-Mar-11 08:00 | G | 21.4 | 5.3 | 8.9 | 0.90 | 412.7 | | | | | 22.50 | 1.5 | 1.06 | 0.44 | 21 | 21.44 | | | | | | | | | | | | | | | | | |
| DP-F11-11-D | 30-Mar-11 08:05 | G | 21.4 | 5.3 | 9.9 | 0.90 | 412.7 | | | | | 22.90 | 1.9 | 1.47 | 0.43 | 21 | 21.43 | | | | | | | | | | | | | | | | | |
| DP-F11-15 | 30-Mar-11 08:20 | G | 21.8 | 5.1 | 7.9 | 0.28 | 453.3 | | | | | 29.50 | 1.5 | 1.36 | 0.14 | 28 | 28.14 | | | | | | | | | | | | | | | | | |
| DP-F11-18 | 30-Mar-11 08:40 | G | 22.2 | 5.4 | 7.9 | 1.18 | 433.9 | | | | | 20.00 | 2 | 1.93 | 0.067 | 18 | 18.07 | | | | | | | | | | | | | | | | | |
| DP-F11-21 | 30-Mar-11 09:00 | G | 22.5 | 5.2 | 5.9 | 0.43 | 318.4 | | | | | 21.10 | 1.1 | 1.10 | 0.005 | 20 | 20.01 | | | | | | | | | | | | | | | | | |
| DP-F11-24 | 30-Mar-11 09:30 | G | 22.8 | 5.1 | 4.0 | 0.30 | 301.1 | | | | | 16.10 | 1.1 | 1.09 | 0.008 | 15 | 15.01 | | | | | | | | | | | | | | | | | |
| DP-F11-27 | 30-Mar-11 09:50 | G | 23.2 | 5.3 | 4.9 | 0.39 | 307.5 | | | | | 8.60 | 1.3 | 1.29 | 0.008 | 7.3 | 7.31 | | | | | | | | | | | | | | | | | |
| DP-F12-10 | 31-Mar-11 08:50 | G | 21.5 | 5.0 | 2.0 | 0.90 | 427 | | | | | 24.50 | 1.5 | 1.34 | 0.16 | 23 | 23.16 | | | | | | | | | | | | | | | | | |
| DP-F15-14 | 31-Mar-11 09:22 | G | 21.7 | 5.2 | 11 | 0.53 | 512 | | | | | 31.74 | 0.74 | 0.62 | 0.12 | 31 | 31.12 | | | | | | | | | | | | | | | | | |
| DP-F15-20 | 31-Mar-11 09:37 | G | 22.3 | 5.4 | 12 | 0.78 | 383 | | | | | 20.40 | 1.4 | 1.40 | 0.005 | 19 | 19.01 | | | | | | | | | | | | | | | | | |
| DP-F15-20-D | 31-Mar-11 09:40 | G | 22.3 | 5.4 | 9.9 | 0.78 | 383 | | | | | 19.70 | 1.7 | 1.69 | 0.012 | 18 | 18.01 | | | | | | | | | | | | | | | | | |
| DP-F15-26 | 31-Mar-11 10:00 | G | 22.5 | 5.2 | 4.0 | 0.78 | 306 | | | | | 18.50 | 1.5 | 1.43 | 0.074 | 17 | 17.07 | | | | | | | | | | | | | | | | | |
| DP-G05-6 | 30-Mar-11 13:40 | G | 26.2 | 6.1 | 22 | 2.49 | 151.9 | | | | 32 | 2.04 | 1.9 | 0.50 | 1.4 | 0.14 | 1.54 | 0.43 | | | 8.7 | 0.075 | 4.1 | 0.14 | 0.01 | 0.18 | 30 | 0.050 | 11 | 8.2 | 3.3 | 0.4 | 2.8 | 2.6 |
| DP-G06-7 | 30-Mar-11 14:45 | G | 28.9 | 6.2 | 34 | 2.36 | 184 | | | | | 0.68 | 0.55 | 0.28 | 0.27 | 0.13 | 0.40 | | | | | | | | | | | | | | | | | |
| DP-G07-13 | 30-Mar-11 15:05 | G | 25.2 | 5.8 | 14 | 2.19 | 232 | | | | | 3.40 | 0.7 | 0.37 | 0.33 | 2.7 | 3.03 | | | | | | | | | | | | | | | | | |
| DP-G07-15 | 30-Mar-11 15:30 | G | 23.4 | 5.2 | 4.0 | 1.20 | 272 | | | | | 4.95 | 0.45 | 0.45 | 0.005 | 4.5 | 4.51 | | | | | | | | | | | | | | | | | |
| DP-G07-17 | 30-Mar-11 15:50 | G | 23.7 | 5.3 | 4.9 | 1.52 | 317 | | | | | 10.00 | 1.1 | 1.10 | 0.005 | 8.9 | 8.91 | | | | | | | | | | | | | | | | | |
| DP-G07-21 | 31-Mar-11 07:55 | G | 22.2 | 5.6 | 4.9 | 0.57 | 326 | | | | | 15.60 | 2.6 | 2.53 | 0.071 | 13 | 13.07 | | | | | | | | | | | | | | | | | |
| DP-G07-24 | 31-Mar-11 08:15 | G | 22.3 | 5.7 | 4.9 | 0.94 | 271 | | | | | 15.50 | 2.5 | 2.50 | 0.005 | 13 | 13.01 | | | | | | | | | | | | | | | | | |
| DP-G07-27 | 31-Mar-11 08:35 | G | 22.3 | 5.2 | 4.0 | 0.95 | 303 | | | | | 17.80 | 2.8 | 2.80 | 0.005 | 15 | 15.01 | | | | | | | | | | | | | | | | | |
| DP-G08-5 | 30-Mar-11 15:15 | G | 26.1 | 5.6 | 4.9 | 7.64 | 157.8 | | | | | 2.52 | 0.92 | 0.92 | 0.005 | 1.6 | 1.61 | | | | | | | | | | | | | | | | | |
| DP-G09-11 | 30-Mar-11 15:45 | G | 24 | 5.4 | 7.9 | 2.08 | 285 | | | | 41 | 10.20 | 1.1 | 1.09 | 0.01 | 9.1 | 9.11 | 0.11 | | | 1.3 | 0.036 | 13 | 9.1 | 0.01 | 0.010 | 51 | 0.050 | 27 | 1.1 | 5.6 | 0.26 | 7 | 12 |
| DP-G11-8 | 31-Mar-11 08:05 | G | 21.2 | 5.1 | 3.0 | 1.38 | 295 | | | | | 14.20 | 2.2 | 2.19 | 0.015 | 12 | 12.02 | | | | | | | | | | | | | | | | | |
| DP-G12-9 | 31-Mar-11 08:30 | G | 21.4 | 4.7 | 3.0 | 2.62 | 341 | | | | | 11.70 | 1.7 | 1.66 | 0.036 | 10 | 10.04 | | | | | | | | | | | | | | | | | |
| DP-G12-15 | 31-Mar-11 08:45 | G | 21.8 | 5.5 | 6.9 | 0.96 | 487 | | | | | 28.70 | 2.7 | 2.42 | 0.28 | 26 | 26.28 | | | | | | | | | | | | | | | | | |
| DP-G12-18 | 31-Mar-11 08:55 | G | 22.2 | 5.2 | 6.9 | 1.40 | 494 | | | | | 30.70 | 1.7 | 1.70 | 0.005 | 29 | 29.01 | | | | | | | | | | | | | | | | | |
| DP-G12-18-D | 31-Mar-11 09:00 | G | 22.2 | 5.2 | 7.9 | 1.40 | 494 | | | | | 31.00 | 2.0 | 1.99 | 0.013 | 29 | 29.01 | | | | | | | | | | | | | | | | | |
| DP-G12-21 | 31-Mar-11 09:15 | G | 22.7 | 5.4 | 8.9 | 0.50 | 385 | | | | | 17.00 | 4.0 | 3.90 | 0.099 | 13 | 13.10 | | | | | | | | | | | | | | | | | |
| DP-G12-24 | 31-Mar-11 09:30 | G | 22.7 | 5.4 | 3.9 | 0.82 | 324 | | | | | 12.98 | 0.98 | 0.98 | 0.005 | 12 | 12.01 | | | | | | | | | | | | | | | | | |
| DP-G12-27 | 31-Mar-11 09:50 | G | 22.9 | 5.4 | 4.9 | 0.43 | 311 | | | | | 13.20 | 1.2 | 1.08 | 0.12 | 12 | 12.12 | | | | | | | | | | | | | | | | | |
| DP-H05-7 | 04-Apr-11 10:40 | G | 25.6 | 6.3 | 15 | 6.73 | 136.7 | | | | | 1.75 | 1.7 | 0.10 | 1.6 | 0.05 | 1.65 | | | | | | | | | | | | | | | | | |
| DP-H06-7 | 01-Apr-11 07:55 | G | 19.8 | 6.0 | 18 | 4.04 | 152.4 | | | | | 1.35 | 1.2 | 0.55 | 0.65 | 0.15 | 0.80 | | | | | | | | | | | | | | | | | |
| DP-H07-8 | 01-Apr-11 07:30 | G | 20.2 | 5.1 | 2.0 | 1.57 | 151.3 | | | | | 1.69 | 0.71 | 0.66 | 0.051 | 0.98 | 1.03 | | | | | | | | | | | | | | | | | |
| DP-H08-10 | 31-Mar-11 11:00 | G | 22.7 | 6.2 | 24 | 2.97 | 189 | | | | | 2.95 | 2.2 | 1.32 | 0.88 | 0.75 | 1.63 | | | | | | | | | | | | | | | | | |
| DP-H09-12 | 31-Mar-11 10:25 | G | 21.9 | 5.7 | 6.9 | 3.40 | 249 | | | | | 8.60 | 1.2 | 1.19 | 0.010 | 7.4 | 7.41 | | | | | | | | | | | | | | | | | |
| DP-H10-11 | 31-Mar-11 10:10 | G | 22.2 | 6.2 | 25 | 5.83 | 204.5 | | | | | 2.11 | 0.21 | 0.12 | 0.089 | 1.9 | 1.99 | | | | | | | | | | | | | | | | | |
| DP-H12-5 | 31-Mar-11 09:02 | G | 21.9 | 5.6 | 7.9 | 0.94 | 188.5 | | | | | 2.81 | 0.81 | 0.76 | 0.047 | 2.0 | 2.05 | | | | | | | | | | | | | | | | | |
| DP-H12-5-D | 31-Mar-11 09:05 | G | 21.9 | 5.6 | 7.9 | 0.94 | 188.5 | | | | | 3.13 | 0.93 | 0.91 | 0.016 | 2.2 | 2.22 | | | | | | | | | | | | | | | | | |
| DP-I06-14 | 01-Apr-11 07:58 | G | 20.9 | 5.3 | 5.9 | 1.44 | 212.3 | | | | | 2.07 | 0.57 | 0.57 | 0.005 | 1.5 | 1.51 | | | | | | | | | | | | | | | | | |
| DP-I06-20 | 01-Apr-11 08:15 | G | 21.4 | 5.0 | 3.9 | 1.03 | 358 | | | | | 19.10 | 1.1 | 1.10 | 0.005 | 18 | 18.01 | | | | | | | | | | | | | | | | | |
| DP-I06-26 | 01-Apr-11 08:30 | G | 21.6 | 4.9 | 3.0 | 1.13 | 305 | | | | | 16.20 | 2.2 | 2.20 | 0.005 | 14 | 14.01 | | | | | | | | | | | | | | | | | |
| DP-I07-8 | 01-Apr-11 07:25 | G | 19.4 | 5.8 | 17 | 2.23 | 170.7 | | | | | 1.28 | 0.42 | 0.38 | 0.041 | 0.86 | 0.90 | | | | | | | | | | | | | | | | | |
| DP-I08-5 | 31-Mar-11 11:05 | G | 23 | 6.5 | 15 | 4.69 | 191.5 | | | | | 2.44 | 2.1 | 0.90 | 1.2 | 0.34 | 1.54 | | | | | | | | | | | | | | | | | |
| DP-I09-11 | 31-Mar-11 10:35 | G | 21.5 | 5.1 | 3.0 | 0.77 | 180.6 | | | | | 2.22 | 0.72 | 0.72 | 0.005 | 1.5 | 1.51 | | | | | | | | | | | | | | | | | |
| DP-I10-6 | 01-Apr-11 08:55 | G | 20.2 | 6.2 | 27 | 5.10 | 173.4 | | | | | 1.75 | 1.4 | 0.74 | 0.66 | 0.35 | 1.01 | | | | | | | | | | | | | | | | | |
| DP-I11-10 | 01-Apr-11 09:20 | G | 21.4 | 5.7 | 17 | 0.90 | 166.8 | | | | | 1.03 | 0.64 | 0.38 | 0.26 | 0.39 | 0.65 | | | | | | | | | | | | | | | | | |
| DP-I12-6 | 01-Apr-11 09:40 | G | 21.9 | 5.6 | 11 | 1.87 | 127.6 | | | | | 7.77 | 0.67 | 0.67 | 0.005 | 7.1 | 7.11 | | | | | | | | | | | | | | | | | |
| DP-J08-6 | 01-Apr-11 08:25 | G | 19.7 | 6.0 | 15 | 2.70 | 140.3 | | | | | 3.75 | 3.7 | 0.70 | 3.0 | 0.05 | 3.05 | | | | | | | | | | | | | | | | | |
| DP-J09-12 | 01-Apr-11 08:50 | G | 21.1 | 4.8 | 2.0 | 0.81 | 167 | | | | | 1.55 | 0.45 | 0.45 | 0.005 | 1.1 | 1.11 | | | | | | | | | | | | | | | | | |
| DP-J09-14 | 01-Apr-11 09:10 | G | 21.4 | 4.8 | 3.0 | 0.73 | 226 | | | | | 8.19 | 0.79 | 0.79 | 0.005 | 7.4 | 7.41 | | | | | | | | | | | | | | | | | |
| DP-J09-20 | 01-Apr-11 09:30 | G | 22.1 | 4.4 | 4.0 | 0.66 | 365 | | | | | 18.20 | 1.2 | 1.20 | 0.005 | 17 | 17.01 | | | | 0.91 | | | | | | | | | | | | | |
| DP-J09-26 | 01-Apr-11 09:50 | G | 22.5 | 5.0 | 4.0 | 0.73 | 297 | | | | | 17.70 | 1.7 | 1.70 | 0.005 | 16 | 16.01 | | | | | | | | | | | | | | | | | |
| DP-J10-6 | 01-Apr-11 11:05 | G | 24 | 5.9 | 14 | 3.48 | 186.6 | | | | | 3.40 | 2.4 | 0.00 | 2.4 | 1 | 3.40 | | | | | | | | | | | | | | | | | |
| DP-J11-12 | 01-Apr-11 11:40 | G | 23.7 | 4.4 | 2.0 | 1.02 | 196.7 | | | | 14 | 2.65 | 0.55 | 0.55 | 0.005 | 2.1 | 2.11 | 0.010 | | | 1.1 | 0.16 | 6.3 | 2.1 | 0.01 | 0.010 | 65 | 0.050 | 16 | 0.039 | 4.2 | 0.15 | 3.8 | 2.9 |
| DP-J12-13 | 01-Apr-11 11:50 | G | 22.9 | 4.9 | 4.0 | 1.54 | 238 | | | | | 6.21 | 0.61 | 0.61 | 0.005 | 5.6 | 5.61 | | | | | | | | | | | | | | | | | |
| DP-J12-15 | 01-Apr-11 12:00 | G | 23.3 | 5.1 | 5.9 | 1.18 | 281 | | | | | 8.96 | 0.46 | 0.46 | 0.005 | 8.5 | 8.51 | | | | | | | | | | | | | | | | | |
| DP-J12-20 | 01-Apr-11 12:50 | G | 23.4 | 5.6 | 5.9 | 1.20 | 354 | | | | 18 | 11.50 | 1.5 | 1.50 | 0.005 | 10 | 10.01 | 0.11 | | | 1.3 | 0.011 | 14 | 10 | 0.01 | 0.010 | 88 | 0.050 | 33 | 0.020 | 9.6 | 0.059 | 21 | 4.3 |
| DP-J12-27 | 01-Apr-11 13:11 | G | 23.6 | 5.1 | 4.0 | 0.92 | 303 | | | | | 17.00 | 1 | 1.00 | 0.005 | 16 | 16.01 | | | | | | | | | | | | | | | | | |
| DP-K10-7 | 01-Apr-11 11:25 | G | 24.2 | 6.0 | 6.9 | 3.79 | 163.8 | | | | | 2.33 | 2 | 0.40 | 1.6 | 0.33 | 1.93 | | | | | | | | | | | | | | | | | |

Table E.2 (continued)
Water Quality Analytical Results
(March 29 – April 4, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg- | NH3-N (mg-N/L) | Nox-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-K11-13 | 01-Apr-11 10:30 | G | 22.1 | 4.9 | 4.0 | 1.84 | 168.3 | | | | | 1.89 | 0.59 | 0.59 | 0.005 | 1.3 | 1.31 | | | | | | | | | | | | | | | | | |
| DP-K12-5 | 01-Apr-11 10:05 | G | 22.3 | 5.6 | 6.9 | 1.40 | 59.3 | | | | 55 | 0.81 | 0.77 | 0.68 | 0.092 | 0.04 | 0.13 | 0.34 | | | 7.3 | 0.083 | 1.9 | 0.04 | 0.01 | 0.010 | 11 | 0.050 | 5.5 | 2.2 | 0.86 | 0.21 | 0.4 | 1.9 |
| DP-K12-5-D | 01-Apr-11 10:10 | G | 22.3 | 5.6 | 6.9 | 1.40 | 59.3 | | | | 43 | 1.73 | 1.7 | 1.63 | 0.071 | 0.03 | 0.10 | 0.32 | | | 7 | 0.058 | 1.6 | 0.03 | 0.01 | 0.010 | 9.2 | 0.050 | 5.4 | 2.5 | 0.92 | 0.2 | 0.44 | 1.9 |
| DP-M07-15 | 01-Apr-11 14:10 | G | 23 | 5.2 | 5.9 | 0.71 | 267 | | | | | 6.61 | 0.61 | 0.61 | 0.005 | 6 | 6.01 | | | | | | | | | | | | | | | | | |
| DP-M07-21 | 01-Apr-11 14:15 | G | 24 | 4.9 | 2.0 | 0.88 | 362 | | | | | 13.50 | 1.5 | 1.50 | 0.005 | 12 | 12.01 | | | | | | | | | | | | | | | | | |
| DP-M07-27 | 01-Apr-11 14:20 | G | 23.8 | 5.2 | 5.9 | 1.08 | 293 | | | | | 10.10 | 2.2 | 2.20 | 0.005 | 7.9 | 7.91 | | | | | | | | | | | | | | | | | |
| DP-M12-10 | 01-Apr-11 12:10 | G | 24 | 5.7 | 8.9 | 1.83 | 161.6 | | | | | 1.49 | 0.6 | 0.52 | 0.083 | 0.89 | 0.97 | | | | | | | | | | | | | | | | | |
| DP-N12-14 | 01-Apr-11 12:40 | G | 22.9 | 4.8 | 3.0 | 0.91 | 178.6 | | | | | 5.08 | 0.98 | 0.98 | 0.005 | 4.1 | 4.11 | | | | | | | | | | | | | | | | | |
| DP-N12-18 | 01-Apr-11 13:00 | G | 23.2 | 5.1 | 4.0 | 1.11 | 250 | | | | | 7.20 | 1.1 | 1.10 | 0.005 | 6.1 | 6.11 | | | | | | | | | | | | | | | | | |
| DP-N12-21 | 01-Apr-11 13:20 | G | 23.3 | 5.2 | 5.9 | 1.04 | 279 | | | | | 6.74 | 0.54 | 0.54 | 0.005 | 6.2 | 6.21 | | | | | | | | | | | | | | | | | |
| DP-N12-24 | 01-Apr-11 13:40 | G | 24.1 | 5.2 | 4.9 | 0.78 | 348 | | | | | 13.30 | 1.3 | 1.30 | 0.005 | 12 | 12.01 | | | | | | | | | | | | | | | | | |
| DP-N12-27 | 01-Apr-11 13:55 | G | 23.9 | 5.1 | 4.9 | 0.68 | 342 | | | | | 21.80 | 1.8 | 1.80 | 0.005 | 20 | 20.01 | | | | | | | | | | | | | | | | | |
| DP-O10-12 | 01-Apr-11 13:30 | G | 22.9 | 4.3 | 2.0 | 1.13 | 185.9 | | | | | 0.22 | 0.18 | 0.18 | 0.005 | 0.04 | 0.05 | | | | | | | | | | | | | | | | | |
| DP-O10-18 | 01-Apr-11 13:50 | G | 23.5 | 5.3 | 5.9 | 1.04 | 294 | | | | | 9.60 | 2.1 | 2.10 | 0.005 | 7.5 | 7.51 | | | | | | | | | | | | | | | | | |
| DP-O10-24 | 01-Apr-11 14:00 | G | 24.2 | 5.1 | 3.0 | 0.95 | 361 | | | | | 20.40 | 4.4 | 4.40 | 0.005 | 16 | 16.01 | | | | | | | | | | | | | | | | | |
| DP-O10-24-D | 01-Apr-11 14:02 | G | 24.2 | 5.1 | 4.0 | 0.95 | 361 | | | | | 17.50 | 1.5 | 1.42 | 0.082 | 16 | 16.08 | | | | | | | | | | | | | | | | | |
| DP-Q15-15 | 04-Apr-11 09:15 | G | 22.7 | 4.8 | 3.0 | 0.61 | 285 | | | | | 5.29 | 0.39 | 0.39 | 0.005 | 4.9 | 4.91 | | | | | | | | | | | | | | | | | |
| DP-Q15-21 | 04-Apr-11 09:40 | G | 23.5 | 5.2 | 5.9 | 0.73 | 319 | | | | | 8.91 | 0.41 | 0.41 | 0.005 | 8.5 | 8.51 | | | | | | | | | | | | | | | | | |
| DP-Q15-26 | 04-Apr-11 10:10 | G | 23.2 | 5.2 | 5.9 | 1.33 | 333 | | | | | 7.59 | 0.89 | 0.85 | 0.037 | 6.7 | 6.74 | | | | | | | | | | | | | | | | | |
| **Standpipe Piezometers** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PZ01-BKG-9 | 31-Mar-11 09:30 | G | 22.8 | 4.6 | 2.0 | 6.78 | 146.8 | | | | | 0.37 | 0.36 | 0.25 | 0.11 | 0.01 | 0.12 | | | | | | | | | | | | | | | | | |
| PZ02-P02-9 | 30-Mar-11 15:35 | G | 24.4 | 4.7 | 2.0 | 4.63 | 73.6 | | | | | 1.73 | 0.96 | 0.96 | 0.005 | 0.77 | 0.78 | | | | | | | | | | | | | | | | | |
| PZ03-H11-6 | 30-Mar-11 12:14 | G | 25.9 | 4.8 | 2.0 | 3.68 | 138.4 | | | | | 3.80 | 2.3 | 2.29 | 0.006 | 1.5 | 1.51 | | | | | | | | | | | | | | | | | |
| PZ04-BKG-9 | 31-Mar-11 08:44 | G | 21.7 | 5.4 | 6.9 | 3.84 | 78.2 | | | | 28 | 0.65 | 0.35 | 0.31 | 0.038 | 0.3 | 0.34 | 0.021 | | | 2.6 | 0.091 | 1.7 | 0.3 | 0.01 | 0.010 | 12 | 0.050 | 5.6 | 0.066 | 1.6 | 0.069 | 0.94 | 1.8 |
| PZ04-BKG-9-D | 31-Mar-11 08:44 | G | 21.7 | 5.4 | 7.9 | 3.84 | 78.2 | | | | 16 | 0.60 | 0.30 | 0.30 | 0.005 | 0.3 | 0.31 | 0.021 | | | 2.6 | 0.11 | 1.8 | 0.3 | 0.01 | 0.010 | 12 | 0.050 | 6.2 | 0.020 | 1.8 | 0.077 | 0.95 | 1.8 |
| PZ05-BKG-9 | 31-Mar-11 10:14 | G | 21.8 | 5.1 | 6.9 | 4.38 | 98.8 | | | | | 4.80 | 1.2 | 1.17 | 0.034 | 3.6 | 3.63 | | | | | | | | | | | | | | | | | |
| PZ06-BKG-12 | 31-Mar-11 10:03 | G | 23.1 | 4.7 | 3.0 | 5.41 | 59.4 | | | | | 0.26 | 0.25 | 0.21 | 0.041 | 0.01 | 0.05 | | | | | | | | | | | | | | | | | |
| PZ07-D05-7 | 30-Mar-11 13:47 | G | 25.3 | 4.7 | 3.0 | 0.39 | 221.6 | | | | | 5.20 | 1.6 | 1.60 | 0.005 | 3.6 | 3.61 | | | | | | | | | | | | | | | | | |
| PZ08-FG7-6 | 30-Mar-11 10:06 | G | 23.6 | 4.8 | 2.0 | 3.33 | 126.9 | | | | | 2.13 | 1.3 | 1.30 | 0.005 | 0.83 | 0.84 | | | | | | | | | | | | | | | | | |
| PZ09-I08-5 | 30-Mar-11 14:38 | G | 21.9 | 5.2 | 2.0 | 6.03 | 94.2 | | | | | 1.99 | 1.4 | 1.40 | 0.005 | 0.59 | 0.60 | | | | | | | | | | | | | | | | | |
| PZ10-CD6-13 | 30-Mar-11 14:00 | G | 26 | 6 | 26 | 2.85 | 524 | | | | | 7.70 | 2.5 | 2.45 | 0.050 | 5.2 | 5.25 | | | | | | | | | | | | | | | | | |
| PZ11-E09-10 | 30-Mar-11 12:55 | G | 25.8 | 5.6 | 12 | 2.33 | 453.8 | | | | | 23.10 | 2.1 | 1.61 | 0.49 | 21 | 21.49 | | | | | | | | | | | | | | | | | |
| PZ13-F04-8 | 29-Mar-11 09:25 | G | 21.4 | 5.6 | 7.9 | 2.48 | 125.5 | | | | | 2.15 | 0.75 | 0.71 | 0.037 | 1.4 | 1.44 | | | | | | | | | | | | | | | | | |
| PZ14-G13-7 | 30-Mar-11 15:05 | G | 24.5 | 5.8 | 15 | 1.04 | 246.1 | | | | | 7.59 | 0.19 | 0.19 | 0.005 | 7.4 | 7.41 | | | | | | | | | | | | | | | | | |
| PZ15-A11-6 | 30-Mar-11 11:22 | G | 24.8 | 5.2 | 4.9 | 2.52 | 100 | | | | | 0.88 | 0.61 | 0.57 | 0.041 | 0.27 | 0.31 | | | | | | | | | | | | | | | | | |
| PZ16-C12-28 | 30-Mar-11 11:48 | G | 25.4 | 5.7 | 9.9 | 0.66 | 295.1 | | | | | 2.21 | 1.9 | 1.88 | 0.016 | 0.31 | 0.33 | | | | | | | | | | | | | | | | | |
| PZ17-I15-26 | 31-Mar-11 10:35 | G | 23.1 | 4.8 | 3.0 | 2.46 | 307.1 | | | | | 17.18 | 0.18 | 0.17 | 0.006 | 17 | 17.01 | | | | | | | | | | | | | | | | | |
| PZ18-R12-26 | 31-Mar-11 11:03 | G | 23.4 | 5.0 | 8.9 | 0.89 | 328.1 | | | | | 15.40 | 3.4 | 3.38 | 0.022 | 12 | 12.02 | | | | | | | | | | | | | | | | | |
| PZ19-G10-26 | 30-Mar-11 09:45 | G | 23.1 | 5.1 | 4.0 | 1.07 | 302.1 | | | | | 17.90 | 0.9 | 0.89 | 0.014 | 17 | 17.01 | | | | | | | | | | | | | | | | | |
| PZ20-G10-15 | 30-Mar-11 09:01 | G | 22.2 | 5.6 | 15.0 | 1.97 | 356.1 | | | | | 22.70 | 3.7 | 3.70 | 0.005 | 19 | 19.01 | | | | | | | | | | | | | | | | | |
| PZ21-E11-26 | 30-Mar-11 11:04 | G | 23.6 | 5.2 | 4.0 | 0.36 | 295.6 | | | | | 9.85 | 0.55 | 0.54 | 0.012 | 9.3 | 9.31 | | | | | | | | | | | | | | | | | |
| PZ22-E11-15 | 30-Mar-11 10:30 | G | 24.4 | 5.3 | 8.9 | 1.36 | 416 | | | | | 5.60 | 1.4 | 1.39 | 0.007 | 4.2 | 4.21 | | | | | | | | | | | | | | | | | |
| PZ23-D09-27 | 30-Mar-11 13:06 | G | 24.4 | 5.4 | 5.9 | 0.18 | 306.2 | | | | | 8.50 | 1.2 | 1.20 | 0.005 | 7.3 | 7.31 | | | | | | | | | | | | | | | | | |
| PZ24-BKG-26 | 31-Mar-11 08:14 | G | 23.1 | 5.0 | 4.0 | 0.50 | 270.9 | | | | 12 | 11.00 | 1.9 | 1.84 | 0.057 | 9.1 | 9.16 | 1.2 | | 3.6 | 0.79 | 0.013 | 15 | 9.1 | 0.01 | 0.010 | 43 | 0.050 | 21 | 0.11 | 9.7 | 0.17 | 8.9 | 7.7 |
| PZ24-BKG-26-D | 31-Mar-11 08:19 | G | 23.1 | 5.0 | 4.9 | 0.50 | 270.9 | | | | 18 | 11.40 | 1.9 | 1.89 | 0.008 | 9.5 | 9.51 | 0.43 | | 2.9 | 2.7 | 0.027 | 16 | 9.5 | 0.01 | 0.010 | 45 | 0.050 | 20 | 0.042 | 10 | 0.18 | 9.1 | 8 |
| PZ25-A6.5-10 | 31-Mar-11 11:25 | G | 22 | 6.0 | 48 | 5.65 | 770 | | | | | 22.30 | 2.3 | 2.28 | 0.022 | 20 | 20.02 | | | | | | | | | | | | | | | | | |
| **Blanks** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment Rinsate | 04-Apr-11 10:50 | G | 27.5 | 6.0 | 2.0 | 7.90 | 1.38 | | | | | 0.08 | 0.05 | 0.02 | 0.026 | 0.03 | 0.06 | | | | | | | | | | | | | | | | | |
| Field Blank DI | 04-Apr-11 09:00 | G | 21.5 | 6.1 | 2.0 | 8.55 | 1.19 | | | | | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | | | | | | | | | | | | | | | | |
| Field Blank Tap | 04-Apr-11 10:30 | G | 23.6 | 7.7 | 140 | 8.13 | 432 | | | | | 0.10 | 0.05 | 0.05 | 0.005 | 0.05 | 0.06 | | | | | | | | | | | | | | | | | |

Notes
DO - Dissolved oxygen
G - Grab sample
Gray - Shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.
Yellow shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
Dark Orange shaded data points indicate too many colonies were present for accurate counting.

Table E.3
Water Quality Analytical Results
(June 27 – June 29, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg-N/L) | NH3-N (mg-N/L) | NOx-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| **STE Sample** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STE-EX Pump Tank | 6/28/2011 1:50:00 PM | G | 31.0 | 6.6 | 200 | 0.1 | 875 | | | | 270 | 26.1 | 26 | 4 | 22 | 0.1 | 22.1 | | | | | 6.7 | 72 | 0.1 | 0.01 | 9.9 | 22 | 0.065 | 56 | 0.81 | 19 | 0.04 | 23 | 49 |
| **Drivepoints** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DP-AA9-14 | 6/27/2011 8:28:00 AM | G | 24.5 | 4.6 | | 1.3 | 752 | | | | | | | | | | | | | | | | 82 | | | | | | | | | | | |
| DP-AA9-22 | 6/27/2011 9:04:00 AM | G | 24.7 | 5.2 | | 0.3 | 279 | | | | | | | | | | | | | | | | 8.7 | | | | | | | | | | | |
| DP-AA9-27 | 6/27/2011 9:16:00 AM | G | 24.7 | 5.1 | | 0.7 | 295 | | | | | | | | | | | | | | | | 20 | | | | | | | | | | | |
| DP-C11-8 | 6/27/2011 9:38:00 AM | G | 27.8 | 5.8 | 21 | 3.0 | 385 | | | | 12 | 13.9 | 1.9 | 1.81 | 0.09 | 12 | 12.09 | | | 5.5 | 5.2 | 0.017 | 31 | 12 | 0.01 | 0.01 | 53 | 0.11 | 30 | 6.6 | 7.2 | 0.31 | 7 | 31 |
| DP-D07-9 | 6/28/2011 8:05:00 AM | G | 24.4 | 4.0 | | 1.9 | 539 | | | | | | | | | | | | | | | | 35 | | | | | | | | | | | |
| DP-D7.5-14 | 6/29/2011 12:25:00 PM | G | 24.4 | 4.5 | | 0.4 | 483 | | | | | | | | | | | | | | | | 37 | | | | | | | | | | | |
| DP-D08-9 | 6/27/2011 1:50:00 PM | G | 27.4 | 5.3 | | 1.8 | 411 | | | | | | | | | | | | | | | | 35 | | | | | | | | | | | |
| DP-D09-8 | 6/27/2011 12:38:00 PM | G | 27.0 | 4.4 | 2 | 1.1 | 670 | | | | 10 | 33.8 | 2.8 | 2.773 | 0.027 | 31 | 31.027 | | | 2.8 | 2.4 | 0.11 | 47 | 31 | 0.01 | 0.01 | 74 | 0.12 | 52 | 0.033 | 14 | 0.009 | 14 | 47 |
| DP-D09-15 | 6/27/2011 1:10:00 PM | G | 26.2 | 5.2 | 12 | 0.9 | 461 | | | | 10 | 21.5 | 2.5 | 2.495 | 0.005 | 19 | 19.005 | | | 3.2 | 3.3 | 0.043 | 31 | 19 | 0.01 | 0.01 | 59 | 0.12 | 35 | 0.045 | 9.3 | 0.11 | 13 | 32 |
| DP-D11-11 | 6/27/2011 10:54:00 AM | G | 26.3 | 5.2 | | 1.1 | 464 | | | | | | | | | | | | | | | | 39 | | | | | | | | | | | |
| DP-D12-11 | 6/27/2011 10:30:00 AM | G | 26.2 | 4.9 | 5.2 | 0.3 | 487 | | | | 10 | 21.6 | 2.6 | 2.14 | 0.46 | 19 | 19.46 | | | 2.6 | 1.8 | 0.01 | 37 | 19 | 0.01 | 0.01 | 52 | 0.13 | 38 | 0.044 | 9.1 | 0.066 | 11 | 31 |
| DP-E04-8 | 6/28/2011 9:10:00 AM | G | 26.0 | 4.7 | | 1.6 | 185 | | | | | | | | | | | | | | | | 5.6 | | | | | | | | | | | |
| DP-E07-10 | 6/28/2011 9:05:00 AM | G | 25.5 | 4.5 | | 0.2 | 245 | | | | | | | | | | | | | | | | 12 | | | | | | | | | | | |
| DP-E08-8 | 6/28/2011 9:00:00 AM | G | 25.8 | 4.5 | | 0.3 | 348 | | | | | | | | | | | | | | | | 26 | | | | | | | | | | | |
| DP-E11-12 | 6/28/2011 8:50:00 AM | G | 24.9 | 5.0 | | 0.3 | 489 | | | | | | | | | | | | | | | | 32 | | | | | | | | | | | |
| DP-E12-10 | 6/28/2011 8:20:00 AM | G | 25.1 | 4.9 | | 0.3 | 502 | | | | | | | | | | | | | | | | 36 | | | | | | | | | | | |
| DP-E12-15 | 6/28/2011 8:25:00 AM | G | 24.7 | 5.2 | | 0.4 | 462 | | | | | | | | | | | | | | | | 31 | | | | | | | | | | | |
| DP-E12-22 | 6/28/2011 8:30:00 AM | G | 24.2 | 4.8 | 12 | 0.4 | 328 | | | | 10 | 12.8 | 1.8 | 1.714 | 0.086 | 11 | 11.086 | | | 2.6 | 2.1 | 0.01 | 14 | 11 | 0.01 | 0.01 | 67 | 0.1 | 30 | 0.067 | 8.5 | 0.19 | 11 | 8.4 |
| DP-E12-22-D | 6/28/2011 8:35:00 AM | G | 24.2 | 4.8 | 6.2 | 0.4 | 328 | | | | 14 | 12.7 | 1.7 | 1.6 | 0.1 | 11 | 11.1 | | | 2.4 | 2 | 0.01 | 13 | 11 | 0.01 | 0.01 | 66 | 0.096 | 30 | 0.067 | 8.5 | 0.2 | 11 | 8.3 |
| DP-E12-28 | 6/28/2011 8:40:00 AM | G | 24.2 | 4.8 | | 0.4 | 320 | | | | | | | | | | | | | | | | 15 | | | | | | | | | | | |
| DP-F04-17 | 6/28/2011 9:25:00 AM | G | 25.1 | 6.1 | | 0.3 | 374 | | | | | | | | | | | | | | | | 21 | | | | | | | | | | | |
| DP-F04-32 | 6/28/2011 9:30:00 AM | G | 24.6 | 6.1 | | 0.3 | 335 | | | | | | | | | | | | | | | | 5.6 | | | | | | | | | | | |
| DP-F08-20 | 6/28/2011 9:40:00 AM | G | 24.7 | 5.3 | | 0.4 | 347 | | | | | | | | | | | | | | | | 14 | | | | | | | | | | | |
| DP-F08-28 | 6/28/2011 9:45:00 AM | G | 24.3 | 5.4 | | 0.3 | 324 | | | | | | | | | | | | | | | | 18 | | | | | | | | | | | |
| DP-F10-11 | 6/28/2011 9:50:00 AM | G | 25.3 | 4.9 | | 0.4 | 492 | | | | | | | | | | | | | | | | 31 | | | | | | | | | | | |
| DP-F11-11 | 6/28/2011 9:55:00 AM | G | 26.0 | 4.8 | | 0.3 | 447 | | | | | | | | | | | | | | | | 32 | | | | | | | | | | | |
| DP-F11-15 | 6/28/2011 10:00:00 AM | G | 24.6 | 4.7 | | 0.2 | 486 | | | | | | | | | | | | | | | | 34 | | | | | | | | | | | |
| DP-F11-18 | 6/28/2011 10:05:00 AM | G | 24.5 | 5.0 | | 0.3 | 359 | | | | | | | | | | | | | | | | 19 | | | | | | | | | | | |
| DP-F11-21 | 6/28/2011 10:10:00 AM | G | 24.4 | 4.9 | | 0.4 | 310 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | |
| DP-F11-24 | 6/28/2011 10:20:00 AM | G | 24.4 | 4.8 | | 0.2 | 310 | | | | | | | | | | | | | | | | 15 | | | | | | | | | | | |
| DP-F11-27 | 6/28/2011 10:25:00 AM | G | 24.3 | 4.9 | | 0.2 | 331 | | | | | | | | | | | | | | | | 16 | | | | | | | | | | | |

Table E.3 (continued)
Water Quality Analytical Results
(June 27 – June 29, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg-N/L) | NH3-N (mg-N/L) | NOx-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-F12-10 | 6/28/2011 10:30:00 AM | G | 25.3 | 4.3 | | 0.2 | 500 | | | | | | | | | | | | | | | | 34 | | | | | | | | | | | |
| DP-F15-14 | 6/29/2011 12:50:00 PM | G | 24.2 | 4.5 | | 0.3 | 487 | | | | | | | | | | | | | | | | 34 | | | | | | | | | | | |
| DP-F15-20 | 6/29/2011 12:55:00 PM | G | 24.4 | 4.6 | | 0.3 | 359 | | | | | | | | | | | | | | | | 18 | | | | | | | | | | | |
| DP-F15-26 | 6/29/2011 1:00:00 PM | G | 24.2 | 4.3 | | 0.2 | 320 | | | | | | | | | | | | | | | | 14 | | | | | | | | | | | |
| DP-G07-13 | 6/28/2011 12:10:00 PM | G | 29.9 | 5.4 | | 3.1 | 255 | | | | | | | | | | | | | | | | 5.8 | | | | | | | | | | | |
| DP-G07-15 | 6/28/2011 12:15:00 PM | G | 25.6 | 5.0 | | 0.8 | 296 | | | | | | | | | | | | | | | | 6.3 | | | | | | | | | | | |
| DP-G07-17 | 6/28/2011 12:20:00 PM | G | 24.5 | 5.0 | | 0.8 | 337 | | | | | | | | | | | | | | | | 9.3 | | | | | | | | | | | |
| DP-G07-21 | 6/28/2011 12:35:00 PM | G | 24.8 | 5.1 | 5.2 | 1.3 | 333 | | | | 10 | 9.8 | 1.3 | 1.295 | 0.005 | 8.5 | 8.505 | | | 2.3 | 1.8 | 0.016 | 12 | 8.5 | 0.01 | 0.01 | 77 | 0.068 | 29 | 0.045 | 8.8 | 0.17 | 15 | 7.4 |
| DP-G07-24 | 6/28/2011 12:45:00 PM | G | 24.6 | 4.9 | | 0.6 | 286 | | | | | | | | | | | | | | | | 16 | | | | | | | | | | | |
| DP-G07-27 | 6/28/2011 12:50:00 PM | G | 25.0 | 5.0 | | 1.8 | 325 | | | | | | | | | | | | | | | | 15 | | | | | | | | | | | |
| DP-G09-11 | 6/28/2011 11:50:00 AM | G | 27.9 | 5.4 | | 2.9 | 279 | | | | | | | | | | | | | | | | 10 | | | | | | | | | | | |
| DP-G11-8 | 6/28/2011 11:45:00 AM | G | 27.6 | 4.6 | | 1.0 | 312 | | | | | | | | | | | | | | | | 21 | | | | | | | | | | | |
| DP-G12-9 | 6/28/2011 10:45:00 AM | G | 26.5 | 4.2 | 2 | 0.2 | 359 | | | | 12 | 10.8 | 1.4 | | 0.037 | 9.4 | 9.437 | | | 4.6 | 2.2 | 0.17 | 26 | 9.4 | 0.01 | 0.01 | 60 | 0.06 | 22 | 0.81 | 5.9 | 0.15 | 5.6 | 23 |
| DP-G12-15 | 6/28/2011 10:55:00 AM | G | 25.2 | 4.7 | 5.2 | 0.2 | 478 | | | | 10 | 23.4 | 3.4 | 3.04 | 0.36 | 20 | 20.36 | | | 3.6 | 2.1 | 0.014 | 33 | 20 | 0.01 | 0.01 | 53 | 0.062 | 35 | 0.17 | 9.1 | 0.21 | 12 | 29 |
| DP-G12-18 | 6/28/2011 11:00:00 AM | G | 24.6 | 4.8 | | 0.2 | 443 | | | | | | | | | | | | | | | | 29 | | | | | | | | | | | |
| DP-G12-21 | 6/28/2011 11:10:00 AM | G | 24.4 | 4.9 | 7.3 | 0.1 | 361 | | | | 10 | 15.5 | 2.5 | 2.493 | 0.007 | 13 | 13.007 | | | 3.5 | 2 | 0.01 | 14 | 13 | 0.01 | 0.01 | 62 | 0.069 | 33 | 0.18 | 7.6 | 0.18 | 15 | 12 |
| DP-G12-24 | 6/28/2011 11:30:00 AM | G | 24.8 | 4.8 | 5.2 | 0.2 | 334 | | | | 51 | 13.2 | 1.2 | 1.195 | 0.005 | 12 | 12.005 | | | 1.8 | 1.4 | 0.19 | 15 | 12 | 0.01 | 0.01 | 59 | 0.067 | 27 | 0.039 | 11 | 0.18 | 15 | 6.7 |
| DP-G12-27 | 6/28/2011 11:15:00 AM | G | 24.3 | 4.8 | | 0.1 | 346 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | |
| DP-H06-7 | 6/28/2011 1:05:00 PM | G | 30.2 | 5.9 | | 4.7 | 164 | | | | | | | | | | | | | | | | 4.5 | | | | | | | | | | | |
| DP-H09-12 | 6/28/2011 1:15:00 PM | G | 25.8 | 5.0 | | 0.8 | 274 | | | | | | | | | | | | | | | | 5.6 | | | | | | | | | | | |
| DP-H10-11 | 6/28/2011 1:25:00 PM | G | 28.5 | 5.6 | 17 | 5.1 | 228 | | | | 10 | 2.02 | 0.62 | 0.48 | 0.14 | 1.4 | 1.54 | | | 4.3 | 3.6 | 0.034 | 7.2 | 1.2 | 0.11 | 0.01 | 51 | 0.062 | 20 | 4.1 | 4.7 | 0.42 | 9.3 | 6.3 |
| DP-I06-14 | 6/29/2011 9:30:00 AM | G | 24.4 | 4.7 | 6.2 | 0.3 | 218 | | | | 10 | 2.65 | 0.55 | 0.545 | 0.005 | 2.1 | 2.105 | | | 3 | 2.4 | 0.19 | 6 | 2.1 | 0.01 | 0.023 | 62 | 0.058 | 23 | 0.024 | 5 | 0.19 | 11 | 3.1 |
| DP-I06-20 | 6/29/2011 9:35:00 AM | G | 24.1 | 4.9 | | 0.3 | 362 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | |
| DP-I06-26 | 6/29/2011 9:40:00 AM | G | 24.2 | 5.0 | | 0.2 | 312 | | | | | | | | | | | | | | | | 14 | | | | | | | | | | | |
| DP-I12-6 | 6/29/2011 9:25:00 AM | G | 26.6 | 4.7 | | 0.4 | 138 | | | | | | | | | | | | | | | | 4.6 | | | | | | | | | | | |
| DP-J08-6 | 6/29/2011 9:50:00 AM | G | 27.3 | 5.9 | | 3.1 | 183 | | | | | | | | | | | | | | | | 4.3 | | | | | | | | | | | |
| DP-J09-12 | 6/29/2011 10:00:00 AM | G | 25.7 | 4.8 | | 0.4 | 189 | | | | | | | | | | | | | | | | 5.2 | | | | | | | | | | | |
| DP-J09-14 | 6/29/2011 10:05:00 AM | G | 24.8 | 4.5 | | 0.3 | 249 | | | | | | | | | | | | | | | | 7.8 | | | | | | | | | | | |
| DP-J09-20 | 6/29/2011 10:10:00 AM | G | 24.1 | 4.7 | | 0.2 | 368 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | |
| DP-J09-26 | 6/29/2011 10:15:00 AM | G | 24.0 | 4.5 | | 0.2 | 306 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | |
| DP-J12-13 | 6/29/2011 10:20:00 AM | G | 24.9 | 4.6 | | 0.3 | 249 | | | | | | | | | | | | | | | | 5.8 | | | | | | | | | | | |
| DP-J12-15 | 6/29/2011 10:25:00 AM | G | 24.7 | 4.6 | | 0.3 | 287 | | | | | | | | | | | | | | | | 7.3 | | | | | | | | | | | |
| DP-J12-20 | 6/29/2011 10:30:00 AM | G | 24.5 | 4.9 | | 0.4 | 356 | | | | | | | | | | | | | | | | 12 | | | | | | | | | | | |
| DP-J12-27 | 6/29/2011 10:35:00 AM | G | 24.4 | 4.7 | | 0.2 | 310 | | | | | | | | | | | | | | | | 15 | | | | | | | | | | | |
| DP-K10-7 | 6/29/2011 10:45:00 AM | G | 27.4 | 5.1 | | 1.3 | 176 | | | | | | | | | | | | | | | | 5.2 | | | | | | | | | | | |
| DP-K12-5 | 6/29/2011 10:40:00 AM | G | 27.5 | 4.7 | | 0.7 | 80 | | | | | | | | | | | | | | | | 2.5 | | | | | | | | | | | |

Table E.3 (continued)
Water Quality Analytical Results
(June 27 – June 29, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg-N/L) | NH3-N (mg-N/L) | NOx-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-M07-21 | 6/29/2011 10:50:00 AM | G | 24.5 | 4.9 | | 0.3 | 366 | | | | | | | | | | | | | | | | 14 | | | | | | | | | | | |
| DP-M07-27 | 6/29/2011 10:55:00 AM | G | 24.3 | 5.0 | | 0.2 | 303 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | |
| DP-M12-10 | 6/29/2011 11:00:00 AM | G | 27.0 | 5.1 | | 0.9 | 177 | | | | | | | | | | | | | | | | 4.8 | | | | | | | | | | | |
| DP-N12-14 | 6/29/2011 11:10:00 AM | G | 25.4 | 4.4 | | 0.2 | 177 | | | | | | | | | | | | | | | | 4.8 | | | | | | | | | | | |
| DP-N12-18 | 6/29/2011 11:15:00 AM | G | 25.2 | 4.7 | | 0.3 | 247 | | | | | | | | | | | | | | | | 6.2 | | | | | | | | | | | |
| DP-N12-21 | 6/29/2011 11:20:00 AM | G | 24.9 | 4.8 | 5.2 | 0.2 | 309 | | | | 10 | 5.79 | 0.69 | 0.685 | 0.005 | 5.1 | 5.105 | | | 2.6 | 1 | 0.2 | 9.4 | 5.1 | 0.01 | 0.025 | 84 | 0.05 | 32 | 0.042 | 8.2 | 0.093 | 15 | 4.3 |
| DP-N12-24 | 6/29/2011 11:30:00 AM | G | 24.7 | 4.6 | | 0.1 | 354 | | | | | | | | | | | | | | | | 16 | | | | | | | | | | | |
| DP-N12-27 | 6/29/2011 11:35:00 AM | G | 24.6 | 4.7 | 5.2 | 0.1 | 365 | | | | 10 | 11 | 1.4 | 1.395 | 0.005 | 9.6 | 9.605 | | | 2.2 | 2.2 | 0.2 | 13 | 9.6 | 0.01 | 0.022 | 84 | 0.05 | 32 | 0.041 | 11 | 0.043 | 22 | 5.2 |
| DP-N12-27-D | 6/29/2011 11:40:00 AM | G | 24.6 | 4.7 | 6.2 | 0.1 | 365 | | | | 10 | 10.9 | 1.3 | 1.295 | 0.005 | 9.6 | 9.605 | | | 2.2 | 2.1 | 0.32 | 13 | 9.6 | 0.01 | 0.012 | 84 | 0.05 | 31 | 0.037 | 11 | 0.042 | 22 | 5 |
| DP-O10-18 | 6/29/2011 12:10:00 PM | G | 25.1 | 4.9 | | 0.7 | 335 | | | | | | | | | | | | | | | | 9.7 | | | | | | | | | | | |
| DP-O10-24 | 6/29/2011 12:15:00 PM | G | 24.7 | 4.7 | | 0.3 | 366 | | | | | | | | | | | | | | | | 15 | | | | | | | | | | | |
| DP-Q15-21 | 6/29/2011 12:35:00 PM | G | 25.2 | 4.8 | | 0.3 | 358 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | |
| DP-Q15-26 | 6/29/2011 12:40:00 PM | G | 25.3 | 4.8 | | 0.4 | 385 | | | | | | | | | | | | | | | | 15 | | | | | | | | | | | |
| **Standpipe Piezometers** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PZ03-H11-6 | 6/27/2011 12:03:00 PM | G | 28.4 | 4.5 | 2 | 3.0 | 165 | | | | 10 | 1.19 | 0.34 | | 0.01 | 0.85 | 0.86 | | | 4.8 | 3.4 | 0.14 | 6.2 | 0.85 | 0.01 | 0.01 | 44 | 0.05 | 11 | 0.022 | 2.7 | 0.052 | 4.8 | 5.8 |
| PZ04-BKG-9 | 6/27/2011 8:40:00 AM | G | 25.9 | 5.6 | | 4.2 | 100 | | | | | | | | | | | | | | | | 3.3 | | | | | | | | | | | |
| PZ07-D05-7 | 6/27/2011 11:40:00 AM | G | 27.3 | 4.7 | | 2.5 | 288 | | | | | | | | | | | | | | | | 21 | | | | | | | | | | | |
| PZ11-E09-10 | 6/27/2011 11:00:00 AM | G | 27.6 | 5.3 | 9.4 | 1.8 | 454 | | | | 10 | 20.3 | 2.3 | | 0.1 | 18 | 18.1 | | | 2.2 | 1.5 | 0.038 | 36 | 18 | 0.01 | 0.01 | 59 | 0.093 | 34 | 0.29 | 8.9 | 0.23 | 10 | 30 |
| PZ11-E09-10-D | 6/27/2011 11:05:00 AM | G | 27.6 | 5.3 | 9.4 | 1.8 | 454 | | | | 10 | 20.2 | 2.2 | | 0.13 | 18 | 18.13 | | | 2.7 | 1.6 | 0.02 | 35 | 18 | 0.01 | 0.01 | 62 | 0.095 | 35 | 0.26 | 9.3 | 0.22 | 11 | 32 |
| PZ15-A11-6 | 6/27/2011 10:40:00 AM | G | 29.4 | 5.3 | | 3.1 | 195 | | | | | | | | | | | | | | | | 17 | | | | | | | | | | | |
| PZ16-C12-28 | 6/27/2011 10:32:00 AM | G | 25.1 | 5.5 | | 0.5 | 306 | | | | | | | | | | | | | | | | 19 | | | | | | | | | | | |
| PZ17-I15-26 | 6/27/2011 12:39:00 PM | G | 25.4 | 4.9 | | 1.6 | 307 | | | | | | | | | | | | | | | | 14 | | | | | | | | | | | |
| PZ18-R12-26 | 6/27/2011 1:02:00 PM | G | 26.6 | 5.1 | | 0.6 | 252 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | |
| PZ19-G10-26 | 6/27/2011 9:31:00 AM | G | 23.9 | 5.0 | | 0.6 | 294 | | | | | | | | | | | | | | | | 15 | | | | | | | | | | | |
| PZ20-G10-15 | 6/27/2011 9:05:00 AM | G | 25.7 | 5.3 | | 2.6 | 300 | | | | | | | | | | | | | | | | 17 | | | | | | | | | | | |
| PZ21-E11-26 | 6/27/2011 9:56:00 AM | G | 24.8 | 4.9 | | 0.9 | 288 | | | | | | | | | | | | | | | | 17 | | | | | | | | | | | |
| PZ24-BKG-26 | 6/27/2011 8:29:00 AM | G | 24.4 | 4.9 | | 0.7 | 296 | | | | | | | | | | | | | | | | 19 | | | | | | | | | | | |
| **Blanks** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment Rinsate | 6/29/2011 1:15:00 PM | | 28.8 | 6.8 | | 4.9 | 10 | | | | | | | | | | | | | | | | 0.05 | | | | | | | | | | | |
| Field Blank DI | 6/29/2011 1:30:00 PM | | | | | | | | | | | | | | | | | | | | | | 0.05 | | | | | | | | | | | |

Notes
DO - Dissolved oxygen
G - Grab sample
Gray - Shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.
Yellow shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
Dark Orange shaded data points indicate too many colonies were present for accurate counting.

o:\44237-001\Wpdocs\Report

Table E.4
Water Quality Analytical Results
(September 26 – September 28, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg-N/L) | NH3-N (mg-N/L) | NOx-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| **STE Sample** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STE-EX Pump Tank | 9/28/11 12:00 | G | 29.4 | 7 | 250 | 0.9 | 721 | 20 | 10 | 32 | | 32.24 | 32 | 4.00 | 28 | 0.24 | 28.24 | 3.2 | 50 | | | | 68 | 0.24 | 0.01 | | | | | | | | | |
| STE-EX Pump Tank-D | 9/28/11 12:05 | G | 29.4 | 7 | 250 | 0.9 | 721 | 17 | 10 | 33 | | 31.24 | 31 | 3.00 | 28 | 0.24 | 28.24 | 3 | 50 | | | | 42 | 0.24 | 0.01 | | | | | | | | | |
| **Drivepoints** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DP-AA9-14 | 9/28/11 9:55 | G | 25.4 | 4.6 | 10 | 2 | 554 | | | | 10 | 23.4 | 2.4 | 2.39 | 0.01 | 21 | 21.01 | 0.17 | | 2.6 | 2.1 | 0.091 | 52 | 21 | 0.01 | 0.01 | 52 | 0.13 | 37 | 0.076 | 9.5 | 0.015 | 11 | 43 |
| DP-AA9-14-D | 9/28/11 10:00 | G | 25.4 | 4.6 | 10 | 2 | 554 | | | | 10 | 22.1 | 2.1 | 2.09 | 0.01 | 20 | 20.01 | 0.17 | | 2.6 | 2.6 | 0.072 | 50 | 20 | 0.01 | 0.01 | 51 | 0.13 | 36 | 0.56 | 9.3 | 0.019 | 11 | 44 |
| DP-AA9-22 | 9/28/11 10:10 | G | 25.1 | 5 | 10 | 0.3 | 369 | | | | 10 | 16.7 | 1.7 | 1.69 | 0.01 | 15 | 15.01 | 0.36 | | | | | 19 | 15 | 0.01 | | | | | | | | | |
| DP-AA9-27 | 9/28/11 10:15 | G | 24.9 | 4.9 | 10 | 0.3 | 267 | | | | 10 | 12.28 | 2.7 | 2.69 | 0.01 | 9.58 | 9.59 | 0.26 | | | | | 16 | 9.4 | 0.18 | | | | | | | | | |
| DP-D07-5 | 9/27/11 8:25 | G | 26 | 5.7 | 31 | 1.7 | 346 | | | | 32 | 10.8 | 1.7 | 1.66 | 0.044 | 9.1 | 9.14 | 0.078 | | 12 | 12 | 0.072 | 29 | 9.1 | 0.01 | 0.043 | 32 | 0.091 | 28 | 0.4 | 5 | 0.007 | 5.1 | 27 |
| DP-D07-9 | 9/27/11 8:40 | G | 25.6 | 3.7 | 2 | 0.8 | 613 | | | | 46 | 26.3 | 3.3 | 3.29 | 0.01 | 23 | 23.01 | 0.046 | | 2.9 | 1.8 | 0.21 | 43 | 23 | 0.01 | 0.01 | 68 | 0.12 | 37 | 0.061 | 8.4 | 0.011 | 12 | 39 |
| DP-D08-9 | 9/27/11 8:00 | G | 25.3 | 5 | 42 | 2.8 | 449 | | | | 28 | 9.5 | 1.5 | 1.39 | 0.11 | 8 | 8.11 | 0.16 | | | | | 35 | 8 | 0.01 | | | | | | | | | |
| DP-D09-15 | 9/27/11 7:55 | G | 24.9 | 4.8 | 10 | 1.8 | 615 | | | | 11 | 29.4 | 2.4 | 2.39 | 0.01 | 27 | 27.01 | 0.5 | | | | | 45 | 27 | 0.01 | | | | | | | | | |
| DP-D09-8 | 9/27/11 7:50 | G | 25.8 | 4.6 | 2 | 0.5 | 591 | | | | 10 | 24.8 | 2.8 | 2.66 | 0.14 | 22 | 22.14 | 0.028 | | 2.9 | 2.3 | 0.35 | 50 | 22 | 0.01 | 0.092 | 64 | 0.12 | 37 | 0.033 | 9.5 | 0.0095 | 9.1 | 38 |
| DP-D11-11 | 9/27/11 7:45 | G | 26 | 5.2 | 31 | 2.3 | 442 | | | | 10 | 17.6 | 1.6 | 1.59 | 0.01 | 16 | 16.01 | 0.12 | | | | | 33 | 16 | 0.01 | | | | | | | | | |
| DP-D12-11 | 9/27/11 7:40 | G | 25.7 | 4.6 | 10 | 1.2 | 486 | | | | 11 | 20.5 | 2.5 | 2.21 | 0.29 | 18 | 18.29 | 0.11 | | | | | 36 | 18 | 0.01 | | | | | | | | | |
| DP-D7.5-14 | 9/27/11 8:00 | G | 24.6 | 4.9 | 10 | 0.2 | 608 | | | | 10 | 29.1 | 2.1 | 2.07 | 0.032 | 27 | 27.03 | 0.099 | | 2.4 | 1.3 | 0.092 | 54 | 27 | 0.01 | 0.042 | 42 | 0.1 | 39 | 0.044 | 11 | 0.120 | 11 | 38 |
| DP-D7.5-14-D | 9/27/11 8:05 | G | 24.6 | 4.9 | 10 | 0.2 | 608 | | | | 10 | 28.9 | 1.9 | 1.87 | 0.032 | 27 | 27.03 | 0.077 | | 2 | 1.2 | 0.082 | 52 | 27 | 0.01 | 0.01 | 41 | 0.12 | 39 | 0.049 | 11 | 0.120 | 11 | 38 |
| DP-D7.5-20 | 9/27/11 8:25 | G | 24.2 | 5.1 | 10 | 0.5 | 531 | | | | | 26.3 | 1.3 | 1.28 | 0.019 | 25 | 25.02 | | | | | | 42 | 25 | 0.01 | | | | | | | | | |
| DP-D7.5-26 | 9/27/11 8:35 | G | 24.2 | 5.2 | 10 | 0.5 | 289 | | | | | 9.62 | 0.92 | 0.04 | 0.88 | 8.7 | 9.58 | | | | | | 14 | 8.7 | 0.01 | | | | | | | | | |
| DP-E04-8 | 9/27/11 8:55 | G | 26.9 | 4 | 2 | 0.6 | 76 | | | | 22 | 0.91 | 0.58 | 0.33 | 0.25 | 0.33 | 0.58 | 1 | | | | | 3.6 | 0.33 | 0.01 | | | | | | | | | |
| DP-E07-10 | 9/27/11 9:09 | G | 26.5 | 4 | 5 | 1 | 264 | | | | 11 | 8.4 | 1.2 | 1.08 | 0.12 | 7.2 | 7.32 | 0.12 | | | | | 12 | 7.2 | 0.01 | | | | | | | | | |
| DP-E08-8 | 9/27/11 9:25 | G | 26.8 | 4.2 | 3 | 0.7 | 304 | | | | 13 | 10.8 | 1.7 | 1.61 | 0.088 | 9.1 | 9.19 | 0.086 | | | | | 22 | 9.1 | 0.01 | | | | | | | | | |
| DP-E10-6 | 9/27/11 9:35 | G | 27.1 | 3.9 | 2 | 0.8 | 352 | | | | | 10.6 | 1.5 | 1.46 | 0.045 | 9.1 | 9.15 | | | | | | 31 | 9.1 | 0.01 | | | | | | | | | |
| DP-E11-12 | 9/27/11 9:35 | G | 26.4 | 5.1 | 8 | 0.3 | 506 | | | | 10 | 18.7 | 1.7 | 1.66 | 0.045 | 17 | 17.05 | 0.031 | | | | | 39 | 17 | 0.01 | | | | | | | | | |
| DP-E12-10 | 9/27/11 8:50 | G | 25.9 | 5.3 | 10 | 0.4 | 462 | | | | 10 | 17.3 | 1.3 | 1.29 | 0.013 | 16 | 16.01 | 0.034 | | 2.4 | 1.4 | 0.063 | 32 | 16 | 0.01 | 0.01 | 49 | 0.1 | 33 | 0.27 | 7.8 | 0.150 | 11 | 31 |
| DP-E12-15 | 9/27/11 9:00 | G | 25.7 | 5.1 | 7 | 1 | 607 | | | | 10 | 29.2 | 1.2 | 1.18 | 0.02 | 28 | 28.02 | 0.044 | | 2.2 | 1.4 | 0.078 | 44 | 28 | 0.01 | 0.01 | 54 | 0.12 | 40 | 0.046 | 10 | 0.025 | 13 | 44 |
| DP-E12-22 | 9/27/11 9:10 | G | 25.2 | 5.2 | 5 | 0.2 | 311 | | | | 10 | 8.9 | 1.3 | 1.29 | 0.014 | 7.6 | 7.61 | 0.13 | | 2.3 | 1.4 | 0.1 | 8.9 | 7.6 | 0.01 | 0.01 | 68 | 0.054 | 25 | 0.02 | 8.1 | 0.190 | 13 | 6.8 |
| DP-E12-28 | 9/27/11 9:20 | G | 25.1 | 5.1 | 4 | 0.4 | 295 | | | | | 6.5 | 0.9 | 0.86 | 0.039 | 5.6 | 5.64 | | | | | | 14 | 5.6 | 0.01 | | | | | | | | | |
| DP-E12-28-D | 9/27/11 9:25 | G | 25.1 | 5.1 | 5 | 0.4 | 295 | | | | | 6.54 | 0.84 | 0.80 | 0.04 | 5.7 | 5.74 | | | | | | 14 | 5.7 | 0.01 | | | | | | | | | |
| DP-F04-17 | 9/27/11 11:12 | G | 27.8 | 5.8 | 52 | 0.8 | 280 | | | | 11 | 2.69 | 0.35 | 0.32 | 0.026 | 2.34 | 2.37 | 0.075 | | | | | 5.6 | 2.1 | 0.24 | | | | | | | | | |
| DP-F04-22 | 9/27/11 11:05 | G | 25.9 | 5.2 | 10 | 0.6 | 270 | | | | | 7.65 | 0.05 | 0.03 | 0.02 | 7.6 | 7.62 | | | | | | 12 | 7.6 | 0.01 | | | | | | | | | |
| DP-F04-32 | 9/27/11 11:00 | G | 26 | 5.9 | 42 | 0.5 | 290 | | | | 10 | 0.66 | 0.18 | 0.12 | 0.06 | 0.48 | 0.54 | 0.21 | | | | | 19 | 0.48 | 0.01 | | | | | | | | | |
| DP-F05-5 | 9/27/11 10:45 | G | 28.8 | 4.8 | 10 | 0.6 | 178 | | | | 10 | 0.96 | 0.44 | 0.31 | 0.13 | 0.52 | 0.65 | 0.18 | | | | | 4.3 | 0.42 | 0.1 | | | | | | | | | |
| DP-F08-20 | 9/27/11 10:20 | G | 25.9 | 5 | 10 | 0.6 | 298 | | | | 10 | 8.4 | 1.2 | 1.17 | 0.033 | 7.2 | 7.23 | 0.33 | | | | | 12 | 7.2 | 0.01 | | | | | | | | | |
| DP-F08-28 | 9/27/11 10:25 | G | 25.4 | 5.1 | 10 | 0.5 | 298 | | | | | 1.84 | 0.34 | 0.31 | 0.026 | 1.5 | 1.53 | | | | | | 20 | 1.5 | 0.01 | | | | | | | | | |
| DP-F10-11 | 9/27/11 10:00 | G | 27 | 4.2 | 10 | 0.5 | 446 | | | | 10 | 16.7 | 2.7 | 2.32 | 0.38 | 14 | 14.38 | 0.076 | | 2 | 1.5 | 0.18 | 32 | 14 | 0.01 | 0.044 | 55 | 0.09 | 30 | 0.054 | 7.9 | 0.150 | 9.1 | 29 |
| DP-F11-11 | 9/27/11 9:50 | G | 27.2 | 5 | 10 | 1.5 | 389 | | | | 10 | 12.4 | 1.4 | 1.29 | 0.11 | 11 | 11.11 | 0.1 | | | | | 31 | 11 | 0.01 | | | | | | | | | |
| DP-F11-15 | 9/27/11 10:00 | G | 26.2 | 5.1 | 10 | 0.5 | 490 | | | | 10 | 19.5 | 1.5 | 1.45 | 0.052 | 18 | 18.05 | 0.28 | | | | | 32 | 18 | 0.01 | | | | | | | | | |
| DP-F11-15-D | 9/27/11 10:05 | G | 26.2 | 5.1 | 10 | 0.5 | 490 | | | | 10 | 20.5 | 1.5 | 1.45 | 0.053 | 19 | 19.05 | 0.31 | | | | | 35 | 19 | 0.01 | | | | | | | | | |
| DP-F11-18 | 9/27/11 10:10 | G | 25.8 | 5.3 | 10 | 0.3 | 271 | | | | 11 | 7.18 | 0.18 | 0.14 | 0.036 | 7 | 7.04 | 0.087 | | | | | 8.9 | 7 | 0.01 | | | | | | | | | |

Table E.4 (con't)
Water Quality Analytical Results
(September 26 – September 28, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg-N/L) | NH3-N (mg-N/L) | NOx-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-F11-21 | 9/27/11 10:15 | G | 25.6 | 5.2 | 10 | 0.4 | 298 | | | | 34 | 8.42 | 0.92 | 0.87 | 0.047 | 7.5 | 7.55 | 0.81 | | | | | 10 | 7.5 | 0.01 | | | | | | | | | | |
| DP-F11-24 | 9/27/11 10:20 | G | 25.4 | 5.1 | 10 | 0.6 | 296 | | | | 10 | 11.1 | 1.1 | 1.07 | 0.032 | 10 | 10.03 | 0.35 | | | | | 16 | 10 | 0.01 | | | | | | | | | | |
| DP-F11-27 | 9/27/11 10:25 | G | 25.3 | 5.2 | 10 | 0.4 | 306 | | | | 10 | 5.1 | 0.4 | 0.36 | 0.044 | 4.7 | 4.74 | 0.55 | | | | | 16 | 4.7 | 0.01 | | | | | | | | | | |
| DP-F12-10 | 9/27/11 9:45 | G | 26.7 | 3.8 | 2 | 0.6 | 423 | | | | 10 | 12.28 | 0.28 | 0.21 | 0.074 | 12 | 12.07 | 0.097 | | | | | 34 | 12 | 0.01 | | | | | | | | | | |
| DP-F15-14 | 9/28/11 10:35 | G | 26.1 | 5 | 9 | 0.4 | 457 | | | | 10 | 18.5 | 1.5 | 1.43 | 0.068 | 17 | 17.07 | 0.072 | | 1.9 | 2 | 0.1 | 31 | 17 | 0.01 | 0.01 | 61 | 0.11 | 33 | 0.048 | 9.2 | 0.170 | 14 | 34 |
| DP-F15-20 | 9/28/11 10:45 | G | 25.3 | 5 | 5 | 0.4 | 290 | | | | 10 | 8.24 | 0.34 | 0.18 | 0.16 | 7.9 | 8.06 | 0.5 | | | | | 10 | 7.9 | 0.01 | | | | | | | | | | |
| DP-F15-26 | 9/28/11 10:50 | G | 25.2 | 4.9 | 4 | 0.3 | 280 | | | | 10 | 10.3 | 1.3 | 1.27 | 0.031 | 9 | 9.03 | 0.12 | | | | | 13 | 9 | 0.01 | | | | | | | | | | |
| DP-F15-26-D | 9/28/11 10:55 | G | 25.2 | 4.9 | 3 | 0.3 | 280 | | | | 10 | 10.5 | 1.5 | 1.47 | 0.034 | 9 | 9.03 | 0.11 | | | | | 13 | 9 | 0.01 | | | | | | | | | | |
| DP-G07-13 | 9/27/11 11:35 | G | 29.8 | 5.2 | 7 | 0.8 | 224 | | | | | 2.18 | 1.3 | 1.29 | 0.01 | 0.88 | 0.89 | | | | | | 5.7 | 0.88 | 0.01 | | | | | | | | | | |
| DP-G07-15 | 9/27/11 11:50 | G | 28.7 | 4.7 | 6 | 0.7 | 254 | | | | 10 | 2.68 | 0.88 | 0.87 | 0.01 | 1.8 | 1.81 | 1.4 | | | | | 5 | 1.8 | 0.01 | | | | | | | | | | |
| DP-G07-17 | 9/27/11 12:00 | G | 26 | 4.8 | 5 | 0.4 | 300 | | | | | 6.3 | 1.7 | 1.69 | 0.01 | 4.6 | 4.61 | | | | | | 7.3 | 4.6 | 0.01 | | | | | | | | | | |
| DP-G07-21 | 9/27/11 12:05 | G | 25.3 | 4.6 | 4 | 0.4 | 274 | | | | 10 | 11.4 | 1.9 | 1.89 | 0.01 | 9.5 | 9.51 | 0.57 | | 1.1 | 0.68 | 0.12 | 16 | 9.5 | 0.01 | 0.01 | 43 | 0.05 | 19 | 0.084 | 8.5 | 0.200 | 9.7 | 7.5 |
| DP-G07-24 | 9/27/11 12:15 | G | 25.6 | 4.7 | 5 | 0.6 | 300 | | | | | 9.94 | 1.8 | 1.79 | 0.01 | 8.14 | 8.15 | | | | | | 11 | 8 | 0.14 | | | | | | | | | | |
| DP-G07-27 | 9/27/11 12:25 | G | 25.7 | 4.7 | 5 | 1.2 | 300 | | | | | 9.3 | 1.6 | 1.59 | 0.01 | 7.7 | 7.71 | | | | | | 15 | 7.7 | 0.01 | | | | | | | | | | |
| DP-G08-5 | 9/27/11 11:55 | G | 28.1 | 5.7 | 11 | 1 | 174 | | | | 10 | 1.48 | 0.93 | 0.85 | 0.082 | 0.55 | 0.63 | 0.14 | | 3.9 | 3.4 | 0.5 | 3.8 | 0.55 | 0.01 | 0.045 | 46 | 0.05 | 13 | 3.6 | 3.7 | 0.260 | 4.3 | 3.3 |
| DP-G09-11 | 9/27/11 11:45 | G | 28.3 | 5.6 | 11 | 1.4 | 299 | | | | 10 | 4.22 | 0.22 | 0.21 | 0.01 | 4 | 4.01 | 0.33 | | | | | 9 | 4 | 0.01 | | | | | | | | | | |
| DP-G11-8 | 9/27/11 11:35 | G | 27.2 | 4.6 | 4 | 0.7 | 319 | | | | 10 | 11.1 | 2.3 | 2.29 | 0.01 | 8.8 | 8.81 | 0.062 | | | | | 23 | 8.8 | 0.01 | | | | | | | | | | |
| DP-G12-9 | 9/27/11 10:45 | G | 24.8 | 5 | 2 | 3.4 | 363 | | | | 10 | 12.4 | 2.3 | 2.29 | 0.01 | 10.1 | 10.11 | 0.19 | | | | | 27 | 9.9 | 0.20 | | | | | | | | | | |
| DP-G12-15 | 9/27/11 10:50 | G | 26.2 | 5.1 | 6 | 0.4 | 415 | | | | 10 | 16.2 | 1.2 | 0.81 | 0.39 | 15 | 15.39 | 1.1 | | 2.2 | 1.4 | 0.058 | 28 | 15 | 0.01 | 0.042 | 54 | 0.087 | 27 | 0.5 | 6.9 | 0.180 | 9.4 | 24 |
| DP-G12-18 | 9/27/11 11:05 | G | 25.8 | 5.3 | 10 | 0.6 | 264 | | | | 26 | 5.6 | 1.2 | 1.19 | 0.01 | 4.4 | 4.41 | 1.1 | | 3.3 | 2.1 | 0.06 | 7.7 | 4.4 | 0.01 | 0.056 | 67 | 0.1 | 21 | 0.59 | 5.7 | 0.110 | 8.9 | 12 |
| DP-G12-21 | 9/27/11 11:15 | G | 25.5 | 5.3 | 10 | 0.5 | 271 | | | | 10 | 8.7 | 1.5 | 1.49 | 0.01 | 7.2 | 7.21 | 0.37 | | | | | 9.8 | 7.2 | 0.01 | | | | | | | | | | |
| DP-G12-24 | 9/27/11 11:20 | G | 25.4 | 5.2 | 10 | 0.4 | 302 | | | | 10 | 10.5 | 1.3 | 1.29 | 0.01 | 9.2 | 9.21 | 0.71 | | | | | 15 | 9.2 | 0.01 | | | | | | | | | | |
| DP-G12-27 | 9/27/11 11:25 | G | 25.3 | 5.1 | 10 | 0.3 | 289 | | | | 10 | 9.8 | 1.5 | 1.49 | 0.01 | 8.3 | 8.31 | 0.14 | | | | | 15 | 8.3 | 0.01 | | | | | | | | | | |
| DP-H06-7 | 9/28/11 7:35 | G | 25.5 | 5.8 | 31 | 4.2 | 140 | | | | 10 | 1.58 | 1.1 | 0.66 | 0.44 | 0.48 | 0.92 | 0.78 | | | | | 4.5 | 0.48 | 0.01 | | | | | | | | | | |
| DP-H09-12 | 9/28/11 7:45 | G | 25.9 | 5.1 | 6 | 0.7 | 248 | | | | 50 | 3.44 | 0.84 | 0.83 | 0.01 | 2.6 | 2.61 | 0.084 | | | | | 5.7 | 2.6 | 0.01 | | | | | | | | | | |
| DP-I06-14 | 9/28/11 7:50 | G | 25.4 | 5.1 | 7 | 0.5 | 220 | | | | 10 | 3.31 | 0.71 | 0.70 | 0.01 | 2.6 | 2.61 | 0.61 | | 3.2 | 2.5 | 0.064 | 5.4 | 2.6 | 0.01 | 0.15 | 61 | 0.05 | 21 | 0.14 | 4.8 | 0.170 | 9.4 | 3.1 |
| DP-I06-20 | 9/28/11 8:05 | G | 24.8 | 5.1 | 4 | 0.4 | 330 | | | | 10 | 11.1 | 2 | 1.99 | 0.01 | 9.1 | 9.11 | 0.17 | | 1.7 | 1.8 | 0.096 | 12 | 9.1 | 0.01 | 0.052 | 73 | 0.05 | 28 | 0.048 | 6.7 | 0.060 | 16 | 6.9 |
| DP-I06-26 | 9/28/11 8:10 | G | 24.6 | 5 | 3 | 0.3 | 295 | | | | | 11.1 | 2.1 | 2.09 | 0.01 | 9 | 9.01 | | | | | | 14 | 9 | 0.01 | | | | | | | | | | |
| DP-I12-6 | 9/28/11 7:40 | G | 26.2 | 5.1 | 6 | 0.6 | 95 | | | | 10 | 1.33 | 0.99 | 0.98 | 0.01 | 0.34 | 0.35 | 0.3 | | | | | 3.1 | 0.34 | 0.01 | | | | | | | | | | |
| DP-J09-12 | 9/28/11 7:55 | G | 26.2 | 5 | 3 | 0.9 | 171 | | | | | 1.43 | 0.57 | 0.56 | 0.01 | 0.86 | 0.87 | | | | | | 4.6 | 0.86 | 0.01 | | | | | | | | | | |
| DP-J09-14 | 9/28/11 8:00 | G | 26.1 | 4.8 | 4 | 0.4 | 210 | | | | 10 | 2.98 | 0.68 | 0.67 | 0.01 | 2.3 | 2.31 | 0.4 | | | | | 5.6 | 2.3 | 0.01 | | | | | | | | | | |
| DP-J09-20 | 9/28/11 8:05 | G | 25.5 | 5 | 5 | 0.3 | 320 | | | | 10 | 9.26 | 0.66 | 0.65 | 0.01 | 8.6 | 8.61 | 0.73 | | | | | 10 | 8.6 | 0.01 | | | | | | | | | | |
| DP-J09-26 | 9/28/11 8:10 | G | 25.4 | 4.8 | 3 | 0.5 | 292 | | | | | 11 | 1.1 | 1.09 | 0.01 | 9.9 | 9.91 | | | | | | 14 | 9.9 | 0.01 | | | | | | | | | | |
| DP-J12-13 | 9/28/11 8:35 | G | 26.1 | 4.9 | 5 | 0.3 | 206 | | | | | 2.58 | 0.48 | 0.47 | 0.01 | 2.1 | 2.11 | | | | | | 5.3 | 2.1 | 0.01 | | | | | | | | | | |
| DP-J12-15 | 9/28/11 8:40 | G | 26.8 | 4.9 | 4 | 0.5 | 265 | | | | 10 | 4.57 | 0.97 | 0.96 | 0.01 | 3.6 | 3.61 | 0.77 | | | | | 6.2 | 3.6 | 0.01 | | | | | | | | | | |
| DP-J12-20 | 9/28/11 8:45 | G | 25.7 | 5.1 | 6 | 0.4 | 327 | | | | 10 | 8.08 | 0.28 | 0.27 | 0.01 | 7.8 | 7.81 | 0.88 | | | | | 10 | 7.8 | 0.01 | | | | | | | | | | |
| DP-J12-27 | 9/28/11 8:50 | G | 24.9 | 4.9 | 4 | 0.4 | 282 | | | | | 12.29 | 0.29 | 0.28 | 0.01 | 12 | 12.01 | | | | | | 15 | 12 | 0.01 | | | | | | | | | | |
| DP-K12-5 | 9/28/11 9:00 | G | 27.5 | 5 | 10 | 0.6 | 70 | | | | 10 | 0.6 | 0.31 | 0.30 | 0.01 | 0.29 | 0.30 | 0.47 | | | | | 4.4 | 0.29 | 0.01 | | | | | | | | | | |
| DP-M07-15 | 9/28/11 8:45 | G | 25.9 | 5.2 | 10 | 0.3 | 274 | | | | | 5.55 | 0.21 | 0.20 | 0.01 | 5.34 | 5.35 | | | | | | 9.1 | 5.1 | 0.24 | | | | | | | | | | |
| DP-M07-21 | 9/28/11 8:55 | G | 25.3 | 5.2 | 10 | 0.3 | 351 | | | | 10 | 12.17 | 0.17 | 0.16 | 0.01 | 12 | 12.01 | 1.1 | | | | | 13 | 12 | 0.01 | | | | | | | | | | |

Table E.4
Water Quality Analytical Results
(September 26 – September 28, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg-N/L) | NH3-N (mg-N/L) | NOx-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-M07-27 | 9/28/11 9:00 | G | 25.1 | 5.1 | 10 | 0.2 | 290 | | | | 10 | 8.32 | 0.22 | 0.21 | 0.01 | 8.1 | 8.11 | 0.093 | | | | | 12 | 8.1 | 0.01 | | | | | | | | | |
| DP-M12-10 | 9/28/11 8:30 | G | 26.2 | 5.6 | 10 | 1.8 | 162 | | | | 10 | 1.31 | 0.79 | 0.74 | 0.046 | 0.52 | 0.57 | 0.13 | | | | | 4.4 | 0.37 | 0.15 | | | | | | | | | |
| DP-N12-14 | 9/28/11 9:15 | G | 26.5 | 5 | 4 | 0.3 | 181 | | | | 10 | 1.45 | 0.15 | 0.14 | 0.01 | 1.3 | 1.31 | 0.35 | | 2 | 1.9 | 0.074 | 4.6 | 1.3 | 0.01 | 0.01 | 53 | 0.05 | 17 | 0.1 | 3.4 | 0.170 | 6 | 2.7 |
| DP-N12-18 | 9/28/11 9:25 | G | 26.7 | 5.1 | 6 | 0.4 | 234 | | | | 10 | 4.47 | 0.57 | 0.56 | 0.01 | 3.9 | 3.91 | 1.1 | | | | | 7.7 | 3.9 | 0.01 | | | | | | | | | |
| DP-N12-21 | 9/28/11 9:35 | G | 26 | 5.3 | 6 | 0.3 | 316 | | | | 10 | 6.83 | 0.13 | 0.12 | 0.01 | 6.7 | 6.71 | 0.093 | | 2.8 | 2.2 | 0.062 | 9.8 | 6.7 | 0.01 | 0.01 | 85 | 0.05 | 31 | 0.02 | 9 | 0.088 | 17 | 4.7 |
| DP-N12-24 | 9/28/11 9:45 | G | 25.9 | 5.2 | 6 | 0.2 | 359 | | | | 67 | 12.05 | 0.05 | 0.04 | 0.01 | 12 | 12.01 | 0.13 | | 2.3 | 2.2 | 0.089 | 14 | 12 | 0.01 | 0.051 | 83 | 0.05 | 31 | 0.098 | 11 | 0.042 | 23 | 6.7 |
| DP-N12-27 | 9/28/11 9:55 | G | 25.8 | 5.1 | 3 | 0.3 | 323 | | | | 10 | 14.6 | 2.6 | 2.59 | 0.01 | 12 | 12.01 | 0.31 | | 1.6 | 1.3 | 0.061 | 15 | 12 | 0.01 | 0.01 | 59 | 0.05 | 27 | 0.02 | 8.3 | 0.085 | 19 | 7.6 |
| DP-O10-18 | 9/28/11 9:15 | G | 27.3 | 4.2 | 2 | 0.7 | 160 | | | | 10 | 0.91 | 0.33 | 0.32 | 0.01 | 0.58 | 0.59 | 0.078 | | | | | 3.6 | 0.47 | 0.11 | | | | | | | | | |
| DP-O10-18-D | 9/28/11 9:20 | G | 27.3 | 4.2 | 2 | 0.7 | 160 | | | | 10 | 0.86 | 0.48 | 0.47 | 0.01 | 0.38 | 0.39 | 0.074 | | | | | 3.7 | 0.38 | 0.01 | | | | | | | | | |
| DP-O10-24 | 9/28/11 9:30 | G | 26.8 | 4.9 | 10 | 0.6 | 279 | | | | 10 | 4.27 | 0.47 | 0.41 | 0.06 | 3.8 | 3.86 | 0.14 | | 2.4 | 2.6 | 0.067 | 6.8 | 3.8 | 0.01 | 0.054 | 77 | 0.05 | 32 | 0.048 | 7.2 | 0.160 | 14 | 3.5 |
| DP-Q15-15 | 9/28/11 10:55 | G | 27.8 | 4.6 | 3 | 0.7 | 316 | | | | | 6.08 | 0.48 | 0.47 | 0.01 | 5.6 | 5.61 | | | | | | 9.5 | 5.6 | 0.01 | | | | | | | | | |
| DP-Q15-21 | 9/28/11 11:00 | G | 26.6 | 5 | 5 | 0.5 | 317 | | | | | 9.58 | 0.48 | 0.47 | 0.01 | 9.1 | 9.11 | | | | | | 15 | 9.1 | 0.01 | | | | | | | | | |
| DP-Q15-26 | 9/28/11 11:10 | G | 26.8 | 5.1 | 10 | 0.3 | 293 | | | | | 11.46 | 0.46 | 0.45 | 0.01 | 11 | 11.01 | | | | | | 13 | 11 | 0.01 | | | | | | | | | |
| DP-Q15-26-D | 9/28/11 11:15 | G | 26.8 | 5.1 | 6 | 0.3 | 293 | | | | | 11.9 | 1.9 | 1.89 | 0.01 | 10 | 10.01 | | | | | | 13 | 10 | 0.01 | | | | | | | | | |
| **Standpipe Piezometers** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PZ03-H11-6 | 9/26/11 8:43 | G | 26.5 | 4.4 | 2 | 1.4 | 136 | | | | 15 | 1.41 | 0.74 | 0.72 | 0.024 | 0.67 | 0.69 | 0.01 | | | | | 8.5 | 0.67 | 0.01 | | | | | | | | | |
| PZ04-BKG-9 | 9/26/11 10:35 | G | 28.2 | 5 | 5 | 1.7 | 120 | | | | 11 | 6.45 | 0.95 | 0.93 | 0.017 | 5.5 | 5.52 | 0.01 | | 3.4 | 3.8 | 0.24 | 3.4 | 5.5 | 0.01 | 0.042 | 10 | 0.05 | 12 | 0.11 | 2.8 | 0.048 | 0.64 | 1.7 |
| PZ07-D05-7 | 9/26/11 9:22 | G | 25.5 | 4.6 | 5 | 0.9 | 361 | | | | 22 | 11.3 | 1.3 | 1.26 | 0.042 | 10 | 10.04 | 0.01 | | | | | 29 | 10 | 0.01 | | | | | | | | | |
| PZ11-E09-10 | 9/26/11 9:15 | G | 26 | 5.7 | 36 | 5.6 | 413 | | | | 140 | 13.4 | 1.4 | 1.35 | 0.046 | 12 | 12.05 | 0.021 | | | | | 37 | 12 | 0.01 | | | | | | | | | |
| PZ15-A11-6 | 9/26/11 9:35 | G | 27.1 | 4.8 | 9 | 1.7 | 84 | | | | 38 | 1.26 | 0.74 | 0.70 | 0.04 | 0.52 | 0.56 | 0.01 | | | | | 6.8 | 0.52 | 0.01 | | | | | | | | | |
| PZ16-C12-28 | 9/26/11 10:03 | G | 24.6 | 5.3 | 10 | 0.3 | 311 | | | | 10 | 0.48 | 0.21 | 0.19 | 0.022 | 0.27 | 0.29 | 0.48 | | | | | 19 | 0.27 | 0.01 | | | | | | | | | |
| PZ17-I15-26 | 9/28/11 10:48 | G | 24.9 | 4.8 | 3 | 0.2 | 283 | | | | | 10.7 | 1.5 | 1.12 | 0.38 | 9.2 | 9.58 | | | | | | 14 | 9.2 | 0.01 | | | | | | | | | |
| PZ18-R12-26 | 9/28/11 11:44 | G | 26.3 | 5 | 8 | 0.2 | 223 | | | | 10 | 0.73 | 0.22 | 0.20 | 0.02 | 0.51 | 0.53 | 0.59 | | | | | 12 | 0.51 | 0.01 | | | | | | | | | |
| PZ19-G10-26 | 9/26/11 8:08 | G | 24.6 | 5 | 4 | 0.4 | 302 | | | | 10 | 10.7 | 2.3 | 2.28 | 0.016 | 8.4 | 8.42 | 0.053 | | 0.77 | 1.1 | 0.19 | 15 | 8.4 | 0.01 | 0.093 | 52 | 0.05 | 22 | 0.034 | 8.2 | 0.210 | 11 | 6.2 |
| PZ20-G10-15 | 9/26/11 8:36 | G | 25.6 | 4.9 | 8 | 0.2 | 308 | | | | 26 | 10.06 | 1.4 | 1.36 | 0.041 | 8.66 | 8.70 | 1.1 | | 6.8 | 2.3 | 0.21 | 16 | 8.5 | 0.16 | 0.052 | 54 | 0.05 | 26 | 0.054 | 6.2 | 0.220 | 7.8 | 11 |
| PZ21-E11-26 | 9/26/11 8:14 | G | 24.7 | 5.1 | 8 | 0.9 | 298 | | | | | 10.47 | 1.4 | 1.28 | 0.12 | 9.07 | 9.19 | | | | | | 13 | 8.9 | 0.17 | | | | | | | | | |
| PZ24-BKG-26 | 9/26/11 10:48 | G | 25.5 | 4.8 | 4 | 0.4 | 299 | | | | 10 | 12.32 | 1.2 | 1.18 | 0.018 | 11.12 | 11.14 | 0.028 | | 0.64 | 1.4 | 0.12 | 15 | 11 | 0.12 | 0.12 | 42 | 0.05 | 20 | 0.035 | 11 | 0.160 | 8 | 7.8 |
| PZ24-BKG-26-D | 9/26/11 10:54 | G | 25.5 | 4.8 | 4 | 0.4 | 299 | | | | 10 | 13.3 | 1.3 | 1.29 | 0.015 | 12 | 12.02 | 0.022 | | 0.63 | 1.3 | 0.11 | 16 | 12 | 0.01 | 0.09 | 45 | 0.05 | 20 | 0.022 | 11 | 0.160 | 8.3 | 8 |
| PZ25-A06-10 | 9/26/11 9:51 | G | 27.4 | 6 | 66 | 2.2 | 608 | | | | 26 | 21 | 2 | 1.98 | 0.02 | 19 | 19.02 | 0.49 | | | | | 37 | 19 | 0.01 | | | | | | | | | |
| **Blanks** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment Blank | 9/28/11 9:40 | G | 25.1 | 5.6 | 6 | 4.6 | 1 | | | | 10 | 0.22 | 0.21 | 0.19 | 0.021 | 0.01 | 0.03 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | |
| Field Blank - DI | 9/28/11 9:45 | G | 25.1 | 5.6 | 2 | 4.6 | 1 | | | | 10 | 0.06 | 0.05 | 0.04 | 0.01 | 0.01 | 0.02 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | |
| Field Blank - Tap | 9/28/11 12:15 | G | 29 | 7.6 | 120 | 5.2 | 430 | | | | 10 | 0.31 | 0.05 | 0.04 | 0.01 | 0.26 | 0.27 | 0.01 | | | | | 19 | 0.26 | 0.01 | | | | | | | | | |

Notes
DO - Dissolved oxygen
G - Grab sample
Gray - Shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.
Yellow shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
Dark Orange shaded data points indicate too many colonies were present for accurate counting.

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# Appendix F: Summary of Water Quality Data

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# Table F.1
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| **STE Sample** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STE-EX Pump Tank | n | 7 | 7 | 8 | 5 | 6 | 3 | 6 | 4 | 5 | 7 | 7 | 7 | 8 | 8 | 7 | 5 | 6 | 0 | 0 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | MEAN | 27.23 | | 232.88 | 0.31 | 792.00 | 410.33 | 31.00 | 138.68 | 270.80 | 37.41 | 37.31 | 7.39 | 26.91 | 0.09 | 30.03 | 3.94 | | | | 5.65 | 62.33 | 0.12 | 0.01 | 6.55 | 21.50 | 0.11 | 57.00 | 3.91 | 18.50 | 0.06 | 19.00 | 46.00 | 5.02 |
| | STD. DEV. | 3.82 | | 81.58 | 0.34 | 278.51 | 166.94 | 24.84 | 107.59 | 236.65 | 12.67 | 12.65 | 7.44 | 10.46 | 0.10 | 6.56 | 2.15 | | | | | | | | | | | | | | | | | |
| | MIN | 19.90 | 6.51 | 150.00 | 0.10 | 494.00 | 260.00 | 14.00 | 82.70 | 120.00 | 24.23 | 24.20 | -1.00 | 5.80 | 0.01 | 21.53 | 1.30 | 50.00 | | | 4.60 | 47.00 | 0.03 | 0.01 | 3.20 | 21.00 | 0.07 | 56.00 | 0.81 | 18.00 | 0.04 | 15.00 | 43.00 | 0.03 |
| | MAX | 31.00 | 7.33 | 410.00 | 0.90 | 1273.00 | 590.00 | 80.00 | 300.00 | 680.00 | 56.01 | 56.00 | 21.00 | 39.00 | 0.26 | 39.26 | 6.40 | 1,000,000.00 | | | 6.70 | 72.00 | 0.24 | 0.01 | 9.90 | 22.00 | 0.15 | 58.00 | 7.00 | 19.00 | 0.08 | 23.00 | 49.00 | 10.00 |
| **Drivepoints** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DP-AA9-14 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.60 | | 8.63 | 1.30 | 571.73 | | | | 10.00 | 26.28 | 1.98 | 1.96 | 0.01 | 24.30 | 24.31 | 0.17 | | 2.60 | 2.10 | 0.09 | 67.00 | 21.00 | 0.01 | 0.01 | 52.00 | 0.13 | 37.00 | 0.08 | 9.50 | 0.02 | 11.00 | 43.00 | |
| | STD. DEV. | 1.71 | | 3.27 | 0.50 | 210.56 | | | | | 21.03 | 0.91 | 0.91 | 0.01 | 20.25 | 20.26 | 0.00 | | | | | 21.21 | | | | | | | | | | | | |
| | MIN | 21.50 | 4.60 | 4.90 | 0.89 | 281.90 | | | | 10.00 | 6.83 | 0.93 | 0.92 | 0.01 | 5.90 | 5.91 | 0.17 | | 2.60 | 2.10 | 0.09 | 52.00 | 21.00 | 0.01 | 0.01 | 52.00 | 0.13 | 37.00 | 0.08 | 9.50 | 0.02 | 11.00 | 43.00 | |
| | MAX | 25.40 | 5.10 | 11.00 | 2.00 | 752.00 | | | | 10.00 | 48.60 | 2.60 | 2.58 | 0.02 | 46.00 | 46.02 | 0.17 | | 2.60 | 2.10 | 0.09 | 82.00 | 21.00 | 0.01 | 0.01 | 52.00 | 0.13 | 37.00 | 0.08 | 9.50 | 0.02 | 11.00 | 43.00 | |
| DP-AA9-22 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.23 | | 6.30 | 0.61 | 313.18 | | | | 10.00 | 12.21 | 1.24 | 1.22 | 0.02 | 10.97 | 10.99 | 0.36 | | | | | 13.85 | 15.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 0.82 | | 4.03 | 0.37 | 41.04 | | | | | 3.99 | 0.44 | 0.44 | 0.02 | 3.65 | 3.63 | | | | | | 7.28 | | | | | | | | | | | | |
| | MIN | 23.30 | 4.90 | 2.00 | 0.30 | 279.00 | | | | 10.00 | 9.10 | 0.82 | 0.81 | 0.01 | 7.90 | 7.94 | 0.36 | | | | | 8.70 | 15.00 | 0.01 | | | | | | | | | | |
| | MAX | 25.10 | 5.30 | 10.00 | 1.06 | 369.00 | | | | 10.00 | 16.70 | 1.70 | 1.69 | 0.04 | 15.00 | 15.01 | 0.36 | | | | | 19.00 | 15.00 | 0.01 | | | | | | | | | | |
| DP-AA9-27 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.05 | | 5.00 | 0.67 | 285.80 | | | | 10.00 | 10.43 | 1.60 | 1.57 | 0.03 | 8.83 | 8.85 | 0.26 | | | | | 18.00 | 9.40 | 0.18 | | | | | | | | | | |
| | STD. DEV. | 1.00 | | 4.36 | 0.25 | 12.88 | | | | | 2.27 | 0.95 | 0.97 | 0.02 | 1.68 | 1.68 | | | | | | 2.83 | | | | | | | | | | | | |
| | MIN | 22.70 | 4.80 | 2.00 | 0.30 | 267.00 | | | | 10.00 | 7.90 | 1.00 | 0.97 | 0.01 | 6.90 | 6.93 | 0.26 | | | | | 16.00 | 9.40 | 0.18 | | | | | | | | | | |
| | MAX | 24.90 | 5.20 | 10.00 | 0.84 | 295.00 | | | | 10.00 | 12.28 | 2.70 | 2.69 | 0.04 | 10.00 | 10.04 | 0.26 | | | | | 20.00 | 9.40 | 0.18 | | | | | | | | | | |
| DP-C11-8 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.80 | | 28.00 | 3.25 | 352.00 | | | | 12.00 | 9.25 | 1.70 | 1.61 | 0.09 | 7.55 | 7.64 | | | 5.50 | 5.20 | 0.02 | 31.00 | 12.00 | 0.01 | 0.01 | 53.00 | 0.11 | 30.00 | 6.60 | 7.20 | 0.31 | 7.00 | 31.00 | |
| | STD. DEV. | 4.24 | | 9.90 | 0.35 | 46.67 | | | | | 6.58 | 0.28 | 0.28 | 0.00 | 6.29 | 6.29 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.80 | 5.80 | 21.00 | 3.00 | 319.00 | | | | 12.00 | 4.60 | 1.50 | 1.41 | 0.09 | 3.10 | 3.19 | | | 5.50 | 5.20 | 0.02 | 31.00 | 12.00 | 0.01 | 0.01 | 53.00 | 0.11 | 30.00 | 6.60 | 7.20 | 0.31 | 7.00 | 31.00 | |
| | MAX | 27.80 | 5.90 | 35.00 | 3.50 | 385.00 | | | | 12.00 | 13.90 | 1.90 | 1.81 | 0.09 | 12.00 | 12.09 | | | 5.50 | 5.20 | 0.02 | 31.00 | 12.00 | 0.01 | 0.01 | 53.00 | 0.11 | 30.00 | 6.60 | 7.20 | 0.31 | 7.00 | 31.00 | |
| DP-D07-5 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 25.05 | | 22.50 | 3.28 | 336.00 | | | | 32.00 | 11.90 | 1.85 | 1.83 | 0.02 | 10.05 | 10.07 | 0.08 | | 12.00 | 12.00 | 0.07 | 29.00 | 9.10 | 0.01 | 0.04 | 32.00 | 0.09 | 28.00 | 0.40 | 5.00 | 0.01 | 5.10 | 27.00 | |
| | STD. DEV. | 1.34 | | 12.02 | 2.23 | 14.14 | | | | | 1.56 | 0.21 | 0.24 | 0.03 | 1.34 | 1.32 | | | | | | | | | | | | | | | | | | |
| | MIN | 24.10 | 5.70 | 14.00 | 1.70 | 326.00 | | | | 32.00 | 10.80 | 1.70 | 1.66 | 0.01 | 9.10 | 9.14 | 0.08 | | 12.00 | 12.00 | 0.07 | 29.00 | 9.10 | 0.01 | 0.04 | 32.00 | 0.09 | 28.00 | 0.40 | 5.00 | 0.01 | 5.10 | 27.00 | |
| | MAX | 26.00 | 6.00 | 31.00 | 4.86 | 346.00 | | | | 32.00 | 13.00 | 2.00 | 2.00 | 0.04 | 11.00 | 11.01 | 0.08 | | 12.00 | 12.00 | 0.07 | 29.00 | 9.10 | 0.01 | 0.04 | 32.00 | 0.09 | 28.00 | 0.40 | 5.00 | 0.01 | 5.10 | 27.00 | |
| DP-D07-7 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.30 | | 2.00 | 0.77 | 365.00 | | | | 20.00 | 13.60 | 1.60 | 1.59 | 0.01 | 12.00 | 12.01 | 0.02 | | 1.70 | 1.40 | 0.12 | 23.00 | 12.00 | 0.01 | 0.01 | 53.00 | 0.10 | 27.00 | 0.05 | 5.40 | 0.01 | 8.00 | 20.00 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.30 | 4.70 | 2.00 | 0.77 | 365.00 | | | | 20.00 | 13.60 | 1.60 | 1.59 | 0.01 | 12.00 | 12.01 | 0.02 | | 1.70 | 1.40 | 0.12 | 23.00 | 12.00 | 0.01 | 0.01 | 53.00 | 0.10 | 27.00 | 0.05 | 5.40 | 0.01 | 8.00 | 20.00 | |
| | MAX | 23.30 | 4.70 | 2.00 | 0.77 | 365.00 | | | | 20.00 | 13.60 | 1.60 | 1.59 | 0.01 | 12.00 | 12.01 | 0.02 | | 1.70 | 1.40 | 0.12 | 23.00 | 12.00 | 0.01 | 0.01 | 53.00 | 0.10 | 27.00 | 0.05 | 5.40 | 0.01 | 8.00 | 20.00 | |
| DP-D07-9 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.67 | | 2.00 | 2.40 | 514.67 | | | | 46.00 | 25.05 | 2.55 | 2.54 | 0.01 | 22.50 | 22.51 | 0.05 | | 2.90 | 1.80 | 0.21 | 39.00 | 23.00 | 0.01 | 0.01 | 68.00 | 0.12 | 37.00 | 0.06 | 8.40 | 0.01 | 12.00 | 39.00 | |
| | STD. DEV. | 0.83 | | 0.00 | 1.90 | 112.49 | | | | | 1.77 | 1.06 | 1.06 | 0.00 | 0.71 | 0.71 | | | | | | 5.66 | | | | | | | | | | | | |
| | MIN | 24.00 | 3.70 | 2.00 | 0.80 | 392.00 | | | | 46.00 | 23.80 | 1.80 | 1.79 | 0.01 | 22.00 | 22.01 | 0.05 | | 2.90 | 1.80 | 0.21 | 35.00 | 23.00 | 0.01 | 0.01 | 68.00 | 0.12 | 37.00 | 0.06 | 8.40 | 0.01 | 12.00 | 39.00 | |
| | MAX | 25.60 | 4.50 | 2.00 | 4.50 | 613.00 | | | | 46.00 | 26.30 | 3.30 | 3.29 | 0.01 | 23.00 | 23.01 | 0.05 | | 2.90 | 1.80 | 0.21 | 43.00 | 23.00 | 0.01 | 0.01 | 68.00 | 0.12 | 37.00 | 0.06 | 8.40 | 0.01 | 12.00 | 39.00 | |
| DP-D7.5-14 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.50 | | 5.33 | 0.59 | 509.25 | | | | 10.00 | 27.99 | 1.99 | 1.94 | 0.05 | 26.00 | 26.05 | 0.10 | | 2.65 | 1.25 | 0.09 | 45.50 | 27.00 | 0.01 | 0.04 | 42.00 | 0.10 | 39.00 | 0.04 | 11.00 | 0.12 | 11.00 | 38.00 | |
| | STD. DEV. | 1.57 | | 4.16 | 0.39 | 74.01 | | | | | 4.86 | 1.26 | 1.32 | 0.06 | 3.61 | 3.55 | | | 0.35 | 0.07 | | 12.02 | | | | | | | | | | | | |
| | MIN | 21.20 | 4.50 | 2.00 | 0.20 | 432.00 | | | | 10.00 | 22.68 | 0.68 | 0.56 | 0.01 | 22.00 | 22.12 | 0.10 | | 2.40 | 1.20 | 0.09 | 37.00 | 27.00 | 0.01 | 0.04 | 42.00 | 0.10 | 39.00 | 0.04 | 11.00 | 0.12 | 11.00 | 38.00 | |
| | MAX | 24.60 | 7.01 | 10.00 | 1.10 | 608.00 | | | | 10.00 | 32.20 | 3.20 | 3.19 | 0.12 | 29.00 | 29.01 | 0.10 | | 2.90 | 1.30 | 0.09 | 54.00 | 27.00 | 0.01 | 0.04 | 42.00 | 0.10 | 39.00 | 0.04 | 11.00 | 0.12 | 11.00 | 38.00 | |
| DP-D7.5-20 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.80 | | 5.97 | 1.44 | 361.67 | | | | 10.00 | 14.47 | 1.13 | 1.12 | 0.02 | 13.33 | 13.35 | 0.16 | | 1.80 | 1.30 | 0.04 | 26.00 | 16.30 | 0.01 | 0.16 | 67.00 | 0.05 | 28.00 | 0.02 | 6.50 | 0.21 | 16.00 | 6.70 | |
| | STD. DEV. | 1.44 | | 4.00 | 1.04 | 147.87 | | | | | 10.25 | 0.29 | 0.29 | 0.01 | 10.10 | 10.11 | | | | | | | 12.30 | 0.00 | | | | | | | | | | |
| | MIN | 22.20 | 5.10 | 2.00 | 0.50 | 258.00 | | | | 10.00 | 8.20 | 0.80 | 0.78 | 0.01 | 7.40 | 7.42 | 0.16 | | 1.80 | 1.30 | 0.04 | 10.00 | 7.60 | 0.01 | 0.16 | 67.00 | 0.05 | 28.00 | 0.02 | 6.50 | 0.21 | 16.00 | 6.70 | |
| | MAX | 25.00 | 7.01 | 10.00 | 2.55 | 531.00 | | | | 10.00 | 26.30 | 1.30 | 1.30 | 0.02 | 25.00 | 25.02 | 0.16 | | 1.80 | 1.30 | 0.04 | 42.00 | 25.00 | 0.01 | 0.16 | 67.00 | 0.05 | 28.00 | 0.02 | 6.50 | 0.21 | 16.00 | 6.70 | |
| DP-D7.5-26 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.50 | | 5.33 | 1.33 | 292.00 | | | | | 10.44 | 1.07 | 0.76 | 0.31 | 9.37 | 9.67 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.95 | | 4.16 | 0.77 | 3.00 | | | | | 2.26 | 0.20 | 0.65 | 0.50 | 2.37 | 2.32 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.30 | 5.20 | 2.00 | 0.50 | 289.00 | | | | | 8.70 | 0.92 | 0.04 | 0.01 | 7.40 | 7.41 | | | | | | 14.00 | 8.70 | 0.01 | | | | | | | | | | |
| | MAX | 25.00 | 7.01 | 10.00 | 2.01 | 295.00 | | | | | 12.99 | 1.30 | 1.30 | 0.88 | 12.00 | 12.04 | | | | | | 14.00 | 8.70 | 0.01 | | | | | | | | | | |
| DP-D08-9 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 25.77 | | 31.00 | 1.99 | 454.00 | | | | 22.00 | 15.25 | 1.75 | 1.64 | 0.12 | 13.50 | 13.62 | 0.16 | | | 3.50 | 0.06 | 37.33 | 13.50 | 0.01 | 0.15 | 52.00 | 0.09 | 33.00 | 11.00 | 10.00 | 0.33 | 8.00 | 35.00 | |
| | STD. DEV. | 1.46 | | 15.56 | 0.74 | 45.71 | | | | 8.49 | 8.13 | 0.35 | 0.35 | 0.01 | 7.78 | 7.79 | 0.00 | | | | | 4.04 | 7.78 | 0.00 | | | | | | | | | | |
| | MIN | 24.60 | 5.00 | 20.00 | 1.36 | 411.00 | | | | 16.00 | 9.50 | 1.50 | 1.39 | 0.11 | 8.00 | 8.11 | 0.16 | | | 3.50 | 0.06 | 35.00 | 8.00 | 0.01 | 0.15 | 52.00 | 0.09 | 33.00 | 11.00 | 10.00 | 0.33 | 8.00 | 35.00 | |
| | MAX | 27.40 | 5.60 | 42.00 | 2.80 | 502.00 | | | | 28.00 | 21.00 | 2.00 | 1.88 | 0.12 | 19.00 | 19.12 | 0.16 | | | 3.50 | 0.06 | 42.00 | 19.00 | 0.01 | 0.15 | 52.00 | 0.09 | 33.00 | 11.00 | 10.00 | 0.33 | 8.00 | 35.00 | |
| DP-D09-6 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 19.80 | | 2.00 | 5.05 | 409.50 | | | | | 16.84 | 0.84 | 0.82 | 0.02 | 16.00 | 16.02 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 3.96 | | 0.00 | 0.77 | 65.76 | | | | | 7.07 | 0.00 | 0.01 | 0.01 | 7.07 | 7.06 | | | | | | | | | | | | | | | | | | |
| | MIN | 17.00 | 4.50 | 2.00 | 4.50 | 363.00 | | | | | 11.84 | 0.84 | 0.81 | 0.01 | 11.00 | 11.03 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.60 | 4.82 | 2.00 | 5.59 | 456.00 | | | | | 21.84 | 0.84 | 0.83 | 0.03 | 21.00 | 21.01 | | | | | | | | | | | | | | | | | | |
| DP-D09-8 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 23.45 | | 2.00 | 1.53 | 532.00 | | | | 10.00 | 25.33 | 2.33 | 2.28 | 0.05 | 23.00 | 23.05 | 0.03 | | 2.85 | 2.35 | 0.23 | 48.50 | 26.50 | 0.01 | 0.05 | 69.00 | 0.12 | 44.50 | 0.03 | 11.75 | 0.01 | 11.55 | 42.50 | |
| | STD. DEV. | 3.84 | | 0.00 | 1.35 | 126.03 | | | | 0.00 | 9.06 | 0.95 | 0.93 | 0.06 | 8.21 | 8.20 | | | 0.07 | 0.07 | 0.17 | 2.12 | 6.36 | 0.00 | 0.06 | 7.07 | 0.00 | 10.61 | 0.00 | 3.18 | 0.00 | 3.46 | 6.36 | |
| | MIN | 18.40 | 4.40 | 2.00 | 0.50 | 380.00 | | | | 10.00 | 12.91 | 0.91 | 0.89 | 0.01 | 12.00 | 12.02 | 0.03 | | 2.80 | 2.30 | 0.11 | 47.00 | 22.00 | 0.01 | 0.01 | 64.00 | 0.12 | 37.00 | 0.03 | 9.50 | 0.01 | 9.10 | 38.00 | |
| | MAX | 27.00 | 4.65 | 2.00 | 3.52 | 670.00 | | | | 10.00 | 33.80 | 2.80 | 2.80 | 0.14 | 31.00 | 31.03 | 0.03 | | 2.90 | 2.40 | 0.35 | 50.00 | 31.00 | 0.01 | 0.09 | 74.00 | 0.12 | 52.00 | 0.03 | 14.00 | 0.01 | 14.00 | 47.00 | |
| DP-D09-15 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.38 | | 9.75 | 1.77 | 494.75 | | | | 10.50 | 21.08 | 1.83 | 1.81 | 0.03 | 19.25 | 19.28 | 0.50 | | 4.25 | 2.90 | 0.04 | 38.00 | 23.00 | 0.01 | 0.01 | 59.00 | 0.12 | 35.00 | 0.05 | 9.30 | 0.11 | 13.00 | 32.00 | |
| | STD. DEV. | 3.09 | | 5.56 | 1.03 | 81.70 | | | | 0.71 | 6.56 | 0.96 | 1.00 | 0.04 | 5.80 | 5.77 | | | 1.48 | 0.57 | | 9.90 | 5.66 | 0.00 | | | | | | | | | | |
| | MIN | 19.10 | 4.80 | 2.00 | 0.90 | 433.00 | | | | 10.00 | 13.43 | 0.43 | 0.34 | 0.01 | 13.00 | 13.09 | 0.50 | | 3.20 | 2.50 | 0.04 | 31.00 | 19.00 | 0.01 | 0.01 | 59.00 | 0.12 | 35.00 | 0.05 | 9.30 | 0.11 | 13.00 | 32.00 | |
| | MAX | 26.20 | 5.40 | 15.00 | 3.20 | 615.00 | | | | 11.00 | 29.40 | 2.50 | 2.50 | 0.09 | 27.00 | 27.01 | 0.50 | | 5.30 | 3.30 | 0.04 | 45.00 | 27.00 | 0.01 | 0.01 | 59.00 | 0.12 | 35.00 | 0.05 | 9.30 | 0.11 | 13.00 | 32.00 | |
| DP-D09-21 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.95 | | 3.45 | 1.08 | 299.00 | | | | | 7.99 | 0.34 | 0.31 | 0.03 | 7.65 | 7.68 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.77 | | 2.05 | 0.39 | 1.41 | | | | | 0.45 | 0.09 | 0.13 | 0.03 | 0.35 | 0.32 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.70 | 5.30 | 2.00 | 0.80 | 298.00 | | | | | 7.67 | 0.27 | 0.22 | 0.01 | 7.40 | 7.45 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.20 | 5.78 | 4.90 | 1.35 | 300.00 | | | | | 8.30 | 0.40 | 0.40 | 0.05 | 7.90 | 7.91 | | | | | | | | | | | | | | | | | | |
| DP-D09-27 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.35 | | 7.00 | 1.51 | 289.50 | | | | | 1.79 | 0.68 | 0.65 | 0.03 | 1.12 | 1.14 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 3.04 | | 5.66 | 1.06 | 27.58 | | | | | 0.51 | 0.60 | 0.63 | 0.03 | 1.11 | 1.14 | | | | | | | | | | | | | | | | | | |
| | MIN | 20.20 | 4.95 | 3.00 | 0.76 | 270.00 | | | | | 1.43 | 0.25 | 0.20 | 0.01 | 0.34 | 0.34 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.50 | 6.00 | 11.00 | 2.26 | 309.00 | | | | | 2.15 | 1.10 | 1.09 | 0.05 | 1.90 | 1.95 | | | | | | | | | | | | | | | | | | |

# Table F.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | F | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-D10-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.80 | | 23.00 | 1.45 | 337.00 | | | | | 4.10 | 1.90 | 1.88 | 0.03 | 2.20 | 2.23 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.80 | 5.70 | 23.00 | 1.45 | 337.00 | | | | | 4.10 | 1.90 | 1.88 | 0.03 | 2.20 | 2.23 | | | | | | | | | | | | | | | | | | |
| | MAX | 23.80 | 5.70 | 23.00 | 1.45 | 337.00 | | | | | 4.10 | 1.90 | 1.88 | 0.03 | 2.20 | 2.23 | | | | | | | | | | | | | | | | | | |
| DP-D11-11 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.67 | | 20.45 | 1.60 | 461.67 | | | | 10.00 | 22.20 | 1.70 | 1.66 | 0.05 | 20.50 | 20.55 | 0.12 | | | | | 36.00 | 16.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.57 | | 14.92 | 0.63 | 18.61 | | | | | 6.51 | 0.14 | 0.09 | 0.05 | 6.36 | 6.41 | | | | | | 4.24 | | | | | | | | | | | | |
| | MIN | 21.70 | 5.20 | 9.90 | 1.10 | 442.00 | | | | 10.00 | 17.60 | 1.60 | 1.59 | 0.01 | 16.00 | 16.01 | 0.12 | | | | | 33.00 | 16.00 | 0.01 | | | | | | | | | | |
| | MAX | 26.30 | 5.30 | 31.00 | 2.30 | 479.00 | | | | 10.00 | 26.80 | 1.80 | 1.72 | 0.08 | 25.00 | 25.08 | 0.12 | | | | | 39.00 | 16.00 | 0.01 | | | | | | | | | | |
| DP-D12-11 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.73 | | 7.37 | 0.72 | 483.33 | | | | 10.50 | 18.13 | 2.63 | 2.14 | 0.50 | 15.50 | 16.00 | 0.11 | | 2.60 | 1.80 | 0.01 | 36.50 | 18.50 | 0.01 | 0.01 | 52.00 | 0.13 | 38.00 | 0.04 | 9.10 | 0.07 | 11.00 | 31.00 | |
| | STD. DEV. | 2.12 | | 2.43 | 0.45 | 5.51 | | | | 0.71 | 5.08 | 0.15 | 0.08 | 0.23 | 5.22 | 5.02 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.30 | 4.60 | 5.20 | 0.30 | 477.00 | | | | 10.00 | 12.30 | 2.50 | 2.06 | 0.29 | 9.50 | 10.24 | 0.11 | | 2.60 | 1.80 | 0.01 | 36.00 | 18.00 | 0.01 | 0.01 | 52.00 | 0.13 | 38.00 | 0.04 | 9.10 | 0.07 | 11.00 | 31.00 | |
| | MAX | 26.20 | 4.90 | 10.00 | 1.20 | 487.00 | | | | 11.00 | 21.60 | 2.80 | 2.21 | 0.74 | 19.00 | 19.46 | 0.11 | | 2.60 | 1.80 | 0.01 | 37.00 | 19.00 | 0.01 | 0.01 | 52.00 | 0.13 | 38.00 | 0.04 | 9.10 | 0.07 | 11.00 | 31.00 | |
| DP-E02-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.30 | | 4.90 | 2.41 | 98.50 | | | | | 2.02 | 0.42 | 0.40 | 0.02 | 1.60 | 1.62 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.30 | 5.50 | 4.90 | 2.41 | 98.50 | | | | | 2.02 | 0.42 | 0.40 | 0.02 | 1.60 | 1.62 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.30 | 5.50 | 4.90 | 2.41 | 98.50 | | | | | 2.02 | 0.42 | 0.40 | 0.02 | 1.60 | 1.62 | | | | | | | | | | | | | | | | | | |
| DP-E02-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.30 | | 5.00 | 0.46 | 158.90 | | | | | 0.64 | 0.22 | 0.21 | 0.01 | 0.42 | 0.43 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.30 | 5.10 | 5.00 | 0.46 | 158.90 | | | | | 0.64 | 0.22 | 0.21 | 0.01 | 0.42 | 0.43 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.30 | 5.10 | 5.00 | 0.46 | 158.90 | | | | | 0.64 | 0.22 | 0.21 | 0.01 | 0.42 | 0.43 | | | | | | | | | | | | | | | | | | |
| DP-E03-10 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.30 | | 6.90 | 2.21 | 211.30 | | | | | 2.61 | 0.81 | 0.74 | 0.08 | 1.80 | 1.88 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.30 | 5.30 | 6.90 | 2.21 | 211.30 | | | | | 2.61 | 0.81 | 0.74 | 0.08 | 1.80 | 1.88 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.30 | 5.30 | 6.90 | 2.21 | 211.30 | | | | | 2.61 | 0.81 | 0.74 | 0.08 | 1.80 | 1.88 | | | | | | | | | | | | | | | | | | |
| DP-E04-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 22.30 | | 2.00 | 3.49 | 90.60 | | | | 39.00 | 1.13 | 0.67 | 0.65 | 0.02 | 0.46 | 0.48 | 2.50 | | | 3.20 | 0.08 | 2.70 | 0.46 | 0.01 | 0.01 | 21.00 | 0.05 | 7.50 | 0.33 | 1.80 | 0.05 | 0.94 | 2.30 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.30 | 4.70 | 2.00 | 3.49 | 90.60 | | | | 39.00 | 1.13 | 0.67 | 0.65 | 0.02 | 0.46 | 0.48 | 2.50 | | | 3.20 | 0.08 | 2.70 | 0.46 | 0.01 | 0.01 | 21.00 | 0.05 | 7.50 | 0.33 | 1.80 | 0.05 | 0.94 | 2.30 | |
| | MAX | 22.30 | 4.70 | 2.00 | 3.49 | 90.60 | | | | 39.00 | 1.13 | 0.67 | 0.65 | 0.02 | 0.46 | 0.48 | 2.50 | | | 3.20 | 0.08 | 2.70 | 0.46 | 0.01 | 0.01 | 21.00 | 0.05 | 7.50 | 0.33 | 1.80 | 0.05 | 0.94 | 2.30 | |
| DP-E04-8 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.97 | | 3.45 | 1.21 | 144.03 | | | | 22.00 | 2.36 | 0.79 | 0.65 | 0.14 | 1.57 | 1.70 | 1.00 | | | | | 4.60 | 0.33 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.61 | | 2.05 | 0.54 | 59.33 | | | | | 2.04 | 0.30 | 0.46 | 0.16 | 1.75 | 1.59 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 22.00 | 4.00 | 2.00 | 0.60 | 76.00 | | | | 22.00 | 0.91 | 0.58 | 0.33 | 0.02 | 0.33 | 0.58 | 1.00 | | | | | 3.60 | 0.33 | 0.01 | | | | | | | | | | |
| | MAX | 26.90 | 4.90 | 4.90 | 1.60 | 185.00 | | | | 22.00 | 3.80 | 1.00 | 0.98 | 0.25 | 2.80 | 2.82 | 1.00 | | | | | 5.60 | 0.33 | 0.01 | | | | | | | | | | |
| DP-E05-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.80 | | 33.00 | 2.96 | 171.80 | | | | | 3.16 | 3.10 | 0.50 | 2.60 | 0.06 | 2.66 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.80 | 6.00 | 33.00 | 2.96 | 171.80 | | | | | 3.16 | 3.10 | 0.50 | 2.60 | 0.06 | 2.66 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.80 | 6.00 | 33.00 | 2.96 | 171.80 | | | | | 3.16 | 3.10 | 0.50 | 2.60 | 0.06 | 2.66 | | | | | | | | | | | | | | | | | | |
| DP-E06-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.80 | | 2.00 | 1.89 | 162.80 | | | | | 3.20 | 1.30 | 1.29 | 0.01 | 1.90 | 1.91 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.80 | 4.40 | 2.00 | 1.89 | 162.80 | | | | | 3.20 | 1.30 | 1.29 | 0.01 | 1.90 | 1.91 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.80 | 4.40 | 2.00 | 1.89 | 162.80 | | | | | 3.20 | 1.30 | 1.29 | 0.01 | 1.90 | 1.91 | | | | | | | | | | | | | | | | | | |
| DP-E06-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.70 | | 2.00 | 10.90 | 180.60 | | | | | 3.22 | 0.82 | 0.81 | 0.01 | 2.40 | 2.41 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.70 | 4.50 | 2.00 | 10.90 | 180.60 | | | | | 3.22 | 0.82 | 0.81 | 0.01 | 2.40 | 2.41 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.70 | 4.50 | 2.00 | 10.90 | 180.60 | | | | | 3.22 | 0.82 | 0.81 | 0.01 | 2.40 | 2.41 | | | | | | | | | | | | | | | | | | |
| DP-E07-10 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.83 | | 5.45 | 0.80 | 266.00 | | | | 11.00 | 9.25 | 1.75 | 1.66 | 0.09 | 7.50 | 7.59 | 0.12 | | | | | 12.00 | 7.20 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.08 | | 0.64 | 0.53 | 22.07 | | | | | 1.20 | 0.78 | 0.83 | 0.05 | 0.42 | 0.38 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 22.50 | 4.00 | 5.00 | 0.20 | 245.00 | | | | 11.00 | 8.40 | 1.20 | 1.08 | 0.05 | 7.20 | 7.32 | 0.12 | | | | | 12.00 | 7.20 | 0.01 | | | | | | | | | | |
| | MAX | 26.50 | 4.90 | 5.90 | 1.19 | 289.00 | | | | 11.00 | 10.10 | 2.30 | 2.25 | 0.12 | 7.80 | 7.85 | 0.12 | | | | | 12.00 | 7.20 | 0.01 | | | | | | | | | | |
| DP-E08-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.40 | | 3.00 | 1.83 | 326.00 | | | | | 12.00 | 2.10 | 2.09 | 0.01 | 9.90 | 9.91 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.40 | 5.00 | 3.00 | 1.83 | 326.00 | | | | | 12.00 | 2.10 | 2.09 | 0.01 | 9.90 | 9.91 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.40 | 5.00 | 3.00 | 1.83 | 326.00 | | | | | 12.00 | 2.10 | 2.09 | 0.01 | 9.90 | 9.91 | | | | | | | | | | | | | | | | | | |
| DP-E08-8 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.07 | | 3.00 | 0.84 | 333.33 | | | | 13.00 | 11.70 | 1.65 | 1.60 | 0.05 | 10.05 | 10.10 | 0.09 | | | | | 24.00 | 9.10 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.19 | | 0.00 | 0.62 | 25.40 | | | | | 1.27 | 0.07 | 0.01 | 0.06 | 1.34 | 1.28 | | | | | | 2.83 | | | | | | | | | | | | |
| | MIN | 22.60 | 4.20 | 3.00 | 0.30 | 304.00 | | | | 13.00 | 10.80 | 1.60 | 1.60 | 0.01 | 9.10 | 9.19 | 0.09 | | | | | 22.00 | 9.10 | 0.01 | | | | | | | | | | |
| | MAX | 26.80 | 5.00 | 3.00 | 1.52 | 348.00 | | | | 13.00 | 12.60 | 1.70 | 1.61 | 0.09 | 11.00 | 11.01 | 0.09 | | | | | 26.00 | 9.10 | 0.01 | | | | | | | | | | |

# Table F.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-E10-6 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.05 | | 2.50 | 0.70 | 379.50 | | | | | 10.15 | 1.35 | 1.33 | 0.03 | 8.80 | 8.83 | | | | | | 31.00 | 9.10 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.90 | | 0.71 | 0.14 | 38.89 | | | | | 0.64 | 0.21 | 0.18 | 0.03 | 0.42 | 0.45 | | | | | | | | | | | | | | | | | | |
| | MIN | 23.00 | 3.90 | 2.00 | 0.60 | 352.00 | | | | | 9.70 | 1.20 | 1.20 | 0.01 | 8.50 | 8.51 | | | | | | 31.00 | 9.10 | 0.01 | | | | | | | | | | |
| | MAX | 27.10 | 4.60 | 3.00 | 0.80 | 407.00 | | | | | 10.60 | 1.50 | 1.46 | 0.05 | 9.10 | 9.15 | | | | | | 31.00 | 9.10 | 0.01 | | | | | | | | | | |
| DP-E11-12 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.77 | | 8.45 | 0.53 | 478.67 | | | | 10.00 | 16.65 | 1.65 | 1.62 | 0.03 | 15.00 | 15.03 | 0.03 | | | | | 35.50 | 17.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.70 | | 0.64 | 0.40 | 33.71 | | | | | 2.90 | 0.07 | 0.05 | 0.02 | 2.83 | 2.85 | | | | | | 4.95 | | | | | | | | | | | | |
| | MIN | 23.00 | 5.00 | 8.00 | 0.30 | 441.00 | | | | 10.00 | 14.60 | 1.60 | 1.58 | 0.02 | 13.00 | 13.02 | 0.03 | | | | | 32.00 | 17.00 | 0.01 | | | | | | | | | | |
| | MAX | 26.40 | 5.10 | 8.90 | 0.99 | 506.00 | | | | 10.00 | 18.70 | 1.70 | 1.66 | 0.05 | 17.00 | 17.05 | 0.03 | | | | | 39.00 | 17.00 | 0.01 | | | | | | | | | | |
| DP-E12-10 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 0 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 23.53 | | 6.97 | 1.43 | 493.75 | | | | 17.00 | 22.60 | 1.60 | 1.47 | 0.13 | 21.00 | 21.13 | 0.03 | | 1.80 | 1.14 | 0.04 | 36.33 | 19.00 | 0.01 | 0.01 | 48.00 | 0.09 | 36.00 | 0.18 | 8.85 | 0.18 | 11.00 | 32.00 | |
| | STD. DEV. | 3.00 | | 4.34 | 2.17 | 24.31 | | | | 9.90 | 5.03 | 0.61 | 0.54 | 0.11 | 4.58 | 4.69 | 0.01 | | 0.85 | 0.37 | 0.04 | 4.51 | 4.24 | 0.00 | 0.00 | 1.41 | 0.02 | 4.24 | 0.13 | 1.48 | 0.04 | 0.00 | 1.41 | |
| | MIN | 19.20 | 4.90 | 2.00 | 0.30 | 462.00 | | | | 10.00 | 17.30 | 1.20 | 1.04 | 0.01 | 16.00 | 16.01 | 0.03 | | 1.20 | 0.88 | 0.01 | 32.00 | 16.00 | 0.01 | 0.01 | 47.00 | 0.08 | 33.00 | 0.09 | 7.80 | 0.15 | 11.00 | 31.00 | |
| | MAX | 25.90 | 5.48 | 10.00 | 4.68 | 520.00 | | | | 24.00 | 27.30 | 2.30 | 2.07 | 0.23 | 25.00 | 25.23 | 0.03 | | 2.40 | 1.40 | 0.06 | 41.00 | 22.00 | 0.01 | 0.01 | 49.00 | 0.10 | 39.00 | 0.27 | 9.90 | 0.21 | 11.00 | 33.00 | |
| DP-E12-15 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 0 | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 23.63 | | 5.97 | 1.12 | 519.75 | | | | 12.00 | 25.19 | 1.53 | 1.44 | 0.09 | 23.67 | 23.76 | 0.03 | | 2.20 | 1.16 | 0.05 | 37.00 | 22.50 | 0.01 | 0.10 | 54.00 | 0.11 | 37.50 | 0.04 | 8.55 | 0.04 | 12.50 | 38.50 | |
| | STD. DEV. | 1.87 | | 3.56 | 0.94 | 71.72 | | | | 2.83 | 5.07 | 0.86 | 0.96 | 0.14 | 5.86 | 5.92 | 0.02 | | | 0.34 | 0.03 | 6.56 | 7.78 | 0.00 | 0.12 | 0.00 | 0.01 | 3.54 | 0.01 | 2.05 | 0.01 | 0.71 | 7.78 | |
| | MIN | 21.90 | 4.88 | 2.00 | 0.40 | 460.00 | | | | 10.00 | 19.50 | 0.88 | 0.63 | 0.01 | 17.00 | 17.01 | 0.01 | | 2.20 | 0.92 | 0.03 | 31.00 | 17.00 | 0.01 | 0.01 | 54.00 | 0.10 | 35.00 | 0.03 | 7.10 | 0.03 | 12.00 | 33.00 | |
| | MAX | 25.70 | 5.20 | 8.90 | 2.47 | 607.00 | | | | 14.00 | 29.20 | 2.50 | 2.50 | 0.25 | 28.00 | 28.02 | 0.04 | | 2.20 | 1.40 | 0.08 | 44.00 | 28.00 | 0.01 | 0.18 | 54.00 | 0.12 | 40.00 | 0.05 | 10.00 | 0.05 | 13.00 | 44.00 | |
| DP-E12-22 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 0 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 |
| | MEAN | 23.08 | | 6.23 | 0.79 | 350.00 | | | | 10.00 | 13.18 | 1.75 | 1.64 | 0.11 | 11.43 | 11.53 | 0.08 | | 2.10 | 1.46 | 0.04 | 11.63 | 9.23 | 0.01 | 0.09 | 63.67 | 0.08 | 28.00 | 0.04 | 7.57 | 0.18 | 11.33 | 7.87 | |
| | STD. DEV. | 2.10 | | 4.20 | 0.79 | 77.05 | | | | 0.00 | 4.23 | 0.83 | 0.72 | 0.12 | 4.60 | 4.57 | | | 0.62 | 0.52 | 0.05 | 2.57 | 1.70 | 0.00 | 0.13 | 6.66 | 0.03 | 2.65 | 0.02 | 1.29 | 0.02 | 1.53 | 0.92 | |
| | MIN | 20.40 | 4.80 | 2.00 | 0.20 | 297.00 | | | | 10.00 | 8.90 | 1.00 | 0.95 | 0.01 | 7.60 | 7.61 | 0.04 | | 1.20 | 0.83 | 0.01 | 8.90 | 7.60 | 0.01 | 0.01 | 56.00 | 0.05 | 25.00 | 0.02 | 6.10 | 0.16 | 10.00 | 6.80 | |
| | MAX | 25.20 | 5.30 | 12.00 | 1.95 | 464.00 | | | | 10.00 | 19.00 | 2.90 | 2.61 | 0.29 | 18.00 | 18.05 | 0.13 | | 2.60 | 2.10 | 0.10 | 14.00 | 11.00 | 0.01 | 0.24 | 68.00 | 0.10 | 30.00 | 0.07 | 8.50 | 0.19 | 13.00 | 8.40 | |
| DP-E12-28 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 1 | 1 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.50 | | 3.33 | 0.85 | 305.50 | | | | 10.00 | 9.47 | 1.70 | 1.66 | 0.04 | 7.77 | 7.81 | 0.07 | | | 0.50 | 0.02 | 14.67 | 7.70 | 0.01 | 0.07 | 59.00 | 0.05 | 27.00 | 0.02 | 9.50 | 0.11 | 15.00 | 5.30 | |
| | STD. DEV. | 1.43 | | 1.15 | 0.78 | 11.73 | | | | | 2.68 | 0.72 | 0.71 | 0.03 | 2.10 | 2.09 | | | | | | 0.58 | 2.97 | 0.00 | | | | | | | | | | |
| | MIN | 21.90 | 4.80 | 2.00 | 0.40 | 295.00 | | | | 10.00 | 6.50 | 0.90 | 0.86 | 0.01 | 5.60 | 5.64 | 0.07 | | | 0.50 | 0.02 | 14.00 | 5.60 | 0.01 | 0.07 | 59.00 | 0.05 | 27.00 | 0.02 | 9.50 | 0.11 | 15.00 | 5.30 | |
| | MAX | 25.10 | 5.30 | 4.00 | 2.01 | 320.00 | | | | 10.00 | 11.70 | 2.30 | 2.23 | 0.07 | 9.80 | 9.81 | 0.07 | | | 0.50 | 0.02 | 15.00 | 9.80 | 0.01 | 0.07 | 59.00 | 0.05 | 27.00 | 0.02 | 9.50 | 0.11 | 15.00 | 5.30 | |
| DP-F03-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.70 | | 18.00 | 1.22 | 145.60 | | | | | 3.30 | 1.60 | 1.21 | 0.39 | 1.70 | 2.09 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.70 | 6.20 | 18.00 | 1.22 | 145.60 | | | | | 3.30 | 1.60 | 1.21 | 0.39 | 1.70 | 2.09 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.70 | 6.20 | 18.00 | 1.22 | 145.60 | | | | | 3.30 | 1.60 | 1.21 | 0.39 | 1.70 | 2.09 | | | | | | | | | | | | | | | | | | |
| DP-F04-17 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.97 | | 71.00 | 0.56 | 356.57 | | | | 11.00 | 2.42 | 0.35 | 0.32 | 0.03 | 2.07 | 2.10 | 0.08 | | | | | 13.30 | 2.10 | 0.24 | | | | | | | | | | |
| | STD. DEV. | 2.90 | | 26.87 | 0.25 | 69.51 | | | | | 0.38 | 0.00 | 0.00 | 0.00 | 0.38 | 0.38 | | | | | | 10.89 | | | | | | | | | | | | |
| | MIN | 22.00 | 5.80 | 52.00 | 0.30 | 280.00 | | | | 11.00 | 2.15 | 0.35 | 0.32 | 0.03 | 1.80 | 1.83 | 0.08 | | | | | 5.60 | 2.10 | 0.24 | | | | | | | | | | |
| | MAX | 27.80 | 7.30 | 90.00 | 0.80 | 415.70 | | | | 11.00 | 2.69 | 0.35 | 0.32 | 0.03 | 2.34 | 2.37 | 0.08 | | | | | 21.00 | 2.10 | 0.24 | | | | | | | | | | |
| DP-F04-22 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.35 | | 9.95 | 0.66 | 292.05 | | | | | 9.28 | 1.38 | 1.36 | 0.02 | 7.90 | 7.92 | | | | | | 12.00 | 7.60 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.19 | | 0.07 | 0.08 | 31.18 | | | | | 2.30 | 1.87 | 1.88 | 0.00 | 0.42 | 0.42 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.80 | 5.20 | 9.90 | 0.60 | 270.00 | | | | | 7.65 | 0.05 | 0.03 | 0.02 | 7.60 | 7.62 | | | | | | 12.00 | 7.60 | 0.01 | | | | | | | | | | |
| | MAX | 25.90 | 6.00 | 10.00 | 0.72 | 314.10 | | | | | 10.90 | 2.70 | 2.68 | 0.02 | 8.20 | 8.22 | | | | | | 12.00 | 7.60 | 0.01 | | | | | | | | | | |
| DP-F04-32 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.57 | | 55.50 | 0.61 | 323.53 | | | | 10.00 | 0.81 | 0.22 | 0.16 | 0.05 | 0.60 | 0.65 | 0.21 | | | | | 12.30 | 0.48 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.45 | | 19.09 | 0.38 | 29.52 | | | | | 0.21 | 0.05 | 0.06 | 0.01 | 0.16 | 0.15 | | | | | | 9.48 | | | | | | | | | | | | |
| | MIN | 23.10 | 5.90 | 42.00 | 0.30 | 290.00 | | | | 10.00 | 0.66 | 0.18 | 0.12 | 0.04 | 0.48 | 0.54 | 0.21 | | | | | 5.60 | 0.48 | 0.01 | | | | | | | | | | |
| | MAX | 26.00 | 6.90 | 69.00 | 1.04 | 345.60 | | | | 10.00 | 0.96 | 0.25 | 0.21 | 0.06 | 0.71 | 0.75 | 0.21 | | | | | 19.00 | 0.48 | 0.01 | | | | | | | | | | |
| DP-F05-5 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 28.25 | | 8.45 | 3.98 | 175.65 | | | | 10.00 | 1.69 | 1.42 | 1.29 | 0.13 | 0.27 | 0.40 | 0.18 | | | | | 4.30 | 0.42 | 0.10 | | | | | | | | | | |
| | STD. DEV. | 0.78 | | 2.19 | 4.78 | 3.32 | | | | | 1.03 | 1.39 | 1.39 | 0.00 | 0.36 | 0.36 | | | | | | | | | | | | | | | | | | |
| | MIN | 27.70 | 4.80 | 6.90 | 0.60 | 173.30 | | | | 10.00 | 0.96 | 0.44 | 0.31 | 0.13 | 0.01 | 0.14 | 0.18 | | | | | 4.30 | 0.42 | 0.10 | | | | | | | | | | |
| | MAX | 28.80 | 5.80 | 10.00 | 7.36 | 178.00 | | | | 10.00 | 2.41 | 2.40 | 2.27 | 0.13 | 0.52 | 0.65 | 0.18 | | | | | 4.30 | 0.42 | 0.10 | | | | | | | | | | |
| DP-F05-31 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.10 | | 69.00 | 1.70 | 187.10 | | | | 18.00 | 2.02 | 0.62 | 0.55 | 0.07 | 1.40 | 1.47 | 0.29 | | | 1.70 | 0.58 | 10.00 | 1.30 | 0.11 | 0.01 | 23.00 | 0.05 | 31.00 | 1.50 | 6.40 | 0.06 | 2.90 | 11.00 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.10 | 7.30 | 69.00 | 1.70 | 187.10 | | | | 18.00 | 2.02 | 0.62 | 0.55 | 0.07 | 1.40 | 1.47 | 0.29 | | | 1.70 | 0.58 | 10.00 | 1.30 | 0.11 | 0.01 | 23.00 | 0.05 | 31.00 | 1.50 | 6.40 | 0.06 | 2.90 | 11.00 | |
| | MAX | 24.10 | 7.30 | 69.00 | 1.70 | 187.10 | | | | 18.00 | 2.02 | 0.62 | 0.55 | 0.07 | 1.40 | 1.47 | 0.29 | | | 1.70 | 0.58 | 10.00 | 1.30 | 0.11 | 0.01 | 23.00 | 0.05 | 31.00 | 1.50 | 6.40 | 0.06 | 2.90 | 11.00 | |
| DP-F06-10 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.80 | | 4.00 | 0.30 | 190.60 | | | | | 1.83 | 0.33 | 0.27 | 0.06 | 1.50 | 1.56 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.80 | 5.20 | 4.00 | 0.30 | 190.60 | | | | | 1.83 | 0.33 | 0.27 | 0.06 | 1.50 | 1.56 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.80 | 5.20 | 4.00 | 0.30 | 190.60 | | | | | 1.83 | 0.33 | 0.27 | 0.06 | 1.50 | 1.56 | | | | | | | | | | | | | | | | | | |
| DP-F08-14 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.45 | | 225.00 | 3.69 | 956.50 | | | | | 7.05 | 1.05 | 0.91 | 0.14 | 6.00 | 6.14 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.07 | | 120.21 | 3.40 | 644.17 | | | | | 3.32 | 0.21 | 0.28 | 0.07 | 3.54 | 3.61 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.40 | 7.04 | 140.00 | 1.28 | 501.00 | | | | | 4.70 | 0.90 | 0.71 | 0.09 | 3.50 | 3.59 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.50 | 7.60 | 310.00 | 6.09 | 1412.00 | | | | | 9.40 | 1.20 | 1.11 | 0.19 | 8.50 | 8.69 | | | | | | | | | | | | | | | | | | |
| DP-F08-20 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 0 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.23 | | 7.63 | 0.80 | 337.15 | | | | 10.00 | 9.99 | 1.39 | 1.36 | 0.03 | 8.60 | 8.63 | 0.33 | | 3.00 | 1.60 | 0.03 | 12.33 | 7.90 | 0.01 | 0.01 | 65.00 | 0.05 | 32.00 | 0.07 | 7.30 | 0.22 | 14.00 | 6.40 | |
| | STD. DEV. | 1.34 | | 4.01 | 0.66 | 29.35 | | | | 0.00 | 1.38 | 0.64 | 0.64 | 0.00 | 1.40 | 1.40 | 0.00 | | | 1.13 | | 1.53 | 0.99 | 0.00 | | | | | | | | | | |
| | MIN | 23.10 | 5.00 | 3.00 | 0.40 | 298.00 | | | | 10.00 | 8.40 | 0.87 | 0.83 | 0.03 | 7.20 | 7.23 | 0.33 | | 3.00 | 0.80 | 0.03 | 11.00 | 7.20 | 0.01 | 0.01 | 65.00 | 0.05 | 32.00 | 0.07 | 7.30 | 0.22 | 14.00 | 6.40 | |
| | MAX | 25.90 | 6.34 | 10.00 | 1.77 | 368.00 | | | | 10.00 | 10.87 | 2.10 | 2.07 | 0.04 | 10.00 | 10.04 | 0.33 | | 3.00 | 2.40 | 0.03 | 14.00 | 8.60 | 0.01 | 0.01 | 65.00 | 0.05 | 32.00 | 0.07 | 7.30 | 0.22 | 14.00 | 6.40 | |

# Table F.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-F08-28 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.05 | | 21.00 | 0.73 | 319.48 | | | | | 3.26 | 0.69 | 0.63 | 0.06 | 2.57 | 2.63 | | | | | | 19.00 | 1.50 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.03 | | 12.77 | 0.68 | 14.81 | | | | | 1.23 | 0.38 | 0.41 | 0.08 | 0.95 | 0.99 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 23.10 | 5.10 | 10.00 | 0.30 | 298.00 | | | | | 1.84 | 0.34 | 0.31 | 0.01 | 1.50 | 1.53 | | | | | | 18.00 | 1.50 | 0.01 | | | | | | | | | | |
| | MAX | 25.40 | 6.30 | 35.00 | 1.73 | 332.00 | | | | | 4.00 | 1.10 | 1.09 | 0.15 | 3.30 | 3.45 | | | | | | 20.00 | 1.50 | 0.01 | | | | | | | | | | |
| DP-F09-05 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.80 | | 22.00 | 1.15 | 191.10 | | | | 24.00 | 3.40 | 1.50 | 1.27 | 0.23 | 1.90 | 2.13 | 0.27 | | | 7.70 | 0.10 | 10.00 | 1.90 | 0.01 | 0.03 | 26.00 | 0.05 | 14.00 | 5.80 | 3.50 | 0.37 | 4.70 | 9.10 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.80 | 6.60 | 22.00 | 1.15 | 191.10 | | | | 24.00 | 3.40 | 1.50 | 1.27 | 0.23 | 1.90 | 2.13 | 0.27 | | | 7.70 | 0.10 | 10.00 | 1.90 | 0.01 | 0.03 | 26.00 | 0.05 | 14.00 | 5.80 | 3.50 | 0.37 | 4.70 | 9.10 | |
| | MAX | 24.80 | 6.60 | 22.00 | 1.15 | 191.10 | | | | 24.00 | 3.40 | 1.50 | 1.27 | 0.23 | 1.90 | 2.13 | 0.27 | | | 7.70 | 0.10 | 10.00 | 1.90 | 0.01 | 0.03 | 26.00 | 0.05 | 14.00 | 5.80 | 3.50 | 0.37 | 4.70 | 9.10 | |
| DP-F10-11 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.53 | | 6.00 | 0.57 | 471.30 | | | | 10.00 | 24.50 | 2.50 | 1.76 | 0.74 | 22.00 | 22.74 | 0.08 | | 2.00 | 1.50 | 0.18 | 31.50 | 14.00 | 0.01 | 0.04 | 55.00 | 0.09 | 30.00 | 0.05 | 7.90 | 0.15 | 9.10 | 29.00 | |
| | STD. DEV. | 2.93 | | 5.66 | 0.21 | 23.34 | | | | | 11.03 | 0.28 | 0.79 | 0.51 | 11.31 | 11.82 | | | | | | 0.71 | | | | | | | | | | | | |
| | MIN | 21.30 | 4.20 | 2.00 | 0.40 | 446.00 | | | | 10.00 | 16.70 | 2.30 | 1.20 | 0.38 | 14.00 | 14.38 | 0.08 | | 2.00 | 1.50 | 0.18 | 31.00 | 14.00 | 0.01 | 0.04 | 55.00 | 0.09 | 30.00 | 0.05 | 7.90 | 0.15 | 9.10 | 29.00 | |
| | MAX | 27.00 | 4.90 | 10.00 | 0.80 | 492.00 | | | | 10.00 | 32.30 | 2.70 | 2.32 | 1.10 | 30.00 | 31.10 | 0.08 | | 2.00 | 1.50 | 0.18 | 32.00 | 14.00 | 0.01 | 0.04 | 55.00 | 0.09 | 30.00 | 0.05 | 7.90 | 0.15 | 9.10 | 29.00 | |
| DP-F11-11 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.53 | | 6.97 | 1.99 | 403.68 | | | | 10.00 | 16.53 | 1.53 | 0.85 | 0.68 | 15.00 | 15.68 | 0.10 | | | | | 31.50 | 11.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 3.67 | | 4.34 | 2.23 | 34.61 | | | | | 5.29 | 0.15 | 0.57 | 0.73 | 5.29 | 5.27 | | | | | | 0.71 | | | | | | | | | | | | |
| | MIN | 19.50 | 4.80 | 2.00 | 0.30 | 366.00 | | | | 10.00 | 12.40 | 1.40 | 0.20 | 0.11 | 11.00 | 11.11 | 0.10 | | | | | 31.00 | 11.00 | 0.01 | | | | | | | | | | |
| | MAX | 27.20 | 5.35 | 10.00 | 5.26 | 447.00 | | | | 10.00 | 22.50 | 1.70 | 1.29 | 1.50 | 21.00 | 21.44 | 0.10 | | | | | 32.00 | 11.00 | 0.01 | | | | | | | | | | |
| DP-F11-15 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.85 | | 6.63 | 1.16 | 494.08 | | | | 10.00 | 26.37 | 1.37 | 1.18 | 0.19 | 25.00 | 25.19 | 0.28 | | | | | 33.00 | 18.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.95 | | 4.15 | 1.66 | 38.93 | | | | | 5.95 | 0.23 | 0.40 | 0.17 | 6.08 | 6.21 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 21.80 | 4.70 | 2.00 | 0.20 | 453.30 | | | | 10.00 | 19.50 | 1.10 | 0.72 | 0.05 | 18.00 | 18.05 | 0.28 | | | | | 32.00 | 18.00 | 0.01 | | | | | | | | | | |
| | MAX | 26.20 | 5.10 | 10.00 | 3.64 | 547.00 | | | | 10.00 | 30.10 | 1.50 | 1.45 | 0.38 | 29.00 | 29.38 | 0.28 | | | | | 34.00 | 18.00 | 0.01 | | | | | | | | | | |
| DP-F11-18 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.90 | | 6.63 | 1.07 | 390.23 | | | | 11.00 | 16.58 | 0.91 | 0.87 | 0.04 | 15.67 | 15.71 | 0.09 | | 4.10 | 1.30 | | 13.95 | 7.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.58 | | 4.15 | 1.03 | 97.46 | | | | | 8.24 | 0.96 | 0.94 | 0.02 | 7.77 | 7.77 | | | | | | 7.14 | | | | | | | | | | | | |
| | MIN | 22.20 | 5.00 | 2.00 | 0.30 | 271.00 | | | | 11.00 | 7.18 | 0.18 | 0.14 | 0.02 | 7.00 | 7.04 | 0.09 | | 4.10 | 1.30 | | 8.90 | 7.00 | 0.01 | | | | | | | | | | |
| | MAX | 25.80 | 5.40 | 10.00 | 2.48 | 497.00 | | | | 11.00 | 22.55 | 2.00 | 1.93 | 0.07 | 22.00 | 22.02 | 0.09 | | 4.10 | 1.30 | | 19.00 | 7.00 | 0.01 | | | | | | | | | | |
| DP-F11-21 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.80 | | 5.97 | 0.83 | 346.10 | | | | 34.00 | 16.39 | 0.89 | 0.86 | 0.02 | 15.50 | 15.52 | 0.81 | | | | | 11.50 | 7.50 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.47 | | 4.00 | 0.85 | 75.07 | | | | | 6.94 | 0.23 | 0.24 | 0.02 | 6.95 | 6.93 | | | | | | 2.12 | | | | | | | | | | | | |
| | MIN | 22.50 | 4.90 | 2.00 | 0.40 | 298.00 | | | | 34.00 | 8.42 | 0.64 | 0.62 | 0.01 | 7.50 | 7.55 | 0.81 | | | | | 10.00 | 7.50 | 0.01 | | | | | | | | | | |
| | MAX | 25.60 | 5.20 | 10.00 | 2.10 | 458.00 | | | | 34.00 | 21.10 | 1.10 | 1.10 | 0.05 | 20.00 | 20.01 | 0.81 | | | | | 13.00 | 7.50 | 0.01 | | | | | | | | | | |
| DP-F11-24 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.88 | | 5.33 | 0.56 | 345.53 | | | | 10.00 | 16.89 | 0.89 | 0.87 | 0.02 | 16.00 | 16.02 | 0.35 | | | | | 15.50 | 10.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.25 | | 4.16 | 0.43 | 86.51 | | | | | 6.22 | 0.36 | 0.37 | 0.01 | 6.56 | 6.55 | | | | | | 0.71 | | | | | | | | | | | | |
| | MIN | 22.80 | 4.80 | 2.00 | 0.20 | 296.00 | | | | 10.00 | 11.10 | 0.47 | 0.45 | 0.01 | 10.00 | 10.03 | 0.35 | | | | | 15.00 | 10.00 | 0.01 | | | | | | | | | | |
| | MAX | 25.40 | 5.10 | 10.00 | 1.15 | 475.00 | | | | 10.00 | 23.47 | 1.10 | 1.09 | 0.03 | 23.00 | 23.02 | 0.35 | | | | | 16.00 | 10.00 | 0.01 | | | | | | | | | | |
| DP-F11-27 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.03 | | 5.63 | 0.45 | 310.38 | | | | 10.00 | 6.08 | 0.84 | 0.82 | 0.03 | 5.23 | 5.26 | 0.55 | | | | | 16.00 | 4.70 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 0.98 | | 4.05 | 0.26 | 14.51 | | | | | 2.20 | 0.45 | 0.47 | 0.02 | 1.86 | 1.85 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 23.20 | 4.90 | 2.00 | 0.20 | 297.00 | | | | 10.00 | 4.53 | 0.40 | 0.36 | 0.01 | 3.70 | 3.73 | 0.55 | | | | | 16.00 | 4.70 | 0.01 | | | | | | | | | | |
| | MAX | 25.30 | 5.30 | 10.00 | 0.82 | 331.00 | | | | 10.00 | 8.60 | 1.30 | 1.29 | 0.04 | 7.30 | 7.31 | 0.55 | | | | | 16.00 | 4.70 | 0.01 | | | | | | | | | | |
| DP-F12-10 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.50 | | 2.00 | 0.57 | 450.00 | | | | 10.00 | 18.39 | 0.89 | 0.77 | 0.12 | 17.50 | 17.62 | 0.10 | | | | | 34.00 | 12.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.69 | | 0.00 | 0.35 | 43.35 | | | | | 8.64 | 0.86 | 0.80 | 0.06 | 7.78 | 7.84 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 21.50 | 3.80 | 2.00 | 0.20 | 423.00 | | | | 10.00 | 12.28 | 0.28 | 0.21 | 0.07 | 12.00 | 12.07 | 0.10 | | | | | 34.00 | 12.00 | 0.01 | | | | | | | | | | |
| | MAX | 26.70 | 5.00 | 2.00 | 0.90 | 500.00 | | | | 10.00 | 24.50 | 1.50 | 1.34 | 0.16 | 23.00 | 23.16 | 0.10 | | | | | 34.00 | 12.00 | 0.01 | | | | | | | | | | |
| DP-F15-14 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.38 | | 14.00 | 0.59 | 466.15 | | | | 10.00 | 22.50 | 0.83 | 0.71 | 0.13 | 21.67 | 21.79 | 0.07 | | 1.90 | 2.00 | 0.10 | 32.50 | 17.00 | 0.01 | 0.01 | 61.00 | 0.11 | 33.00 | 0.05 | 9.20 | 0.17 | 14.00 | 34.00 | |
| | STD. DEV. | 2.19 | | 7.00 | 0.36 | 44.47 | | | | | 8.03 | 0.63 | 0.69 | 0.06 | 8.08 | 8.08 | | | | | | 2.12 | | | | | | | | | | | | |
| | MIN | 21.50 | 4.50 | 9.00 | 0.30 | 408.60 | | | | 10.00 | 17.26 | 0.26 | 0.07 | 0.07 | 17.00 | 17.07 | 0.07 | | 1.90 | 2.00 | 0.10 | 31.00 | 17.00 | 0.01 | 0.01 | 61.00 | 0.11 | 33.00 | 0.05 | 9.20 | 0.17 | 14.00 | 34.00 | |
| | MAX | 26.10 | 5.20 | 22.00 | 1.11 | 512.00 | | | | 10.00 | 31.74 | 1.50 | 1.43 | 0.19 | 31.00 | 31.12 | 0.07 | | 1.90 | 2.00 | 0.10 | 34.00 | 17.00 | 0.01 | 0.01 | 61.00 | 0.11 | 33.00 | 0.05 | 9.20 | 0.17 | 14.00 | 34.00 | |
| DP-F15-20 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.53 | | 9.33 | 0.53 | 420.25 | | | | 10.00 | 19.32 | 0.68 | 0.62 | 0.06 | 18.63 | 18.69 | 0.50 | | 1.10 | 1.20 | | 14.00 | 7.90 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.58 | | 3.79 | 0.22 | 157.51 | | | | | 10.58 | 0.62 | 0.67 | 0.09 | 10.55 | 10.48 | | | | | | 5.66 | | | | | | | | | | | | |
| | MIN | 22.10 | 4.60 | 5.00 | 0.30 | 290.00 | | | | 10.00 | 8.24 | 0.31 | 0.18 | 0.01 | 7.90 | 8.06 | 0.50 | | 1.10 | 1.20 | | 10.00 | 7.90 | 0.01 | | | | | | | | | | |
| | MAX | 25.30 | 5.40 | 12.00 | 0.78 | 649.00 | | | | 10.00 | 29.31 | 1.40 | 1.40 | 0.16 | 29.00 | 29.02 | 0.50 | | 1.10 | 1.20 | | 18.00 | 7.90 | 0.01 | | | | | | | | | | |
| DP-F15-26 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.43 | | 3.33 | 0.45 | 299.20 | | | | 10.00 | 13.45 | 1.11 | 1.07 | 0.04 | 12.33 | 12.37 | 0.12 | | | | | 13.50 | 9.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.55 | | 1.15 | 0.26 | 17.49 | | | | | 4.42 | 0.51 | 0.48 | 0.03 | 4.16 | 4.19 | | | | | | 0.71 | | | | | | | | | | | | |
| | MIN | 21.80 | 4.30 | 2.00 | 0.20 | 280.00 | | | | 10.00 | 10.30 | 0.54 | 0.52 | 0.02 | 9.00 | 9.03 | 0.12 | | | | | 13.00 | 9.00 | 0.01 | | | | | | | | | | |
| | MAX | 25.20 | 5.20 | 4.00 | 0.78 | 320.00 | | | | 10.00 | 18.50 | 1.50 | 1.43 | 0.07 | 17.00 | 17.07 | 0.12 | | | | | 14.00 | 9.00 | 0.01 | | | | | | | | | | |
| DP-G05-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 26.20 | | 22.00 | 2.49 | 151.90 | | | | 32.00 | 2.04 | 1.90 | 0.50 | 1.40 | 0.14 | 1.54 | 0.43 | | | 8.70 | 0.08 | 4.10 | 0.14 | 0.01 | 0.18 | 30.00 | 0.05 | 11.00 | 8.20 | 3.30 | 0.40 | 2.80 | 2.60 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 26.20 | 6.10 | 22.00 | 2.49 | 151.90 | | | | 32.00 | 2.04 | 1.90 | 0.50 | 1.40 | 0.14 | 1.54 | 0.43 | | | 8.70 | 0.08 | 4.10 | 0.14 | 0.01 | 0.18 | 30.00 | 0.05 | 11.00 | 8.20 | 3.30 | 0.40 | 2.80 | 2.60 | |
| | MAX | 26.20 | 6.10 | 22.00 | 2.49 | 151.90 | | | | 32.00 | 2.04 | 1.90 | 0.50 | 1.40 | 0.14 | 1.54 | 0.43 | | | 8.70 | 0.08 | 4.10 | 0.14 | 0.01 | 0.18 | 30.00 | 0.05 | 11.00 | 8.20 | 3.30 | 0.40 | 2.80 | 2.60 | |
| DP-G06-7 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 28.90 | | 34.00 | 2.36 | 184.00 | | | | | 0.68 | 0.55 | 0.28 | 0.27 | 0.13 | 0.40 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 28.90 | 6.20 | 34.00 | 2.36 | 184.00 | | | | | 0.68 | 0.55 | 0.28 | 0.27 | 0.13 | 0.40 | | | | | | | | | | | | | | | | | | |
| | MAX | 28.90 | 6.20 | 34.00 | 2.36 | 184.00 | | | | | 0.68 | 0.55 | 0.28 | 0.27 | 0.13 | 0.40 | | | | | | | | | | | | | | | | | | |

# Table F.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-G07-13 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | MEAN | 28.3 | | 10.5 | 2.0 | 237.0 | | | | | 2.79 | 1.00 | 0.83 | 0.17 | 1.79 | 1.96 | | | | | | 5.8 | 0.88 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.7 | | 4.9 | 1.2 | 16.1 | | | | | 0.86 | 0.42 | 0.65 | 0.23 | 1.29 | 1.51 | | | | | | 0.1 | | | | | | | | | | | | |
| | MIN | 25.2 | 5.2 | 7 | 0.8 | 224 | | | | | 2.18 | 0.70 | 0.37 | 0.01 | 0.88 | 0.89 | | | | | | 5.7 | 0.88 | 0.01 | | | | | | | | | | |
| | MAX | 29.9 | 5.8 | 14 | 3.1 | 255 | | | | | 3.40 | 1.30 | 1.29 | 0.33 | 2.7 | 3.03 | | | | | | 5.8 | 0.88 | 0.01 | | | | | | | | | | |
| DP-G07-15 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | MEAN | 24.78 | | 5.37 | 1.51 | 273.25 | | | | 10.00 | 4.14 | 0.61 | 0.59 | 0.02 | 3.53 | 3.55 | 1.40 | | | | | 5.65 | 1.80 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 3.13 | | 1.18 | 1.23 | 17.27 | | | | | 1.27 | 0.24 | 0.24 | 0.02 | 1.50 | 1.51 | | | | | | 0.92 | | | | | | | | | | | | |
| | MIN | 21.40 | 4.70 | 4.00 | 0.70 | 254.00 | | | | 10.00 | 2.68 | 0.45 | 0.45 | 0.01 | 1.80 | 1.81 | 1.40 | | | | | 5.00 | 1.80 | 0.01 | | | | | | | | | | |
| | MAX | 28.70 | 5.53 | 6.10 | 3.33 | 296.00 | | | | 10.00 | 4.95 | 0.88 | 0.87 | 0.04 | 4.50 | 4.51 | 1.40 | | | | | 6.30 | 1.80 | 0.01 | | | | | | | | | | |
| DP-G07-17 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | MEAN | 24.03 | | 5.00 | 1.23 | 316.50 | | | | | 7.77 | 1.04 | 1.03 | 0.01 | 6.73 | 6.74 | | | | | | 8.30 | 4.60 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.71 | | 0.10 | 0.79 | 15.42 | | | | | 1.96 | 0.70 | 0.69 | 0.00 | 2.15 | 2.15 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 21.90 | 4.80 | 4.90 | 0.40 | 300.00 | | | | | 6.30 | 0.31 | 0.31 | 0.01 | 4.60 | 4.61 | | | | | | 7.30 | 4.60 | 0.01 | | | | | | | | | | |
| | MAX | 26.00 | 5.36 | 5.10 | 2.19 | 337.00 | | | | | 10.00 | 1.70 | 1.69 | 0.01 | 8.90 | 8.91 | | | | | | 9.30 | 4.60 | 0.01 | | | | | | | | | | |
| DP-G07-21 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 23.80 | | 5.05 | 0.98 | 319.00 | | | | 10.00 | 12.33 | 1.58 | 1.55 | 0.02 | 10.75 | 10.77 | 0.57 | | 1.70 | 1.24 | 0.07 | 14.00 | 9.00 | 0.01 | 0.01 | 60.00 | 0.06 | 24.00 | 0.06 | 8.65 | 0.19 | 12.35 | 7.45 | | |
| | STD. DEV. | 1.49 | | 0.87 | 0.60 | 30.80 | | | | 0.00 | 2.45 | 0.89 | 0.86 | 0.03 | 2.10 | 2.12 | | | 0.85 | 0.79 | 0.07 | 2.83 | 0.71 | 0.00 | 0.00 | 24.04 | 0.01 | 7.07 | 0.03 | 0.21 | 0.02 | 3.75 | 0.07 | | |
| | MIN | 22.20 | 4.60 | 4.00 | 0.40 | 274.00 | | | | 10.00 | 9.80 | 0.51 | 0.51 | 0.01 | 8.50 | 8.51 | 0.57 | | 1.10 | 0.68 | 0.02 | 12.00 | 8.50 | 0.01 | 0.01 | 43.00 | 0.05 | 19.00 | 0.05 | 8.50 | 0.17 | 9.70 | 7.40 | | |
| | MAX | 25.30 | 5.60 | 6.10 | 1.66 | 343.00 | | | | 10.00 | 15.60 | 2.60 | 2.53 | 0.07 | 13.00 | 13.07 | 0.57 | | 2.30 | 1.80 | 0.12 | 16.00 | 9.50 | 0.01 | 0.01 | 77.00 | 0.07 | 29.00 | 0.08 | 8.80 | 0.20 | 15.00 | 7.50 | | |
| DP-G07-24 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | MEAN | 23.85 | | 5.67 | 0.82 | 289.25 | | | | | 13.31 | 1.60 | 1.59 | 0.01 | 11.71 | 11.72 | | | | | | 13.50 | 8.00 | 0.14 | | | | | | | | | | |
| | STD. DEV. | 1.52 | | 1.24 | 0.26 | 13.84 | | | | | 2.96 | 1.01 | 1.01 | 0.00 | 3.13 | 3.13 | | | | | | 3.54 | | | | | | | | | | | | |
| | MIN | 22.30 | 4.70 | 4.90 | 0.60 | 271.00 | | | | | 9.94 | 0.50 | 0.50 | 0.01 | 8.14 | 8.15 | | | | | | 11.00 | 8.00 | 0.14 | | | | | | | | | | |
| | MAX | 25.60 | 5.70 | 7.10 | 1.13 | 300.00 | | | | | 15.50 | 2.50 | 2.50 | 0.01 | 14.00 | 14.01 | | | | | | 16.00 | 8.00 | 0.14 | | | | | | | | | | |
| DP-G07-27 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | MEAN | 23.88 | | 4.70 | 1.33 | 305.25 | | | | | 11.85 | 1.71 | 1.71 | 0.01 | 10.13 | 10.14 | | | | | | 15.00 | 7.70 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.73 | | 0.61 | 0.36 | 13.82 | | | | | 5.17 | 1.03 | 1.03 | 0.00 | 4.21 | 4.21 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 22.30 | 4.70 | 4.00 | 0.95 | 293.00 | | | | | 8.44 | 0.74 | 0.74 | 0.01 | 7.70 | 7.71 | | | | | | 15.00 | 7.70 | 0.01 | | | | | | | | | | |
| | MAX | 25.70 | 5.20 | 5.10 | 1.80 | 325.00 | | | | | 17.80 | 2.80 | 2.80 | 0.01 | 15.00 | 15.01 | | | | | | 15.00 | 7.70 | 0.01 | | | | | | | | | | |
| DP-G08-05 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 27.10 | | 7.95 | 4.32 | 165.90 | | | | 10.00 | 2.00 | 0.93 | 0.88 | 0.04 | 1.08 | 1.12 | 0.14 | | 3.90 | 3.40 | 0.50 | 3.80 | 0.55 | 0.01 | 0.05 | 46.00 | 0.05 | 13.00 | 3.60 | 3.70 | 0.26 | 4.30 | 3.30 | | |
| | STD. DEV. | 1.41 | | 4.31 | 4.70 | 11.46 | | | | | 0.74 | 0.01 | 0.05 | 0.05 | 0.74 | 0.69 | | | | | | | | | | | | | | | | | | |
| | MIN | 26.10 | 5.60 | 4.90 | 1.00 | 157.80 | | | | 10.00 | 1.48 | 0.92 | 0.85 | 0.01 | 0.55 | 0.63 | 0.14 | | 3.90 | 3.40 | 0.50 | 3.80 | 0.55 | 0.01 | 0.05 | 46.00 | 0.05 | 13.00 | 3.60 | 3.70 | 0.26 | 4.30 | 3.30 | | |
| | MAX | 28.10 | 5.70 | 11.00 | 7.64 | 174.00 | | | | 10.00 | 2.52 | 0.93 | 0.92 | 0.08 | 1.60 | 1.61 | 0.14 | | 3.90 | 3.40 | 0.50 | 3.80 | 0.55 | 0.01 | 0.05 | 46.00 | 0.05 | 13.00 | 3.60 | 3.70 | 0.26 | 4.30 | 3.30 | | |
| DP-G09-11 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 26.73 | | 9.45 | 2.13 | 287.67 | | | | 25.50 | 7.21 | 0.66 | 0.65 | 0.01 | 6.55 | 6.56 | 0.22 | | | 1.30 | 0.04 | 10.67 | 6.55 | 0.01 | 0.01 | 51.00 | 0.05 | 27.00 | 1.10 | 5.60 | 0.26 | 7.00 | 12.00 | | |
| | STD. DEV. | 2.38 | | 2.19 | 0.75 | 10.26 | | | | 21.92 | 4.23 | 0.62 | 0.62 | 0.00 | 3.61 | 3.61 | 0.16 | | | | | 2.08 | 3.61 | 0.00 | | | | | | | | | | | |
| | MIN | 24.00 | 5.40 | 7.90 | 1.40 | 279.00 | | | | 10.00 | 4.22 | 0.22 | 0.21 | 0.01 | 4.00 | 4.01 | 0.11 | | | 1.30 | 0.04 | 9.00 | 4.00 | 0.01 | 0.01 | 51.00 | 0.05 | 27.00 | 1.10 | 5.60 | 0.26 | 7.00 | 12.00 | | |
| | MAX | 28.30 | 5.60 | 11.00 | 2.90 | 299.00 | | | | 41.00 | 10.20 | 1.10 | 1.09 | 0.01 | 9.10 | 9.11 | 0.33 | | | 1.30 | 0.04 | 13.00 | 9.10 | 0.01 | 0.01 | 51.00 | 0.05 | 27.00 | 1.10 | 5.60 | 0.26 | 7.00 | 12.00 | | |
| DP-G11-8 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | MEAN | 25.33 | | 3.50 | 1.03 | 308.67 | | | | 10.00 | 12.65 | 2.25 | 2.24 | 0.01 | 10.40 | 10.41 | 0.06 | | | | | 22.00 | 8.80 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 3.59 | | 0.71 | 0.34 | 12.34 | | | | | 2.19 | 0.07 | 0.07 | 0.00 | 2.26 | 2.27 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 21.20 | 4.60 | 3.00 | 0.70 | 295.00 | | | | 10.00 | 11.10 | 2.20 | 2.19 | 0.01 | 8.80 | 8.81 | 0.06 | | | | | 21.00 | 8.80 | 0.01 | | | | | | | | | | |
| | MAX | 27.60 | 5.10 | 4.00 | 1.38 | 319.00 | | | | 10.00 | 14.20 | 2.30 | 2.29 | 0.02 | 12.00 | 12.02 | 0.06 | | | | | 23.00 | 8.80 | 0.01 | | | | | | | | | | |
| DP-G12-9 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.23 | | 2.33 | 2.07 | 354.33 | | | | 11.00 | 11.63 | 1.80 | 1.98 | 0.03 | 9.83 | 9.86 | 0.19 | | 4.60 | 2.20 | 0.17 | 26.50 | 9.65 | 0.11 | 0.01 | 60.00 | 0.06 | 22.00 | 0.81 | 5.90 | 0.15 | 5.60 | 23.00 | | |
| | STD. DEV. | 2.60 | | 0.58 | 1.67 | 11.72 | | | | 1.41 | 0.80 | 0.46 | 0.44 | 0.02 | 0.38 | 0.37 | | | | | | 0.71 | 0.35 | 0.13 | | | | | | | | | | |
| | MIN | 21.40 | 4.20 | 2.00 | 0.20 | 341.00 | | | | 10.00 | 10.80 | 1.40 | 1.66 | 0.01 | 9.40 | 9.44 | 0.19 | | 4.60 | 2.20 | 0.17 | 26.00 | 9.40 | 0.01 | 0.01 | 60.00 | 0.06 | 22.00 | 0.81 | 5.90 | 0.15 | 5.60 | 23.00 | | |
| | MAX | 26.50 | 5.00 | 3.00 | 3.40 | 363.00 | | | | 12.00 | 12.40 | 2.30 | 2.29 | 0.04 | 10.10 | 10.11 | 0.19 | | 4.60 | 2.20 | 0.17 | 27.00 | 9.90 | 0.20 | 0.01 | 60.00 | 0.06 | 22.00 | 0.81 | 5.90 | 0.15 | 5.60 | 23.00 | | |
| DP-G12-15 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 23.88 | | 5.80 | 0.61 | 472.00 | | | | 10.00 | 23.33 | 2.08 | 1.76 | 0.31 | 21.25 | 21.56 | 1.10 | | 2.90 | 1.75 | 0.04 | 30.50 | 17.50 | 0.01 | 0.03 | 53.50 | 0.07 | 31.00 | 0.34 | 8.00 | 0.20 | 10.70 | 26.50 | | |
| | STD. DEV. | 2.16 | | 0.84 | 0.37 | 40.02 | | | | 0.00 | 5.24 | 1.16 | 1.15 | 0.08 | 4.86 | 4.79 | | | 0.99 | 0.49 | 0.03 | 3.54 | 3.54 | 0.00 | 0.02 | 0.71 | 0.02 | 5.66 | 0.23 | 1.56 | 0.02 | 1.84 | 3.54 | | |
| | MIN | 21.80 | 4.70 | 5.10 | 0.20 | 415.00 | | | | 10.00 | 16.20 | 1.00 | 0.78 | 0.22 | 15.00 | 15.39 | 1.10 | | 2.20 | 1.40 | 0.01 | 28.00 | 15.00 | 0.01 | 0.01 | 53.00 | 0.06 | 27.00 | 0.17 | 6.90 | 0.18 | 9.40 | 24.00 | | |
| | MAX | 26.20 | 5.50 | 6.90 | 0.96 | 508.00 | | | | 10.00 | 28.70 | 3.40 | 3.04 | 0.39 | 26.00 | 26.28 | 1.10 | | 3.60 | 2.10 | 0.06 | 33.00 | 20.00 | 0.01 | 0.04 | 54.00 | 0.09 | 35.00 | 0.50 | 9.10 | 0.21 | 12.00 | 29.00 | | |
| DP-G12-18 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.20 | | 8.45 | 0.73 | 400.33 | | | | 26.00 | 18.15 | 1.45 | 1.44 | 0.01 | 16.70 | 16.71 | 1.10 | | 3.30 | 2.10 | 0.06 | 18.35 | 4.40 | 0.01 | 0.06 | 67.00 | 0.10 | 21.00 | 0.59 | 5.70 | 0.11 | 8.90 | 12.00 | | |
| | STD. DEV. | 1.83 | | 2.19 | 0.61 | 120.79 | | | | | 17.75 | 0.35 | 0.36 | 0.00 | 17.39 | 17.39 | | | | | | 15.06 | | | | | | | | | | | | |
| | MIN | 22.20 | 4.80 | 6.90 | 0.20 | 264.00 | | | | 26.00 | 5.60 | 1.20 | 1.19 | 0.01 | 4.40 | 4.41 | 1.10 | | 3.30 | 2.10 | 0.06 | 7.70 | 4.40 | 0.01 | 0.06 | 67.00 | 0.10 | 21.00 | 0.59 | 5.70 | 0.11 | 8.90 | 12.00 | | |
| | MAX | 25.80 | 5.30 | 10.00 | 1.40 | 494.00 | | | | 26.00 | 30.70 | 1.70 | 1.70 | 0.01 | 29.00 | 29.01 | 1.10 | | 3.30 | 2.10 | 0.06 | 29.00 | 4.40 | 0.01 | 0.06 | 67.00 | 0.10 | 21.00 | 0.59 | 5.70 | 0.11 | 8.90 | 12.00 | | |
| DP-G12-21 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.83 | | 7.58 | 0.52 | 413.25 | | | | 10.00 | 18.07 | 2.02 | 1.98 | 0.03 | 16.05 | 16.08 | 0.37 | | 3.50 | 2.00 | 0.01 | 11.90 | 10.10 | 0.01 | 0.01 | 62.00 | 0.07 | 33.00 | 0.18 | 7.60 | 0.18 | 15.00 | 12.00 | | |
| | STD. DEV. | 1.37 | | 2.57 | 0.36 | 156.40 | | | | 0.00 | 9.39 | 1.66 | 1.62 | 0.05 | 10.33 | 10.32 | | | | | | 2.97 | 4.10 | 0.00 | | | | | | | | | | |
| | MIN | 22.70 | 4.90 | 4.10 | 0.10 | 271.00 | | | | 10.00 | 8.70 | 0.06 | 0.06 | 0.01 | 7.20 | 7.21 | 0.37 | | 3.50 | 2.00 | 0.01 | 9.80 | 7.20 | 0.01 | 0.01 | 62.00 | 0.07 | 33.00 | 0.18 | 7.60 | 0.18 | 15.00 | 12.00 | | |
| | MAX | 25.50 | 5.40 | 10.00 | 0.99 | 636.00 | | | | 10.00 | 31.06 | 4.00 | 3.90 | 0.10 | 31.00 | 31.01 | 0.37 | | 3.50 | 2.00 | 0.01 | 14.00 | 13.00 | 0.01 | 0.01 | 62.00 | 0.07 | 33.00 | 0.18 | 7.60 | 0.18 | 15.00 | 12.00 | | |
| DP-G12-24 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.30 | | 6.37 | 0.47 | 320.00 | | | | 30.50 | 12.23 | 1.16 | 1.15 | 0.01 | 11.07 | 11.07 | 0.71 | | 1.80 | 1.40 | 0.19 | 15.00 | 10.60 | 0.01 | 0.01 | 59.00 | 0.07 | 27.00 | 0.04 | 11.00 | 0.18 | 15.00 | 6.70 | | |
| | STD. DEV. | 1.42 | | 3.21 | 0.32 | 16.37 | | | | 28.99 | 1.50 | 0.16 | 0.16 | 0.00 | 1.62 | 1.61 | | | | | | 0.00 | 1.98 | 0.00 | | | | | | | | | | |
| | MIN | 22.70 | 4.80 | 3.90 | 0.20 | 302.00 | | | | 10.00 | 10.50 | 0.98 | 0.98 | 0.01 | 9.20 | 9.21 | 0.71 | | 1.80 | 1.40 | 0.19 | 15.00 | 9.20 | 0.01 | 0.01 | 59.00 | 0.07 | 27.00 | 0.04 | 11.00 | 0.18 | 15.00 | 6.70 | | |
| | MAX | 25.40 | 5.40 | 10.00 | 0.82 | 334.00 | | | | 51.00 | 13.20 | 1.30 | 1.29 | 0.01 | 12.00 | 12.01 | 0.71 | | 1.80 | 1.40 | 0.19 | 15.00 | 12.00 | 0.01 | 0.01 | 59.00 | 0.07 | 27.00 | 0.04 | 11.00 | 0.18 | 15.00 | 6.70 | | |
| DP-G12-27 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | MEAN | 23.90 | | 7.00 | 0.32 | 363.75 | | | | 10.00 | 14.23 | 1.13 | 1.01 | 0.12 | 13.10 | 13.22 | 0.14 | | | | | 14.00 | 8.30 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.12 | | 2.67 | 0.16 | 99.64 | | | | | 5.02 | 0.41 | 0.52 | 0.11 | 5.43 | 5.54 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 22.90 | 4.70 | 4.90 | 0.10 | 289.00 | | | | 10.00 | 9.80 | 0.68 | 0.46 | 0.01 | 8.30 | 8.31 | 0.14 | | | | | 13.00 | 8.30 | 0.01 | | | | | | | | | | |
| | MAX | 25.30 | 5.40 | 10.00 | 0.45 | 509.00 | | | | 10.00 | 19.68 | 1.50 | 1.49 | 0.22 | 19.00 | 19.22 | 0.14 | | | | | 15.00 | 8.30 | 0.01 | | | | | | | | | | |



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# Table F.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-H05-7 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.60 | | 15.00 | 6.73 | 136.70 | | | | | 1.75 | 1.70 | 0.10 | 1.60 | 0.05 | 1.65 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.60 | 6.30 | 15.00 | 6.73 | 136.70 | | | | | 1.75 | 1.70 | 0.10 | 1.60 | 0.05 | 1.65 | | | | | | | | | | | | | | | | | | |
| | MAX | 25.60 | 6.30 | 15.00 | 6.73 | 136.70 | | | | | 1.75 | 1.70 | 0.10 | 1.60 | 0.05 | 1.65 | | | | | | | | | | | | | | | | | | |
| DP-H06-7 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.17 | | 24.50 | 4.31 | 152.13 | | | | 10.00 | 1.47 | 1.15 | 0.61 | 0.55 | 0.32 | 0.86 | 0.78 | | | | | 4.50 | 0.48 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 5.21 | | 9.19 | 0.34 | 12.00 | | | | | 0.16 | 0.07 | 0.08 | 0.15 | 0.23 | 0.08 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 19.80 | 5.80 | 18.00 | 4.04 | 140.00 | | | | 10.00 | 1.35 | 1.10 | 0.55 | 0.44 | 0.15 | 0.80 | 0.78 | | | | | 4.50 | 0.48 | 0.01 | | | | | | | | | | |
| | MAX | 30.20 | 6.00 | 31.00 | 4.70 | 164.00 | | | | 10.00 | 1.58 | 1.20 | 0.66 | 0.65 | 0.48 | 0.92 | 0.78 | | | | | 4.50 | 0.48 | 0.01 | | | | | | | | | | |
| DP-H07-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 20.20 | | 2.00 | 1.57 | 151.30 | | | | | 1.69 | 0.71 | 0.66 | 0.05 | 0.98 | 1.03 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 20.20 | 5.10 | 2.00 | 1.57 | 151.30 | | | | | 1.69 | 0.71 | 0.66 | 0.05 | 0.98 | 1.03 | | | | | | | | | | | | | | | | | | |
| | MAX | 20.20 | 5.10 | 2.00 | 1.57 | 151.30 | | | | | 1.69 | 0.71 | 0.66 | 0.05 | 0.98 | 1.03 | | | | | | | | | | | | | | | | | | |
| DP-H08-10 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.70 | | 24.00 | 2.97 | 189.00 | | | | | 2.95 | 2.20 | 1.32 | 0.88 | 0.75 | 1.63 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.70 | 6.20 | 24.00 | 2.97 | 189.00 | | | | | 2.95 | 2.20 | 1.32 | 0.88 | 0.75 | 1.63 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.70 | 6.20 | 24.00 | 2.97 | 189.00 | | | | | 2.95 | 2.20 | 1.32 | 0.88 | 0.75 | 1.63 | | | | | | | | | | | | | | | | | | |
| DP-H09-12 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.53 | | 6.45 | 1.63 | 257.00 | | | | 50.00 | 6.02 | 1.02 | 1.01 | 0.01 | 5.00 | 5.01 | 0.08 | | | | | 5.65 | 2.60 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.28 | | 0.64 | 1.53 | 14.73 | | | | | 3.65 | 0.25 | 0.25 | 0.00 | 3.39 | 3.39 | | | | | | 0.07 | | | | | | | | | | | | |
| | MIN | 21.90 | 5.00 | 6.00 | 0.70 | 248.00 | | | | 50.00 | 3.44 | 0.84 | 0.83 | 0.01 | 2.60 | 2.61 | 0.08 | | | | | 5.60 | 2.60 | 0.01 | | | | | | | | | | |
| | MAX | 25.90 | 5.70 | 6.90 | 3.40 | 274.00 | | | | 50.00 | 8.60 | 1.20 | 1.19 | 0.01 | 7.40 | 7.41 | 0.08 | | | | | 5.70 | 2.60 | 0.01 | | | | | | | | | | |
| DP-H10-11 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 25.35 | | 21.00 | 5.47 | 216.25 | | | | 10.00 | 2.07 | 0.42 | 0.30 | 0.11 | 1.65 | 1.76 | | | 4.30 | 3.60 | 0.03 | 7.20 | 1.20 | 0.11 | 0.01 | 51.00 | 0.06 | 20.00 | 4.10 | 4.70 | 0.42 | 9.30 | 6.30 | |
| | STD. DEV. | 4.45 | | 5.66 | 0.52 | 16.62 | | | | | 0.06 | 0.29 | 0.25 | 0.04 | 0.35 | 0.32 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.20 | 5.60 | 17.00 | 5.10 | 204.50 | | | | 10.00 | 2.02 | 0.21 | 0.12 | 0.09 | 1.40 | 1.54 | | | 4.30 | 3.60 | 0.03 | 7.20 | 1.20 | 0.11 | 0.01 | 51.00 | 0.06 | 20.00 | 4.10 | 4.70 | 0.42 | 9.30 | 6.30 | |
| | MAX | 28.50 | 6.20 | 25.00 | 5.83 | 228.00 | | | | 10.00 | 2.11 | 0.62 | 0.48 | 0.14 | 1.90 | 1.99 | | | 4.30 | 3.60 | 0.03 | 7.20 | 1.20 | 0.11 | 0.01 | 51.00 | 0.06 | 20.00 | 4.10 | 4.70 | 0.42 | 9.30 | 6.30 | |
| DP-H12-5 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.90 | | 7.90 | 0.94 | 188.50 | | | | | 2.81 | 0.81 | 0.76 | 0.05 | 2.00 | 2.05 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.90 | 5.60 | 7.90 | 0.94 | 188.50 | | | | | 2.81 | 0.81 | 0.76 | 0.05 | 2.00 | 2.05 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.90 | 5.60 | 7.90 | 0.94 | 188.50 | | | | | 2.81 | 0.81 | 0.76 | 0.05 | 2.00 | 2.05 | | | | | | | | | | | | | | | | | | |
| DP-I06-14 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 22.78 | | 6.30 | 0.98 | 222.58 | | | | 10.00 | 3.08 | 0.73 | 0.73 | 0.01 | 2.35 | 2.36 | 0.61 | | 3.10 | 2.45 | 0.13 | 5.70 | 2.35 | 0.01 | 0.09 | 61.50 | 0.05 | 22.00 | 0.08 | 4.90 | 0.18 | 10.20 | 3.10 | |
| | STD. DEV. | 2.50 | | 0.48 | 0.67 | 12.07 | | | | 0.00 | 0.96 | 0.26 | 0.26 | 0.00 | 0.72 | 0.72 | | | 0.14 | 0.07 | 0.09 | 0.42 | 0.35 | 0.00 | 0.09 | 0.71 | 0.01 | 1.41 | 0.08 | 0.14 | 0.01 | 1.13 | 0.00 | |
| | MIN | 20.40 | 4.70 | 5.90 | 0.30 | 212.30 | | | | 10.00 | 2.07 | 0.55 | 0.55 | 0.01 | 1.50 | 1.51 | 0.61 | | 3.00 | 2.40 | 0.06 | 5.40 | 2.10 | 0.01 | 0.02 | 61.00 | 0.05 | 21.00 | 0.02 | 4.80 | 0.17 | 9.40 | 3.10 | |
| | MAX | 25.40 | 5.30 | 7.00 | 1.66 | 240.00 | | | | 10.00 | 4.30 | 1.10 | 1.10 | 0.01 | 3.20 | 3.21 | 0.61 | | 3.20 | 2.50 | 0.19 | 6.00 | 2.60 | 0.01 | 0.15 | 62.00 | 0.06 | 23.00 | 0.14 | 5.00 | 0.19 | 11.00 | 3.10 | |
| DP-I06-20 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 22.93 | | 3.30 | 0.88 | 354.25 | | | | 10.00 | 15.22 | 1.19 | 1.18 | 0.01 | 14.03 | 14.04 | 0.17 | | 1.70 | 1.80 | 0.10 | 12.50 | 9.10 | 0.01 | 0.05 | 73.00 | 0.05 | 28.00 | 0.05 | 6.70 | 0.06 | 16.00 | 6.90 | |
| | STD. DEV. | 1.78 | | 1.13 | 0.69 | 16.58 | | | | | 4.01 | 0.77 | 0.77 | 0.00 | 4.53 | 4.53 | | | | | | 0.71 | | | | | | | | | | | | |
| | MIN | 21.40 | 4.90 | 2.00 | 0.30 | 330.00 | | | | 10.00 | 11.10 | 0.46 | 0.46 | 0.01 | 9.10 | 9.11 | 0.17 | | 1.70 | 1.80 | 0.10 | 12.00 | 9.10 | 0.01 | 0.05 | 73.00 | 0.05 | 28.00 | 0.05 | 6.70 | 0.06 | 16.00 | 6.90 | |
| | MAX | 24.80 | 5.10 | 4.00 | 1.80 | 367.00 | | | | 10.00 | 19.10 | 2.00 | 1.99 | 0.01 | 18.00 | 18.01 | 0.17 | | 1.70 | 1.80 | 0.10 | 13.00 | 9.10 | 0.01 | 0.05 | 73.00 | 0.05 | 28.00 | 0.05 | 6.70 | 0.06 | 16.00 | 6.90 | |
| DP-I06-26 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.93 | | 2.67 | 1.00 | 303.50 | | | | | 12.56 | 1.56 | 1.55 | 0.01 | 11.00 | 11.01 | | | 0.75 | 1.00 | | 14.00 | 9.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.72 | | 0.58 | 1.00 | 7.05 | | | | | 3.17 | 1.02 | 1.02 | 0.00 | 2.65 | 2.64 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 21.30 | 4.90 | 2.00 | 0.20 | 295.00 | | | | | 10.38 | 0.38 | 0.38 | 0.01 | 9.00 | 9.01 | | | 0.75 | 1.00 | | 14.00 | 9.00 | 0.01 | | | | | | | | | | |
| | MAX | 24.60 | 5.01 | 3.00 | 2.36 | 312.00 | | | | | 16.20 | 2.20 | 2.20 | 0.01 | 14.00 | 14.01 | | | 0.75 | 1.00 | | 14.00 | 9.00 | 0.01 | | | | | | | | | | |
| DP-I07-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 19.40 | | 17.00 | 2.23 | 170.70 | | | | | 1.28 | 0.42 | 0.38 | 0.04 | 0.86 | 0.90 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 19.40 | 5.80 | 17.00 | 2.23 | 170.70 | | | | | 1.28 | 0.42 | 0.38 | 0.04 | 0.86 | 0.90 | | | | | | | | | | | | | | | | | | |
| | MAX | 19.40 | 5.80 | 17.00 | 2.23 | 170.70 | | | | | 1.28 | 0.42 | 0.38 | 0.04 | 0.86 | 0.90 | | | | | | | | | | | | | | | | | | |
| DP-I08-5 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.00 | | 15.00 | 4.69 | 191.50 | | | | | 2.44 | 2.10 | 0.90 | 1.20 | 0.34 | 1.54 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.00 | 6.50 | 15.00 | 4.69 | 191.50 | | | | | 2.44 | 2.10 | 0.90 | 1.20 | 0.34 | 1.54 | | | | | | | | | | | | | | | | | | |
| | MAX | 23.00 | 6.50 | 15.00 | 4.69 | 191.50 | | | | | 2.44 | 2.10 | 0.90 | 1.20 | 0.34 | 1.54 | | | | | | | | | | | | | | | | | | |
| DPI09-11 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.50 | | 3.00 | 0.77 | 180.60 | | | | | 2.22 | 0.72 | 0.72 | 0.01 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.50 | 5.10 | 3.00 | 0.77 | 180.60 | | | | | 2.22 | 0.72 | 0.72 | 0.01 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.50 | 5.10 | 3.00 | 0.77 | 180.60 | | | | | 2.22 | 0.72 | 0.72 | 0.01 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | | |
| DP-I10-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 20.20 | | 27.00 | 5.10 | 173.40 | | | | | 1.75 | 1.40 | 0.74 | 0.66 | 0.35 | 1.01 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 20.20 | 6.20 | 27.00 | 5.10 | 173.40 | | | | | 1.75 | 1.40 | 0.74 | 0.66 | 0.35 | 1.01 | | | | | | | | | | | | | | | | | | |
| | MAX | 20.20 | 6.20 | 27.00 | 5.10 | 173.40 | | | | | 1.75 | 1.40 | 0.74 | 0.66 | 0.35 | 1.01 | | | | | | | | | | | | | | | | | | |
| DP-I11-10 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.40 | | 17.00 | 0.90 | 166.80 | | | | | 1.03 | 0.64 | 0.38 | 0.26 | 0.39 | 0.65 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.40 | 5.70 | 17.00 | 0.90 | 166.80 | | | | | 1.03 | 0.64 | 0.38 | 0.26 | 0.39 | 0.65 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.40 | 5.70 | 17.00 | 0.90 | 166.80 | | | | | 1.03 | 0.64 | 0.38 | 0.26 | 0.39 | 0.65 | | | | | | | | | | | | | | | | | | |

# Table F.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-I12-6 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.90 | | 8.50 | 0.96 | 120.20 | | | | 10.00 | 4.55 | 0.83 | 0.82 | 0.01 | 3.72 | 3.73 | 0.30 | | | | | 3.85 | 0.34 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.61 | | | 0.80 | 22.43 | | | | | 4.55 | 0.23 | 0.22 | 0.00 | 4.78 | 4.78 | | | | | | 1.06 | | | | | | | | | | | | |
| | MIN | 21.90 | 4.70 | 6.00 | 0.40 | 95.00 | | | | 10.00 | 1.33 | 0.67 | 0.67 | 0.01 | 0.34 | 0.35 | 0.30 | | | | | 3.10 | 0.34 | 0.01 | | | | | | | | | | |
| | MAX | 26.60 | 5.60 | 11.00 | 1.87 | 138.00 | | | | 10.00 | 7.77 | 0.99 | 0.98 | 0.01 | 7.10 | 7.11 | 0.30 | | | | | 4.60 | 0.34 | 0.01 | | | | | | | | | | |
| DP-J08-6 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.50 | | 15.00 | 2.90 | 161.65 | | | | | 3.75 | 3.70 | 0.70 | 3.00 | 0.05 | 3.05 | | | | | | 4.30 | | | | | | | | | | | | |
| | STD. DEV. | 5.37 | | | 0.28 | 30.19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 19.70 | 5.90 | 15.00 | 2.70 | 140.30 | | | | | 3.75 | 3.70 | 0.70 | 3.00 | 0.05 | 3.05 | | | | | | 4.30 | | | | | | | | | | | | |
| | MAX | 27.30 | 6.00 | 15.00 | 3.10 | 183.00 | | | | | 3.75 | 3.70 | 0.70 | 3.00 | 0.05 | 3.05 | | | | | | 4.30 | | | | | | | | | | | | |
| DP-J09-12 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.33 | | 2.50 | 0.70 | 175.67 | | | | | 1.49 | 0.51 | 0.50 | 0.01 | 0.98 | 0.99 | | | | | | 4.90 | 0.86 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.81 | | 0.71 | 0.27 | 11.72 | | | | | 0.08 | 0.08 | 0.08 | 0.00 | 0.17 | 0.17 | | | | | | 0.42 | | | | | | | | | | | | |
| | MIN | 21.10 | 4.80 | 2.00 | 0.40 | 167.00 | | | | | 1.43 | 0.45 | 0.45 | 0.01 | 0.86 | 0.87 | | | | | | 4.60 | 0.86 | 0.01 | | | | | | | | | | |
| | MAX | 26.20 | 5.00 | 3.00 | 0.90 | 189.00 | | | | | 1.55 | 0.57 | 0.56 | 0.01 | 1.10 | 1.11 | | | | | | 5.20 | 0.86 | 0.01 | | | | | | | | | | |
| DP-J09-14 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.55 | | 3.00 | 1.18 | 229.28 | | | | 10.00 | 5.03 | 0.63 | 0.62 | 0.01 | 4.40 | 4.41 | 0.40 | | | | | 6.70 | 2.30 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.27 | | 1.00 | 1.42 | 16.12 | | | | | 2.78 | 0.19 | 0.19 | 0.00 | 2.67 | 2.66 | | | | | | 1.56 | | | | | | | | | | | | |
| | MIN | 21.40 | 4.50 | 2.00 | 0.30 | 210.00 | | | | 10.00 | 2.98 | 0.42 | 0.42 | 0.01 | 2.30 | 2.31 | 0.40 | | | | | 5.60 | 2.30 | 0.01 | | | | | | | | | | |
| | MAX | 26.10 | 4.80 | 4.00 | 3.29 | 249.00 | | | | 10.00 | 8.19 | 0.79 | 0.79 | 0.01 | 7.40 | 7.41 | 0.40 | | | | | 7.80 | 2.30 | 0.01 | | | | | | | | | | |
| DP-J09-20 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 1 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.73 | | 3.67 | 0.68 | 347.78 | | | | 10.00 | 11.87 | 0.64 | 0.63 | 0.01 | 11.23 | 11.24 | 0.73 | | | 0.91 | | 11.50 | 8.60 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.44 | | 1.53 | 0.62 | 22.88 | | | | | 5.51 | 0.58 | 0.58 | 0.00 | 5.00 | 5.00 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.10 | 4.40 | 2.00 | 0.20 | 320.00 | | | | 10.00 | 8.15 | 0.05 | 0.05 | 0.01 | 8.10 | 8.11 | 0.73 | | | 0.91 | | 10.00 | 8.60 | 0.01 | | | | | | | | | | |
| | MAX | 25.50 | 5.00 | 5.00 | 1.57 | 368.00 | | | | 10.00 | 18.20 | 1.20 | 1.20 | 0.01 | 17.00 | 17.01 | 0.73 | | | 0.91 | | 13.00 | 8.60 | 0.01 | | | | | | | | | | |
| DP-J09-26 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.73 | | 3.00 | 0.99 | 298.30 | | | | | 13.03 | 1.30 | 1.29 | 0.01 | 11.73 | 11.74 | | | | | | 13.50 | 9.90 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.28 | | 1.00 | 1.04 | 5.79 | | | | | 4.05 | 0.35 | 0.35 | 0.00 | 3.71 | 3.71 | | | | | | 0.71 | | | | | | | | | | | | |
| | MIN | 22.50 | 4.50 | 2.00 | 0.20 | 292.00 | | | | | 10.40 | 1.10 | 1.09 | 0.01 | 9.30 | 9.31 | | | | | | 13.00 | 9.90 | 0.01 | | | | | | | | | | |
| | MAX | 25.40 | 5.00 | 4.00 | 2.51 | 306.00 | | | | | 17.70 | 1.70 | 1.70 | 0.01 | 16.00 | 16.01 | | | | | | 14.00 | 9.90 | 0.01 | | | | | | | | | | |
| DP-J10-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.00 | | 14.00 | 3.48 | 186.60 | | | | | 3.40 | 2.40 | 0.00 | 2.40 | 1.00 | 3.40 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.00 | 5.90 | 14.00 | 3.48 | 186.60 | | | | | 3.40 | 2.40 | 0.00 | 2.40 | 1.00 | 3.40 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.00 | 5.90 | 14.00 | 3.48 | 186.60 | | | | | 3.40 | 2.40 | 0.00 | 2.40 | 1.00 | 3.40 | | | | | | | | | | | | | | | | | | |
| DP-J11-12 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.70 | | 2.00 | 1.02 | 196.70 | | | | 14.00 | 2.65 | 0.55 | 0.55 | 0.01 | 2.10 | 2.11 | 0.01 | | | 1.10 | 0.16 | 6.30 | 2.10 | 0.01 | 0.01 | 65.00 | 0.05 | 16.00 | 0.04 | 4.20 | 0.15 | 3.80 | 2.90 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.70 | 4.40 | 2.00 | 1.02 | 196.70 | | | | 14.00 | 2.65 | 0.55 | 0.55 | 0.01 | 2.10 | 2.11 | 0.01 | | | 1.10 | 0.16 | 6.30 | 2.10 | 0.01 | 0.01 | 65.00 | 0.05 | 16.00 | 0.04 | 4.20 | 0.15 | 3.80 | 2.90 | |
| | MAX | 23.70 | 4.40 | 2.00 | 1.02 | 196.70 | | | | 14.00 | 2.65 | 0.55 | 0.55 | 0.01 | 2.10 | 2.11 | 0.01 | | | 1.10 | 0.16 | 6.30 | 2.10 | 0.01 | 0.01 | 65.00 | 0.05 | 16.00 | 0.04 | 4.20 | 0.15 | 3.80 | 2.90 | |
| DP-J12-13 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.63 | | 4.50 | 0.71 | 231.00 | | | | | 4.40 | 0.55 | 0.54 | 0.01 | 3.85 | 3.86 | | | | | | 5.55 | 2.10 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.62 | | 0.71 | 0.72 | 22.34 | | | | | 2.57 | 0.09 | 0.10 | 0.00 | 2.47 | 2.47 | | | | | | 0.35 | | | | | | | | | | | | |
| | MIN | 22.90 | 4.60 | 4.00 | 0.30 | 206.00 | | | | | 2.58 | 0.48 | 0.47 | 0.01 | 2.10 | 2.11 | | | | | | 5.30 | 2.10 | 0.01 | | | | | | | | | | |
| | MAX | 26.10 | 4.90 | 5.00 | 1.54 | 249.00 | | | | | 6.21 | 0.61 | 0.61 | 0.01 | 5.60 | 5.61 | | | | | | 5.80 | 2.10 | 0.01 | | | | | | | | | | |
| DP-J12-15 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.23 | | 3.97 | 0.86 | 280.13 | | | | 10.00 | 6.19 | 0.49 | 0.49 | 0.01 | 5.70 | 5.71 | 0.77 | | | | | 6.75 | 3.60 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.02 | | 1.95 | 0.56 | 10.51 | | | | | 2.41 | 0.46 | 0.46 | 0.00 | 2.52 | 2.52 | | | | | | 0.78 | | | | | | | | | | | | |
| | MIN | 22.10 | 4.60 | 2.00 | 0.30 | 265.00 | | | | 10.00 | 4.57 | 0.05 | 0.05 | 0.01 | 3.60 | 3.61 | 0.77 | | | | | 6.20 | 3.60 | 0.01 | | | | | | | | | | |
| | MAX | 26.80 | 5.10 | 5.90 | 1.50 | 287.50 | | | | 10.00 | 8.96 | 0.97 | 0.96 | 0.01 | 8.50 | 8.51 | 0.77 | | | | | 7.30 | 3.60 | 0.01 | | | | | | | | | | |
| DP-J12-20 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2.00 | 0 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.13 | | 4.63 | 0.78 | 344.98 | | | | 14.00 | 9.40 | 0.87 | 0.86 | 0.01 | 8.53 | 8.54 | 0.50 | | 2.60 | 1.40 | 0.01 | 12.00 | 8.90 | 0.01 | 0.01 | 88.00 | 0.05 | 33.00 | 0.02 | 9.60 | 0.06 | 21.00 | 4.30 | |
| | STD. DEV. | 1.24 | | 2.28 | 0.44 | 13.30 | | | | 5.66 | 1.84 | 0.61 | 0.61 | 0.00 | 1.27 | 1.27 | 0.54 | | | 0.14 | | 2.00 | 1.56 | 0.00 | | | | | | | | | | |
| | MIN | 22.90 | 4.90 | 2.00 | 0.40 | 327.00 | | | | 10.00 | 8.08 | 0.28 | 0.27 | 0.01 | 7.80 | 7.81 | 0.11 | | 2.60 | 1.30 | 0.01 | 10.00 | 7.80 | 0.01 | 0.01 | 88.00 | 0.05 | 33.00 | 0.02 | 9.60 | 0.06 | 21.00 | 4.30 | |
| | MAX | 25.70 | 5.60 | 6.00 | 1.20 | 356.00 | | | | 18.00 | 11.50 | 1.50 | 1.50 | 0.01 | 10.00 | 10.01 | 0.88 | | 2.60 | 1.50 | 0.01 | 14.00 | 10.00 | 0.01 | 0.01 | 88.00 | 0.05 | 33.00 | 0.02 | 9.60 | 0.06 | 21.00 | 4.30 | |
| DP-J12-27 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.88 | | 3.33 | 0.67 | 300.53 | | | | | 14.13 | 0.80 | 0.79 | 0.01 | 13.33 | 13.34 | | | | | | 15.00 | 12.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.00 | | 1.15 | 0.44 | 12.68 | | | | | 2.52 | 0.44 | 0.44 | 0.00 | 2.31 | 2.31 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 22.60 | 4.70 | 2.00 | 0.20 | 282.00 | | | | | 12.29 | 0.29 | 0.28 | 0.01 | 12.00 | 12.01 | | | | | | 15.00 | 12.00 | 0.01 | | | | | | | | | | |
| | MAX | 24.90 | 5.10 | 4.00 | 1.14 | 310.00 | | | | | 17.00 | 1.10 | 1.10 | 0.01 | 16.00 | 16.01 | | | | | | 15.00 | 12.00 | 0.01 | | | | | | | | | | |
| DP-K10-7 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.80 | | 6.90 | 2.55 | 169.90 | | | | | 2.33 | 2.00 | 0.40 | 1.60 | 0.33 | 1.93 | | | | | | 5.20 | | | | | | | | | | | | |
| | STD. DEV. | 2.26 | | | 1.76 | 8.63 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.20 | 5.10 | 6.90 | 1.30 | 163.80 | | | | | 2.33 | 2.00 | 0.40 | 1.60 | 0.33 | 1.93 | | | | | | 5.20 | | | | | | | | | | | | |
| | MAX | 27.40 | 6.00 | 6.90 | 3.79 | 176.00 | | | | | 2.33 | 2.00 | 0.40 | 1.60 | 0.33 | 1.93 | | | | | | 5.20 | | | | | | | | | | | | |
| DP-K11-13 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.10 | | 4.00 | 1.84 | 168.30 | | | | | 1.89 | 0.59 | 0.59 | 0.01 | 1.30 | 1.31 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.10 | 4.90 | 4.00 | 1.84 | 168.30 | | | | | 1.89 | 0.59 | 0.59 | 0.01 | 1.30 | 1.31 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.10 | 4.90 | 4.00 | 1.84 | 168.30 | | | | | 1.89 | 0.59 | 0.59 | 0.01 | 1.30 | 1.31 | | | | | | | | | | | | | | | | | | |
| DP-K12-5 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 25.77 | | 8.45 | 0.90 | 69.77 | | | | 32.50 | 0.71 | 0.54 | 0.49 | 0.05 | 0.17 | 0.22 | 0.41 | | | 7.30 | 0.08 | 2.93 | 0.17 | 0.01 | 0.01 | 11.00 | 0.05 | 5.50 | 2.20 | 0.86 | 0.21 | 0.40 | 1.90 | |
| | STD. DEV. | 3.00 | | 2.19 | 0.44 | 10.35 | | | | 31.82 | 0.15 | 0.33 | 0.27 | 0.06 | 0.18 | 0.12 | 0.09 | | | | | 1.31 | 0.18 | 0.00 | | | | | | | | | | |
| | MIN | 22.30 | 4.70 | 6.90 | 0.60 | 59.30 | | | | 10.00 | 0.60 | 0.31 | 0.30 | 0.01 | 0.04 | 0.13 | 0.34 | | | 7.30 | 0.08 | 1.90 | 0.04 | 0.01 | 0.01 | 11.00 | 0.05 | 5.50 | 2.20 | 0.86 | 0.21 | 0.40 | 1.90 | |
| | MAX | 27.50 | 5.60 | 10.00 | 1.40 | 80.00 | | | | 55.00 | 0.81 | 0.77 | 0.68 | 0.09 | 0.29 | 0.30 | 0.47 | | | 7.30 | 0.08 | 4.40 | 0.29 | 0.01 | 0.01 | 11.00 | 0.05 | 5.50 | 2.20 | 0.86 | 0.21 | 0.40 | 1.90 | |



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# Table F.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-M07-15 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.70 | | 5.97 | 0.60 | 281.67 | | | | | 6.26 | 0.41 | 0.41 | 0.01 | 5.85 | 5.85 | | | | | | 9.10 | 5.10 | 0.24 | | | | | | | | | | |
| | STD. DEV. | 1.95 | | 4.00 | 0.27 | 19.66 | | | | | 0.61 | 0.20 | 0.20 | 0.00 | 0.45 | 0.45 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.20 | 4.80 | 2.00 | 0.30 | 267.00 | | | | | 5.55 | 0.21 | 0.20 | 0.01 | 5.34 | 5.35 | | | | | | 9.10 | 5.10 | 0.24 | | | | | | | | | | |
| | MAX | 25.90 | 5.20 | 10.00 | 0.80 | 304.00 | | | | | 6.62 | 0.61 | 0.61 | 0.01 | 6.20 | 6.21 | | | | | | 9.10 | 5.10 | 0.24 | | | | | | | | | | |
| DP-M07-21 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.08 | | 4.67 | 0.52 | 363.48 | | | | 10.00 | 13.18 | 0.84 | 0.84 | 0.01 | 12.33 | 12.34 | 1.10 | | | | | 13.50 | 12.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.18 | | 4.62 | 0.28 | 9.91 | | | | | 0.89 | 0.67 | 0.67 | 0.00 | 0.58 | 0.58 | | | | | | 0.71 | | | | | | | | | | | | |
| | MIN | 22.50 | 4.90 | 2.00 | 0.30 | 351.00 | | | | 10.00 | 12.17 | 0.17 | 0.16 | 0.01 | 12.00 | 12.01 | 1.10 | | | | | 13.00 | 12.00 | 0.01 | | | | | | | | | | |
| | MAX | 25.30 | 5.20 | 10.00 | 0.88 | 374.90 | | | | 10.00 | 13.86 | 1.50 | 1.50 | 0.01 | 13.00 | 13.01 | 1.10 | | | | | 14.00 | 12.00 | 0.01 | | | | | | | | | | |
| DP-M07-27 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.93 | | 5.97 | 0.49 | 296.88 | | | | | 9.25 | 1.05 | 1.05 | 0.01 | 8.20 | 8.21 | 0.09 | | | | | 12.50 | 8.10 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.09 | | 4.00 | 0.41 | 6.36 | | | | 0.00 | 0.89 | 1.03 | 1.03 | 0.00 | 0.36 | 0.36 | | | | | | 0.71 | | | | | | | | | | | | |
| | MIN | 22.50 | 4.80 | 2.00 | 0.20 | 290.00 | | | | 10.00 | 8.32 | 0.22 | 0.21 | 0.01 | 7.90 | 7.91 | 0.09 | | | | | 12.00 | 8.10 | 0.01 | | | | | | | | | | |
| | MAX | 25.10 | 5.20 | 10.00 | 1.08 | 303.00 | | | | 10.00 | 10.10 | 2.20 | 2.20 | 0.01 | 8.60 | 8.61 | 0.09 | | | | | 13.00 | 8.10 | 0.01 | | | | | | | | | | |
| DP-M12-10 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.73 | | 9.45 | 1.51 | 166.87 | | | | 10.00 | 1.40 | 0.70 | 0.63 | 0.06 | 0.71 | 0.77 | 0.13 | | | | | 4.60 | 0.37 | 0.15 | | | | | | | | | | |
| | STD. DEV. | 1.55 | | 0.78 | 0.53 | 8.78 | | | | | 0.13 | 0.13 | 0.16 | 0.03 | 0.26 | 0.29 | | | | | | 0.28 | | | | | | | | | | | | |
| | MIN | 24.00 | 5.10 | 8.90 | 0.90 | 161.60 | | | | 10.00 | 1.31 | 0.60 | 0.52 | 0.05 | 0.52 | 0.57 | 0.13 | | | | | 4.40 | 0.37 | 0.15 | | | | | | | | | | |
| | MAX | 27.00 | 5.70 | 10.00 | 1.83 | 177.00 | | | | 10.00 | 1.49 | 0.79 | 0.74 | 0.08 | 0.89 | 0.97 | 0.13 | | | | | 4.80 | 0.37 | 0.15 | | | | | | | | | | |
| DP-N12-14 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.23 | | 3.00 | 0.67 | 175.00 | | | | 10.00 | 2.52 | 0.46 | 0.46 | 0.01 | 2.06 | 2.06 | 0.35 | | 2.00 | 1.90 | 0.07 | 4.70 | 1.30 | 0.01 | 0.01 | 53.00 | 0.05 | 17.00 | 0.10 | 3.40 | 0.17 | 6.00 | 2.70 | |
| | STD. DEV. | 2.07 | | 1.00 | 0.51 | 7.91 | | | | | 2.23 | 0.45 | 0.45 | 0.00 | 1.79 | 1.79 | | | | | | 0.14 | | | | | | | | | | | | |
| | MIN | 22.10 | 4.40 | 2.00 | 0.20 | 163.40 | | | | 10.00 | 1.03 | 0.15 | 0.14 | 0.01 | 0.77 | 0.78 | 0.35 | | 2.00 | 1.90 | 0.07 | 4.60 | 1.30 | 0.01 | 0.01 | 53.00 | 0.05 | 17.00 | 0.10 | 3.40 | 0.17 | 6.00 | 2.70 | |
| | MAX | 26.50 | 5.00 | 4.00 | 1.28 | 181.00 | | | | 10.00 | 5.08 | 0.98 | 0.98 | 0.01 | 4.10 | 4.11 | 0.35 | | 2.00 | 1.90 | 0.07 | 4.80 | 1.30 | 0.01 | 0.01 | 53.00 | 0.05 | 17.00 | 0.10 | 3.40 | 0.17 | 6.00 | 2.70 | |
| DP-N12-18 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.03 | | 5.00 | 0.60 | 243.67 | | | | 10.00 | 5.84 | 0.84 | 0.83 | 0.01 | 5.00 | 5.01 | 1.10 | | | | | 6.95 | 3.90 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.76 | | 1.41 | 0.44 | 8.50 | | | | | 1.93 | 0.37 | 0.38 | 0.00 | 1.56 | 1.55 | | | | | | 1.06 | | | | | | | | | | | | |
| | MIN | 23.20 | 4.70 | 4.00 | 0.30 | 234.00 | | | | 10.00 | 4.47 | 0.57 | 0.56 | 0.01 | 3.90 | 3.91 | 1.10 | | | | | 6.20 | 3.90 | 0.01 | | | | | | | | | | |
| | MAX | 26.70 | 5.10 | 6.00 | 1.11 | 250.00 | | | | 10.00 | 7.20 | 1.10 | 1.10 | 0.01 | 6.10 | 6.11 | 1.10 | | | | | 7.70 | 3.90 | 0.01 | | | | | | | | | | |
| DP-N12-21 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 24.13 | | 4.78 | 0.86 | 302.03 | | | | 10.00 | 6.02 | 0.49 | 0.48 | 0.01 | 5.53 | 5.53 | 0.09 | | 2.70 | 1.60 | 0.13 | 9.60 | 5.90 | 0.01 | 0.02 | 84.50 | 0.05 | 31.50 | 0.03 | 8.60 | 0.09 | 16.00 | 4.50 | |
| | STD. DEV. | 1.65 | | 1.88 | 0.79 | 16.11 | | | | 0.00 | 0.99 | 0.25 | 0.25 | 0.00 | 1.16 | 1.16 | | | 0.14 | 0.85 | 0.10 | 0.28 | 1.13 | 0.00 | 0.01 | 0.71 | 0.00 | 0.71 | 0.02 | 0.57 | 0.00 | 1.41 | 0.28 | |
| | MIN | 22.30 | 4.80 | 2.00 | 0.20 | 279.00 | | | | 10.00 | 4.70 | 0.13 | 0.12 | 0.01 | 4.10 | 4.11 | 0.09 | | 2.60 | 1.00 | 0.06 | 9.40 | 5.10 | 0.01 | 0.01 | 84.00 | 0.05 | 31.00 | 0.02 | 8.20 | 0.09 | 15.00 | 4.30 | |
| | MAX | 26.00 | 5.30 | 6.00 | 1.91 | 316.00 | | | | 10.00 | 6.83 | 0.69 | 0.69 | 0.01 | 6.70 | 6.71 | 0.09 | | 2.80 | 2.20 | 0.20 | 9.80 | 6.70 | 0.01 | 0.03 | 85.00 | 0.05 | 32.00 | 0.04 | 9.00 | 0.09 | 17.00 | 4.70 | |
| DP-N12-24 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.90 | | 5.45 | 0.36 | 353.67 | | | | 67.00 | 12.68 | 0.68 | 0.67 | 0.01 | 12.00 | 12.01 | 0.13 | | 2.30 | 2.20 | 0.09 | 15.00 | 12.00 | 0.01 | 0.05 | 83.00 | 0.05 | 31.00 | 0.10 | 11.00 | 0.04 | 23.00 | 6.70 | |
| | STD. DEV. | 0.92 | | 0.78 | 0.37 | 5.51 | | | | | 0.88 | 0.88 | 0.89 | 0.00 | 0.00 | 0.00 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 24.10 | 4.60 | 4.90 | 0.10 | 348.00 | | | | 67.00 | 12.05 | 0.05 | 0.04 | 0.01 | 12.00 | 12.01 | 0.13 | | 2.30 | 2.20 | 0.09 | 14.00 | 12.00 | 0.01 | 0.05 | 83.00 | 0.05 | 31.00 | 0.10 | 11.00 | 0.04 | 23.00 | 6.70 | |
| | MAX | 25.90 | 5.20 | 6.00 | 0.78 | 359.00 | | | | 67.00 | 13.30 | 1.30 | 1.30 | 0.01 | 12.00 | 12.01 | 0.13 | | 2.30 | 2.20 | 0.09 | 16.00 | 12.00 | 0.01 | 0.05 | 83.00 | 0.05 | 31.00 | 0.10 | 11.00 | 0.04 | 23.00 | 6.70 | |
| DP-N12-27 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 23.98 | | 3.78 | 0.88 | 340.40 | | | | 10.00 | 14.85 | 1.70 | 1.69 | 0.01 | 13.15 | 13.16 | 0.31 | | 1.77 | 1.83 | 0.13 | 14.00 | 10.80 | 0.01 | 0.02 | 71.50 | 0.05 | 29.50 | 0.03 | 9.65 | 0.06 | 20.50 | 6.40 | |
| | STD. DEV. | 1.77 | | 1.53 | 1.07 | 18.15 | | | | 0.00 | 4.88 | 0.69 | 0.68 | 0.00 | 4.67 | 4.67 | | | 0.38 | 0.47 | 0.10 | 1.41 | 1.70 | 0.00 | 0.01 | 17.68 | 0.00 | 3.54 | 0.01 | 1.91 | 0.03 | 2.12 | 1.70 | |
| | MIN | 21.60 | 4.70 | 2.00 | 0.10 | 323.00 | | | | 10.00 | 11.00 | 0.99 | 0.99 | 0.01 | 9.60 | 9.61 | 0.31 | | 1.50 | 1.30 | 0.06 | 13.00 | 9.60 | 0.01 | 0.01 | 59.00 | 0.05 | 27.00 | 0.02 | 8.30 | 0.04 | 19.00 | 5.20 | |
| | MAX | 25.80 | 5.10 | 5.20 | 2.45 | 365.00 | | | | 10.00 | 21.80 | 2.60 | 2.59 | 0.01 | 20.00 | 20.01 | 0.31 | | 2.20 | 2.20 | 0.20 | 15.00 | 12.00 | 0.01 | 0.02 | 84.00 | 0.05 | 32.00 | 0.04 | 11.00 | 0.09 | 22.00 | 7.60 | |
| DP-O10-12 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.00 | | 2.00 | 1.22 | 186.15 | | | | | 0.19 | 0.14 | 0.14 | 0.01 | 0.05 | 0.06 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.27 | | 0.00 | 0.13 | 0.35 | | | | | 0.04 | 0.06 | 0.06 | 0.00 | 0.01 | 0.01 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.10 | 4.30 | 2.00 | 1.13 | 185.90 | | | | | 0.16 | 0.10 | 0.10 | 0.01 | 0.04 | 0.05 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.90 | 4.30 | 2.00 | 1.31 | 186.40 | | | | | 0.22 | 0.18 | 0.18 | 0.01 | 0.06 | 0.07 | | | | | | | | | | | | | | | | | | |
| DP-O10-18 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.53 | | 3.30 | 0.80 | 271.90 | | | | 10.00 | 5.02 | 0.99 | 0.98 | 0.01 | 4.03 | 4.03 | 0.08 | | | | | 6.65 | 0.47 | 0.11 | | | | | | | | | | |
| | STD. DEV. | 2.20 | | 2.25 | 0.16 | 76.82 | | | | | 4.36 | 0.97 | 0.97 | 0.00 | 3.46 | 3.46 | | | | | | 4.31 | | | | | | | | | | | | |
| | MIN | 22.20 | 4.20 | 2.00 | 0.70 | 160.00 | | | | 10.00 | 0.91 | 0.33 | 0.32 | 0.01 | 0.58 | 0.59 | 0.08 | | | | | 3.60 | 0.47 | 0.11 | | | | | | | | | | |
| | MAX | 27.30 | 5.30 | 5.90 | 1.04 | 335.00 | | | | 10.00 | 9.60 | 2.10 | 2.10 | 0.01 | 7.50 | 7.51 | 0.08 | | | | | 9.70 | 0.47 | 0.11 | | | | | | | | | | |
| DP-O10-24 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.38 | | 5.00 | 0.64 | 297.05 | | | | 10.00 | 8.28 | 1.65 | 1.63 | 0.02 | 6.62 | 6.65 | 0.14 | | 2.40 | 2.60 | 0.07 | 10.90 | 3.80 | 0.01 | 0.05 | 77.00 | 0.05 | 32.00 | 0.05 | 7.20 | 0.16 | 14.00 | 3.50 | |
| | STD. DEV. | 2.05 | | 4.36 | 0.27 | 86.33 | | | | | 10.70 | 2.39 | 2.40 | 0.03 | 8.33 | 8.32 | | | | | | 5.80 | | | | | | | | | | | | |
| | MIN | 21.80 | 4.20 | 2.00 | 0.30 | 182.20 | | | | 10.00 | 0.16 | 0.09 | 0.09 | 0.01 | 0.07 | 0.08 | 0.14 | | 2.40 | 2.60 | 0.07 | 6.80 | 3.80 | 0.01 | 0.05 | 77.00 | 0.05 | 32.00 | 0.05 | 7.20 | 0.16 | 14.00 | 3.50 | |
| | MAX | 26.80 | 5.10 | 10.00 | 0.95 | 366.00 | | | | 10.00 | 20.40 | 4.40 | 4.40 | 0.06 | 16.00 | 16.01 | 0.14 | | 2.40 | 2.60 | 0.07 | 15.00 | 3.80 | 0.01 | 0.05 | 77.00 | 0.05 | 32.00 | 0.05 | 7.20 | 0.16 | 14.00 | 3.50 | |
| DP-Q15-15 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.73 | | 2.67 | 1.21 | 301.47 | | | | | 4.39 | 0.39 | 0.38 | 0.01 | 4.00 | 4.01 | | | | | | 9.50 | 5.60 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 3.66 | | 0.58 | 0.96 | 15.59 | | | | | 2.28 | 0.10 | 0.09 | 0.00 | 2.19 | 2.19 | | | | | | | | | | | | | | | | | | |
| | MIN | 20.70 | 4.60 | 2.00 | 0.61 | 285.00 | | | | | 1.79 | 0.29 | 0.29 | 0.01 | 1.50 | 1.51 | | | | | | 9.50 | 5.60 | 0.01 | | | | | | | | | | |
| | MAX | 27.80 | 4.80 | 3.00 | 2.31 | 316.00 | | | | | 6.08 | 0.48 | 0.47 | 0.01 | 5.60 | 5.61 | | | | | | 9.50 | 5.60 | 0.01 | | | | | | | | | | |
| DP-Q15-21 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.48 | | 4.30 | 0.74 | 329.40 | | | | | 8.13 | 0.60 | 0.59 | 0.01 | 7.53 | 7.54 | | | | | | 14.00 | 9.10 | 0.01 | | | | | | | | | | |
| | STD. DEV | 1.78 | | 2.04 | 0.50 | 19.27 | | | | | 1.96 | 0.27 | 0.27 | 0.00 | 2.21 | 2.22 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 22.60 | 4.80 | 2.00 | 0.30 | 317.00 | | | | | 5.90 | 0.41 | 0.41 | 0.01 | 5.00 | 5.01 | | | | | | 13.00 | 9.10 | 0.01 | | | | | | | | | | |
| | MAX | 26.60 | 5.20 | 5.90 | 1.44 | 358.00 | | | | | 9.58 | 0.90 | 0.90 | 0.01 | 9.10 | 9.11 | | | | | | 15.00 | 9.10 | 0.01 | | | | | | | | | | |

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# Table F.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-Q15-26 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.20 | | 5.97 | 0.75 | 333.75 | | | | | 9.35 | 0.68 | 0.67 | 0.02 | 8.67 | 8.68 | | | | | | 14.00 | 11.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.33 | | 4.00 | 0.48 | 38.22 | | | | | 1.96 | 0.22 | 0.20 | 0.02 | 2.17 | 2.16 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 21.50 | 4.80 | 2.00 | 0.30 | 293.00 | | | | | 7.59 | 0.46 | 0.45 | 0.01 | 6.70 | 6.74 | | | | | | 13.00 | 11.00 | 0.01 | | | | | | | | | | |
| | MAX | 26.80 | 5.20 | 10.00 | 1.33 | 385.00 | | | | | 11.46 | 0.89 | 0.85 | 0.04 | 11.00 | 11.01 | | | | | | 15.00 | 11.00 | 0.01 | | | | | | | | | | |
| **Standpipe Piezometers** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PZ01-BKG-9 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.80 | | 2.00 | 6.78 | 146.80 | | | | | 0.37 | 0.36 | 0.25 | 0.11 | 0.01 | 0.12 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.80 | 4.60 | 2.00 | 6.78 | 146.80 | | | | | 0.37 | 0.36 | 0.25 | 0.11 | 0.01 | 0.12 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.80 | 4.60 | 2.00 | 6.78 | 146.80 | | | | | 0.37 | 0.36 | 0.25 | 0.11 | 0.01 | 0.12 | | | | | | | | | | | | | | | | | | |
| PZ02-P02-9 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.40 | | 2.00 | 4.63 | 73.60 | | | | | 1.73 | 0.96 | 0.96 | 0.01 | 0.77 | 0.78 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.40 | 4.70 | 2.00 | 4.63 | 73.60 | | | | | 1.73 | 0.96 | 0.96 | 0.01 | 0.77 | 0.78 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.40 | 4.70 | 2.00 | 4.63 | 73.60 | | | | | 1.73 | 0.96 | 0.96 | 0.01 | 0.77 | 0.78 | | | | | | | | | | | | | | | | | | |
| PZ03-H11-6 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 26.93 | | 2.00 | 2.69 | 146.47 | | | | 12.50 | 2.13 | 1.13 | 1.51 | 0.01 | 1.01 | 1.02 | 0.01 | | 4.80 | 3.40 | 0.14 | 7.35 | 0.76 | 0.01 | 0.01 | 44.00 | 0.05 | 11.00 | 0.02 | 2.70 | 0.05 | 4.80 | 5.80 | |
| | STD. DEV. | 1.31 | | 0.00 | 1.17 | 16.10 | | | | 3.54 | 1.45 | 1.04 | 1.12 | 0.01 | 0.44 | 0.43 | | | | | | 1.63 | 0.13 | 0.00 | | | | | | | | | | |
| | MIN | 25.90 | 4.40 | 2.00 | 1.40 | 136.00 | | | | 10.00 | 1.19 | 0.34 | 0.72 | 0.01 | 0.67 | 0.69 | 0.01 | | 4.80 | 3.40 | 0.14 | 6.20 | 0.67 | 0.01 | 0.01 | 44.00 | 0.05 | 11.00 | 0.02 | 2.70 | 0.05 | 4.80 | 5.80 | |
| | MAX | 28.40 | 4.80 | 2.00 | 3.68 | 165.00 | | | | 15.00 | 3.80 | 2.30 | 2.29 | 0.02 | 1.50 | 1.51 | 0.01 | | 4.80 | 3.40 | 0.14 | 8.50 | 0.85 | 0.01 | 0.01 | 44.00 | 0.05 | 11.00 | 0.02 | 2.70 | 0.05 | 4.80 | 5.80 | |
| PZ04-BKG-9 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 0 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 24.35 | | 6.67 | 2.71 | 92.78 | | | | 19.50 | 2.41 | 0.47 | 0.45 | 0.02 | 1.94 | 1.96 | 0.02 | | 3.15 | 3.07 | 0.17 | 2.80 | 2.90 | 0.01 | 0.03 | 11.00 | 0.05 | 8.80 | 0.09 | 2.20 | 0.06 | 0.79 | 1.75 | |
| | STD. DEV. | 3.26 | | 1.56 | 1.54 | 21.61 | | | | 12.02 | 3.51 | 0.43 | 0.43 | 0.02 | 3.09 | 3.09 | 0.01 | | 0.35 | 0.64 | 0.11 | 0.95 | 3.68 | 0.00 | 0.02 | 1.41 | 0.00 | 4.53 | 0.03 | 0.85 | 0.01 | 0.21 | 0.07 | |
| | MIN | 21.60 | 5.00 | 5.00 | 1.10 | 72.90 | | | | 11.00 | 0.12 | 0.11 | 0.11 | 0.01 | 0.01 | 0.02 | 0.01 | | 2.90 | 2.60 | 0.09 | 1.70 | 0.30 | 0.01 | 0.01 | 10.00 | 0.05 | 5.60 | 0.07 | 1.60 | 0.05 | 0.64 | 1.70 | |
| | MAX | 28.20 | 5.60 | 8.10 | 4.20 | 120.00 | | | | 28.00 | 6.45 | 0.95 | 0.93 | 0.04 | 5.50 | 5.52 | 0.02 | | 3.40 | 3.80 | 0.24 | 3.40 | 5.50 | 0.01 | 0.04 | 12.00 | 0.05 | 12.00 | 0.11 | 2.80 | 0.07 | 0.94 | 1.80 | |
| PZ05-BKG-9 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.80 | | 6.90 | 4.38 | 98.80 | | | | | 4.80 | 1.20 | 1.17 | 0.03 | 3.60 | 3.63 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.80 | 5.10 | 6.90 | 4.38 | 98.80 | | | | | 4.80 | 1.20 | 1.17 | 0.03 | 3.60 | 3.63 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.80 | 5.10 | 6.90 | 4.38 | 98.80 | | | | | 4.80 | 1.20 | 1.17 | 0.03 | 3.60 | 3.63 | | | | | | | | | | | | | | | | | | |
| PZ06-BKG-12 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.10 | | 3.00 | 5.41 | 59.40 | | | | | 0.26 | 0.25 | 0.21 | 0.04 | 0.01 | 0.05 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.10 | 4.70 | 3.00 | 5.41 | 59.40 | | | | | 0.26 | 0.25 | 0.21 | 0.04 | 0.01 | 0.05 | | | | | | | | | | | | | | | | | | |
| | MAX | 23.10 | 4.70 | 3.00 | 5.41 | 59.40 | | | | | 0.26 | 0.25 | 0.21 | 0.04 | 0.01 | 0.05 | | | | | | | | | | | | | | | | | | |
| PZ07-D05-7 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 26.03 | | 4.00 | 1.26 | 290.20 | | | | 22.00 | 8.25 | 1.45 | 1.43 | 0.02 | 6.80 | 6.82 | 0.01 | | | | | 25.00 | 10.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.10 | | 1.41 | 1.10 | 69.73 | | | | | 4.31 | 0.21 | 0.24 | 0.03 | 4.53 | 4.55 | | | | | | 5.66 | | | | | | | | | | | | |
| | MIN | 25.30 | 4.60 | 3.00 | 0.39 | 221.60 | | | | 22.00 | 5.20 | 1.30 | 1.26 | 0.01 | 3.60 | 3.61 | 0.01 | | | | | 21.00 | 10.00 | 0.01 | | | | | | | | | | |
| | MAX | 27.30 | 4.70 | 5.00 | 2.50 | 361.00 | | | | 22.00 | 11.30 | 1.60 | 1.60 | 0.04 | 10.00 | 10.04 | 0.01 | | | | | 29.00 | 10.00 | 0.01 | | | | | | | | | | |
| PZ08-FG7-12 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.60 | | 2.00 | 3.33 | 126.90 | | | | | 2.13 | 1.30 | 1.30 | 0.01 | 0.83 | 0.84 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.60 | 4.80 | 2.00 | 3.33 | 126.90 | | | | | 2.13 | 1.30 | 1.30 | 0.01 | 0.83 | 0.84 | | | | | | | | | | | | | | | | | | |
| | MAX | 23.60 | 4.80 | 2.00 | 3.33 | 126.90 | | | | | 2.13 | 1.30 | 1.30 | 0.01 | 0.83 | 0.84 | | | | | | | | | | | | | | | | | | |
| PZ09-I08-5 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.90 | | 2.00 | 6.03 | 94.20 | | | | | 1.99 | 1.40 | 1.40 | 0.01 | 0.59 | 0.60 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.90 | 5.20 | 2.00 | 6.03 | 94.20 | | | | | 1.99 | 1.40 | 1.40 | 0.01 | 0.59 | 0.60 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.90 | 5.20 | 2.00 | 6.03 | 94.20 | | | | | 1.99 | 1.40 | 1.40 | 0.01 | 0.59 | 0.60 | | | | | | | | | | | | | | | | | | |
| PZ10-CD6-13 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.60 | | 26.00 | 2.85 | 524.00 | | | | | 7.70 | 2.50 | 2.45 | 0.05 | 5.20 | 5.25 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.60 | 6.00 | 26.00 | 2.85 | 524.00 | | | | | 7.70 | 2.50 | 2.45 | 0.05 | 5.20 | 5.25 | | | | | | | | | | | | | | | | | | |
| | MAX | 25.60 | 6.00 | 26.00 | 2.85 | 524.00 | | | | | 7.70 | 2.50 | 2.45 | 0.05 | 5.20 | 5.25 | | | | | | | | | | | | | | | | | | |
| PZ11-E09-10 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 26.47 | | 19.13 | 3.24 | 440.27 | | | | 75.00 | 18.93 | 1.93 | 1.48 | 0.21 | 17.00 | 17.21 | 0.02 | | 2.20 | 1.50 | 0.04 | 36.50 | 15.00 | 0.01 | 0.01 | 59.00 | 0.09 | 34.00 | 0.29 | 8.90 | 0.23 | 10.00 | 30.00 | |
| | STD. DEV. | 0.99 | | 14.66 | 2.06 | 23.61 | | | | 91.92 | 4.99 | 0.47 | 0.18 | 0.24 | 4.58 | 4.78 | | | | | | 0.71 | 4.24 | 0.00 | | | | | | | | | | |
| | MIN | 25.80 | 5.30 | 9.40 | 1.80 | 413.00 | | | | 10.00 | 13.40 | 1.40 | 1.35 | 0.05 | 12.00 | 12.05 | 0.02 | | 2.20 | 1.50 | 0.04 | 36.00 | 12.00 | 0.01 | 0.01 | 59.00 | 0.09 | 34.00 | 0.29 | 8.90 | 0.23 | 10.00 | 30.00 | |
| | MAX | 27.60 | 5.70 | 36.00 | 5.60 | 454.00 | | | | 140.00 | 23.10 | 2.30 | 1.61 | 0.49 | 21.00 | 21.49 | 0.02 | | 2.20 | 1.50 | 0.04 | 37.00 | 18.00 | 0.01 | 0.01 | 59.00 | 0.09 | 34.00 | 0.29 | 8.90 | 0.23 | 10.00 | 30.00 | |
| PZ13-F04-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.40 | | 7.90 | 2.48 | 125.50 | | | | | 2.15 | 0.75 | 0.71 | 0.04 | 1.40 | 1.44 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.40 | 5.60 | 7.90 | 2.48 | 125.50 | | | | | 2.15 | 0.75 | 0.71 | 0.04 | 1.40 | 1.44 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.40 | 5.60 | 7.90 | 2.48 | 125.50 | | | | | 2.15 | 0.75 | 0.71 | 0.04 | 1.40 | 1.44 | | | | | | | | | | | | | | | | | | |
| PZ14-G13-7 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.50 | | 15.00 | 1.04 | 246.10 | | | | | 7.59 | 0.19 | 0.19 | 0.01 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.50 | 5.80 | 15.00 | 1.04 | 246.10 | | | | | 7.59 | 0.19 | 0.19 | 0.01 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.50 | 5.80 | 15.00 | 1.04 | 246.10 | | | | | 7.59 | 0.19 | 0.19 | 0.01 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | | |
| PZ15-A11-6 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 27.10 | | 6.95 | 2.44 | 126.33 | | | | 38.00 | 1.07 | 0.68 | 0.63 | 0.04 | 0.40 | 0.44 | 0.01 | | | | | 11.90 | 0.52 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.30 | | 2.90 | 0.70 | 60.00 | | | | | 0.27 | 0.09 | 0.09 | 0.00 | 0.18 | 0.18 | | | | | | 7.21 | | | | | | | | | | | | |
| | MIN | 24.80 | 4.80 | 4.90 | 1.70 | 84.00 | | | | 38.00 | 0.88 | 0.61 | 0.57 | 0.04 | 0.27 | 0.31 | 0.01 | | | | | 6.80 | 0.52 | 0.01 | | | | | | | | | | |
| | MAX | 29.40 | 5.30 | 9.00 | 3.10 | 195.00 | | | | 38.00 | 1.26 | 0.74 | 0.70 | 0.04 | 0.52 | 0.56 | 0.01 | | | | | 17.00 | 0.52 | 0.01 | | | | | | | | | | |



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# Table F.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| PZ16-C12-28 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.68 | | 10.30 | 0.54 | 300.98 | | | | 10.00 | 0.99 | 0.74 | 0.73 | 0.02 | 0.25 | 0.27 | 0.48 | | | | | 19.00 | 0.27 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.33 | | 0.61 | 0.18 | 9.03 | | | | | 1.06 | 1.00 | 1.00 | 0.00 | 0.07 | 0.07 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 24.60 | 5.30 | 9.90 | 0.30 | 291.80 | | | | 10.00 | 0.29 | 0.12 | 0.10 | 0.02 | 0.17 | 0.19 | 0.48 | | | | | 19.00 | 0.27 | 0.01 | | | | | | | | | | |
| | MAX | 27.60 | 5.70 | 11.00 | 0.70 | 311.00 | | | | 10.00 | 2.21 | 1.90 | 1.88 | 0.02 | 0.31 | 0.33 | 0.48 | | | | | 19.00 | 0.27 | 0.01 | | | | | | | | | | |
| PZ17-I15-26 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.88 | | 3.37 | 1.20 | 297.80 | | | | | 12.73 | 0.76 | 0.63 | 0.13 | 11.97 | 12.10 | | | 4.00 | 1.00 | | 14.00 | 9.20 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.54 | | 0.64 | 1.03 | 11.60 | | | | | 3.86 | 0.67 | 0.47 | 0.22 | 4.37 | 4.25 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 22.10 | 4.80 | 3.00 | 0.20 | 283.00 | | | | | 10.30 | 0.18 | 0.17 | 0.01 | 9.20 | 9.58 | | | 4.00 | 1.00 | | 14.00 | 9.20 | 0.01 | | | | | | | | | | |
| | MAX | 25.40 | 5.70 | 4.10 | 2.46 | 307.10 | | | | | 17.18 | 1.50 | 1.12 | 0.38 | 17.00 | 17.01 | | | 4.00 | 1.00 | | 14.00 | 9.20 | 0.01 | | | | | | | | | | |
| PZ18-R12-26 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.43 | | 8.45 | 0.56 | 267.70 | | | | 10.00 | 8.07 | 1.81 | 1.79 | 0.02 | 6.26 | 6.28 | 0.59 | | | | | 12.50 | 0.51 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.77 | | 0.64 | 0.35 | 54.28 | | | | | 10.37 | 2.25 | 2.25 | 0.00 | 8.12 | 8.13 | | | | | | 0.71 | | | | | | | | | | | | |
| | MIN | 23.40 | 5.00 | 8.00 | 0.20 | 223.00 | | | | 10.00 | 0.73 | 0.22 | 0.20 | 0.02 | 0.51 | 0.53 | 0.59 | | | | | 12.00 | 0.51 | 0.01 | | | | | | | | | | |
| | MAX | 26.60 | 5.10 | 8.90 | 0.89 | 328.10 | | | | 10.00 | 15.40 | 3.40 | 3.38 | 0.02 | 12.00 | 12.02 | 0.59 | | | | | 13.00 | 0.51 | 0.01 | | | | | | | | | | |
| PZ19-G10-26 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.87 | | 4.00 | 0.69 | 299.37 | | | | 10.00 | 14.30 | 1.60 | 1.59 | 0.02 | 12.70 | 12.72 | 0.05 | | 0.77 | 1.10 | 0.19 | 15.00 | 8.40 | 0.01 | 0.09 | 52.00 | 0.05 | 22.00 | 0.03 | 8.20 | 0.21 | 11.00 | 6.20 | |
| | STD. DEV. | 0.75 | | 0.00 | 0.34 | 4.65 | | | | | 5.09 | 0.99 | 0.99 | 0.00 | 6.08 | 6.08 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 23.10 | 5.00 | 4.00 | 0.40 | 294.00 | | | | 10.00 | 10.70 | 0.90 | 0.89 | 0.01 | 8.40 | 8.42 | 0.05 | | 0.77 | 1.10 | 0.19 | 15.00 | 8.40 | 0.01 | 0.09 | 52.00 | 0.05 | 22.00 | 0.03 | 8.20 | 0.21 | 11.00 | 6.20 | |
| | MAX | 24.60 | 5.10 | 4.00 | 1.07 | 302.10 | | | | 10.00 | 17.90 | 2.30 | 2.28 | 0.02 | 17.00 | 17.01 | 0.05 | | 0.77 | 1.10 | 0.19 | 15.00 | 8.40 | 0.01 | 0.09 | 52.00 | 0.05 | 22.00 | 0.03 | 8.20 | 0.21 | 11.00 | 6.20 | |
| PZ20-G10-15 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.50 | | 11.50 | 1.59 | 321.37 | | | | 26.00 | 16.38 | 2.55 | 2.53 | 0.02 | 13.83 | 13.85 | 1.10 | | 6.80 | 2.30 | 0.21 | 16.50 | 8.50 | 0.16 | 0.05 | 54.00 | 0.05 | 26.00 | 0.05 | 6.20 | 0.22 | 7.80 | 11.00 | |
| | STD. DEV. | 1.99 | | 4.95 | 1.24 | 30.34 | | | | | 8.94 | 1.63 | 1.65 | 0.03 | 7.31 | 7.29 | | | | | | 0.71 | | | | | | | | | | | | |
| | MIN | 22.20 | 4.90 | 8.00 | 0.20 | 300.00 | | | | 26.00 | 10.06 | 1.40 | 1.36 | 0.01 | 8.66 | 8.70 | 1.10 | | 6.80 | 2.30 | 0.21 | 16.00 | 8.50 | 0.16 | 0.05 | 54.00 | 0.05 | 26.00 | 0.05 | 6.20 | 0.22 | 7.80 | 11.00 | |
| | MAX | 25.70 | 5.60 | 15.00 | 2.60 | 356.10 | | | | 26.00 | 22.70 | 3.70 | 3.70 | 0.04 | 19.00 | 19.01 | 1.10 | | 6.80 | 2.30 | 0.21 | 17.00 | 8.50 | 0.16 | 0.05 | 54.00 | 0.05 | 26.00 | 0.05 | 6.20 | 0.22 | 7.80 | 11.00 | |
| PZ21-E11-26 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.37 | | 6.00 | 0.72 | 293.87 | | | | | 10.16 | 0.98 | 0.91 | 0.07 | 9.19 | 9.25 | | | | | | 15.00 | 8.90 | 0.17 | | | | | | | | | | |
| | STD. DEV. | 0.67 | | 2.83 | 0.31 | 5.22 | | | | | 0.44 | 0.60 | 0.52 | 0.08 | 0.16 | 0.09 | | | | | | 2.83 | | | | | | | | | | | | |
| | MIN | 23.60 | 4.90 | 4.00 | 0.36 | 288.00 | | | | | 9.85 | 0.55 | 0.54 | 0.01 | 9.07 | 9.19 | | | | | | 13.00 | 8.90 | 0.17 | | | | | | | | | | |
| | MAX | 24.80 | 5.20 | 8.00 | 0.90 | 298.00 | | | | | 10.47 | 1.40 | 1.28 | 0.12 | 9.30 | 9.31 | | | | | | 17.00 | 8.90 | 0.17 | | | | | | | | | | |
| PZ22-E11-15 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.40 | | 8.90 | 1.36 | 416.00 | | | | | 5.60 | 1.40 | 1.39 | 0.01 | 4.20 | 4.21 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.40 | 5.30 | 8.90 | 1.36 | 416.00 | | | | | 5.60 | 1.40 | 1.39 | 0.01 | 4.20 | 4.21 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.40 | 5.30 | 8.90 | 1.36 | 416.00 | | | | | 5.60 | 1.40 | 1.39 | 0.01 | 4.20 | 4.21 | | | | | | | | | | | | | | | | | | |
| PZ23-D09-27 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.40 | | 5.90 | 0.18 | 306.20 | | | | | 8.50 | 1.20 | 1.20 | 0.01 | 7.30 | 7.31 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.40 | 5.40 | 5.90 | 0.18 | 306.20 | | | | | 8.50 | 1.20 | 1.20 | 0.01 | 7.30 | 7.31 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.40 | 5.40 | 5.90 | 0.18 | 306.20 | | | | | 8.50 | 1.20 | 1.20 | 0.01 | 7.30 | 7.31 | | | | | | | | | | | | | | | | | | |
| PZ24-BKG-26 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 0 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 24.28 | | 4.03 | 0.58 | 290.53 | | | | 11.00 | 11.97 | 1.23 | 1.21 | 0.03 | 10.74 | 10.77 | 0.61 | | 1.85 | 1.10 | 0.07 | 16.33 | 10.05 | 0.07 | 0.07 | 42.50 | 0.05 | 20.50 | 0.07 | 10.35 | 0.17 | 8.45 | 7.75 | |
| | STD. DEV. | 0.99 | | 0.06 | 0.15 | 13.15 | | | | 1.41 | 0.85 | 0.65 | 0.62 | 0.03 | 1.49 | 1.46 | 0.83 | | 1.55 | 0.31 | 0.08 | 2.31 | 1.34 | 0.08 | 0.08 | 0.71 | 0.00 | 0.71 | 0.05 | 0.92 | 0.01 | 0.64 | 0.07 | |
| | MIN | 23.10 | 4.80 | 4.00 | 0.40 | 270.90 | | | | 10.00 | 11.00 | 0.60 | 0.60 | 0.01 | 9.10 | 9.16 | 0.03 | | 0.64 | 0.79 | 0.01 | 15.00 | 9.10 | 0.01 | 0.01 | 42.00 | 0.05 | 20.00 | 0.04 | 9.70 | 0.16 | 8.00 | 7.70 | |
| | MAX | 25.50 | 5.10 | 4.10 | 0.70 | 299.00 | | | | 12.00 | 12.60 | 1.90 | 1.84 | 0.06 | 12.00 | 12.01 | 1.20 | | 3.60 | 1.40 | 0.12 | 19.00 | 11.00 | 0.12 | 0.12 | 43.00 | 0.05 | 21.00 | 0.11 | 11.00 | 0.17 | 8.90 | 7.80 | |
| PZ25-A6.5-10 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.70 | | 57.00 | 3.93 | 689.00 | | | | 26.00 | 21.65 | 2.15 | 2.13 | 0.02 | 19.50 | 19.52 | 0.49 | | | | | 37.00 | 19.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 3.82 | | 12.73 | 2.44 | 114.55 | | | | | 0.92 | 0.21 | 0.21 | 0.00 | 0.71 | 0.71 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.00 | 6.00 | 48.00 | 2.20 | 608.00 | | | | 26.00 | 21.00 | 2.00 | 1.98 | 0.02 | 19.00 | 19.02 | 0.49 | | | | | 37.00 | 19.00 | 0.01 | | | | | | | | | | |
| | MAX | 27.40 | 6.00 | 66.00 | 5.65 | 770.00 | | | | 26.00 | 22.30 | 2.30 | 2.28 | 0.02 | 20.00 | 20.02 | 0.49 | | | | | 37.00 | 19.00 | 0.01 | | | | | | | | | | |
| **Blanks** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FB-DI | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 19.57 | | 2.00 | 7.53 | 1.23 | | | | 10.00 | 0.06 | 0.05 | 0.04 | 0.01 | 0.01 | 0.02 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 6.71 | | 0.00 | 2.58 | 0.25 | | | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 12.10 | 5.60 | 2.00 | 4.60 | 1.00 | | | | 10.00 | 0.06 | 0.05 | 0.04 | 0.01 | 0.01 | 0.02 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | | |
| | MAX | 25.10 | 6.10 | 2.00 | 9.44 | 1.49 | | | | 10.00 | 0.06 | 0.05 | 0.05 | 0.01 | 0.01 | 0.02 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | | |
| FB-TAP | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 20.73 | | 133.33 | 8.13 | 435.67 | | | | 10.00 | 0.16 | 0.05 | 0.04 | 0.01 | 0.11 | 0.11 | 0.01 | | | | | 19.00 | 0.26 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 10.01 | | 11.55 | 2.94 | 8.14 | | | | | 0.13 | 0.00 | 0.00 | 0.00 | 0.13 | 0.14 | | | | | | | | | | | | | | | | | | |
| | MIN | 9.60 | 6.97 | 120.00 | 5.20 | 430.00 | | | | 10.00 | 0.06 | 0.05 | 0.04 | 0.01 | 0.01 | 0.02 | 0.01 | | | | | 19.00 | 0.26 | 0.01 | | | | | | | | | | |
| | MAX | 29.00 | 7.70 | 140.00 | 11.07 | 445.00 | | | | 10.00 | 0.31 | 0.05 | 0.05 | 0.01 | 0.26 | 0.27 | 0.01 | | | | | 19.00 | 0.26 | 0.01 | | | | | | | | | | |
| Equipment Rinsate | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.33 | | 3.33 | 4.93 | 6.40 | | | | 10.00 | 0.12 | 0.10 | 0.09 | 0.02 | 0.02 | 0.03 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 7.77 | | 2.31 | 2.29 | 6.15 | | | | | 0.09 | 0.09 | 0.09 | 0.01 | 0.01 | 0.02 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 11.90 | 5.60 | 2.00 | 2.31 | 1.00 | | | | 10.00 | 0.06 | 0.05 | 0.02 | 0.01 | 0.01 | 0.02 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | | |
| | MAX | 28.80 | 7.20 | 6.00 | 7.90 | 13.20 | | | | 10.00 | 0.22 | 0.21 | 0.19 | 0.03 | 0.03 | 0.06 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | | |

NOTES:
All results in milligrams per liter (mg/L) except where indicated
Blank - Not sampled
D.O. - Dissolved oxygen
G - Grab sample
Gray-shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.
Yellow-shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit, value used for statistical analysis.
Orange - shaded data points indicate too many colonies were present. The numberic value represents the dilution factor times the maximum reportable number of colonies.
Blue-shaded data points indicate the number is greater than reported value.

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# Appendix G: Soil Analytical Results

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**Table G.1**
**Site GCREC Mound Soil Sample Descriptions**

| Grid Location | Identifier | Surface Elevation (ft) | Depth bgs (ft) | Description |
|---|---|---|---|---|
| CD6.5 | PZ10-CD6-13 | 129.51 | 0-0.4’ | Grass/fill |
| | | | 0.4-0.9’ | Gray fine sand with yellow and white mottles |
| | | | 0.9-6.6’ | Uniform yellow fine grain sand |
| | | | 6.5’ | Saturation |
| | | | 6.6-6.7’ | Dark brown (10YR 3/3) fine sand |
| | | | 6.7-10.7’ | Light gray (5Y 7/2) fine sand |
| | | | 10.7-11.5’ | Dark brown (10YR 3/3) fine sand |
| | | | 11.5-12.3’ | Yellow (5Y 7/6) fine sand |
| | | | 12.3-13.45’ | Light gray (5Y 7/2) fine sand |
| | | | 13.45-16.1’ | Spodic horizon, dark brown (7.5YR 3/3) fine sand |
| | | | 16.1-17.4’ | Brown (7.5YR 4/4) fine sand |
| E9 | PZ11-E09-10 | 124.06 | 0-2.2’ | A Horizon top soil |
| | | | 2.2-2.7’ | Pale yellow (5Y 7/3) fine sand with mottles |
| | | | 2.7-5.8’ | Yellowish brown (10YR 5/4) fine sand |
| | | | 5.8-6.9’ | Very dark brown (7.5YR 2.5/3) fine sand |
| | | | 6.1’ | Saturation |
| | | | 6.9-10.3’ | Medium brown (10YR 5/3) fine sand |
| | | | 10.3-15’ | Spodic horizon, black (10YR 2/1) fine sand |
| F4 | PZ13-F04-8 | 124.42 | 0-4.2’ | A Horizon top soil |
| | | | 4.2-4.7’ | Pale yellow (5Y 8/4) fine sand with mottles |
| | | | 4.7-13.5’ | Spodic horizon, dark brown sand |
| | | | 6.3’ | Saturation |

| Grid Location | Identifier | Surface Elevation (ft) | Depth bgs (ft) | Description |
|---|---|---|---|---|
| Westside of Mound Near A9 | | ~129 | 0-7.4’ | Mound sand with some mottles |
| | | | 7.4-8.4’ | Dark oxidized sand |
| | | | 8.4’ | Saturation |
| | | | 8.4-9.4’ | Saturated very pale brown fine sand |
| | | | 9.4-10’ | Spodic horizon, dark brown fine sand |
| | | | 10-12’ | Dark yellowish brown (10YR 4/6) fine sand |
| | | | 12-15’ | Dark brown fine sand |
| G10 | PZ12 Abandoned | 123.55 | 0-1.2’ | A Horizon top soil |
| | | | 1.2-2.8’ | White (10YR 8/2) fine sand |
| | | | 2.8-6.1’ | Spodic horizon, black fine sand |
| | | | 6.1-9’ | Brown (10YR 4/3) fine sand |
| | | | 9’ | Saturation |
| | | | 9-10.1’ | Gray (5Y 5/1) fine sand with black mottles |
| | | | 10.1-13.9’ | Black (5Y 2.5/1) fine sand |
| | | | 13.9-16.6’ | Light yellowish brown (10YR 6/4) uniform fine sand |
| E6 | | 124.81 | 0-2.44' | top fill brown |
| | | | 2.44'-2.9' | tan fine sand |
| | | | 2.9'-4' | light tan fine sand |
| | | | 2.8'-3.9' | shelby tube sample |
| | | | 4'-4.35' | cream & dark marble fine sand |
| | | | 4.35'-4.85' | shelby tube sample creamy fine sand (wet) |
| | | | 4.85'-5.35' | shelby tube sample top spodic soil 6" |

## Table G.2
## Site GCREC Mound Soil Particle Size Distribution

| Grid ID | Depth Bgs (ft) | Sand Fractions (%) | | | | | Total (%) | | | | Texture Class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Very Fine | Fine | Medium | Coarse | Very Coarse | Sand | Silt | Clay | Other | |
| | | 0.05-0.1 mm | 0.25-0.1 mm | 0.25-0.5 mm | 0.5-1.0 mm | 1.0-2.0 mm | 0.05-2 mm | 0.002-0.05 mm | <0.002 mm | >2 mm | |
| 010 | 0-1.57 | 9.9 | 48.0 | 29.4 | 6.7 | 1.4 | 95.2 | * | * | 0.4 | sand |
| | 1.57-2.49 | 10.6 | 50.8 | 26.8 | 6.9 | 2.0 | 98.1 | * | * | 0.2 | sand |
| | 2.49-3.58 | 12.3 | 49.5 | 25.8 | 6.3 | 1.3 | 95.6 | 2.6 | 1.8 | 0.1 | Sand |
| | 3.58-5.1 | 12.0 | 49.1 | 24.9 | 6.7 | 1.8 | 95.0 | 4.3 | 0.7 | 0.2 | sand |
| | 5.1-5.6 | 7.3 | 42.4 | 25.1 | 7.4 | 2.4 | 84.1 | 3.4 | 12.5 | 0.6 | loamy sand |
| | 5.6-6.2 | 5.8 | 39.9 | 25.1 | 7.8 | 3.2 | 81.8 | 2.2 | 16.1 | 0.9 | sandy loam |
| E06 | 0-2.4 | 11.0 | 48.7 | 28.3 | 5.5 | 1.1 | 94.6 | 3.9 | 1.5 | 0.2 | sand |
| | 2.4-2.9 | 12.4 | 47.0 | 22.7 | 4.9 | 1.3 | 88.1 | 11.4 | 0.5 | 0.2 | sand |
| | 2.8-3.9 | 11.6 | 49.5 | 27.4 | 7.2 | 2.0 | 97.5 | 2.5 | 0.0 | 0.2 | sand |
| | 2.9-4 | 12.7 | 50.5 | 24.8 | 5.3 | 1.0 | 94.3 | 4.3 | 1.4 | 0.2 | sand |
| | 4-4.35 | 12.8 | 50.3 | 25.7 | 6.6 | 1.3 | 96.9 | 2.8 | 0.3 | 0.3 | sand |
| | 4.35-4.85 | 9.4 | 47.0 | 26.9 | 7.3 | 2.6 | 93.1 | 5.2 | 1.7 | 1.3 | sand |
| | 4.85-5.35 | 5.8 | 46.6 | 26.9 | 6.1 | 2.4 | 88.3 | 6.2 | 5.5 | 1.4 | sand |
| | 6-8 | 5.2 | 48.0 | 32.2 | 6.2 | 1.0 | 93.0 | 4.1 | 2.9 | 0.2 | sand |
| G10 | 0-1.2 | 11.9 | 47.6 | 27.8 | 5.9 | 1.1 | 94.7 | 3.2 | 2.1 | 0.2 | sand |
| | 1.2-2.8 | 10.0 | 46.7 | 27.2 | 6.9 | 1.5 | 92.3 | 3.6 | 4.1 | 0.6 | sand |
| | 2.8-6.1 | 11.7 | 46.6 | 27.4 | 7.0 | 1.4 | 94.0 | 4.3 | 1.6 | 0.3 | sand |
| | 6.1-9 | 8.9 | 49.8 | 26.2 | 3.9 | 1.1 | 90.1 | 8.8 | 1.1 | 0.8 | sand |
| | 9-10.1 | 7.2 | 44.1 | 34.4 | 6.0 | 0.8 | 92.6 | 6.5 | 0.9 | 0.1 | sand |
| | 10.1-13.9 | 3.1 | 37.5 | 45.9 | 5.6 | 0.7 | 92.4 | 6.2 | 1.4 | 0.0 | sand |
| | 13.9-16.6 | 2.5 | 33.7 | 48.3 | 7.1 | 1.0 | 92.8 | 3.2 | 3.9 | 0.3 | sand |
| | 16.6-19 | 2.3 | 14.2 | 54.3 | 19.3 | 2.2 | 92.0 | 5.4 | 2.6 | 1.3 | sand |
| | 19-23 | 1.7 | 40.4 | 46.8 | 5.3 | 0.4 | 94.7 | 1.9 | 3.4 | 0.5 | sand |
| | 23-27.5 | 4.2 | 76.2 | 6.4 | 0.4 | 0.1 | 87.5 | 8.2 | 4.2 | 0.2 | sand |
| | 27.5-27.9 | 4.5 | 44.7 | 11.2 | 7.1 | 10.9 | 79.5 | 3.5 | 17.0 | 41.2 | sandy loam |
| | 27.9-30 | | | | | | | | | n/a | n/a |

* Clay and silt values were not within acceptable limits.



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## Table G.3
## Site GCREC Mound Soil Sample Parameters

| ID# | Sample ID | Depth | pH | BufpH | CEC | TN[1] | TKN | ON[2] | NH3-N | NOx-N | TIN[3] | OrgMt | Est. TOC[4] | K | Ca | Mg | Na |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | % | 0.68% OM | mg/kg | mg/kg | mg/kg | mg/kg |
| 1 | O-10 | 0-1.57' | 6.10 | 7.80 | 6.92 | 800.92 | 799.0897 | 797.44 | 1.65 | 1.83 | 3.48 | 2.11 | 1.43 | 27.19 | 634.0 | 50.20 | 23.68 |
| 2 | O-10 | 1.57-2.49' | 5.30 | 7.89 | 2.36 | 115.37 | 114.3235 | 113.31 | 1.02 | 1.05 | 2.06 | 0.20 | 0.14 | 12.89 | 42.86 | 1.58 | 21.25 |
| 3 | O-10 | 2.49-3.58' | 5.40 | 7.92 | 2.19 | 49.20 | 48.9296 | 48.06 | 0.87 | 0.27 | 1.14 | 0.14 | 0.10 | 11.81 | 38.34 | 1.99 | 23.84 |
| 4 | O-10 | 3.58-5.1' | 5.20 | 7.92 | 2.15 | 41.04 | 40.777 | 39.92 | 0.86 | 0.26 | 1.12 | 0.14 | 0.10 | 13.01 | 39.47 | 1.88 | 22.10 |
| 5 | O-10 | 5.1-5.6' | 4.70 | 7.76 | 3.79 | 66.94 | 66.7042 | 65.68 | 1.03 | 0.23 | 1.26 | 0.20 | 0.14 | 17.00 | 34.48 | 0.54 | 28.90 |
| 6 | O-10 | 5.6-6.2' | 4.60 | 7.52 | 6.20 | 116.14 | 115.8041 | 114.62 | 1.18 | 0.34 | 1.52 | 0.54 | 0.37 | 21.73 | 40.38 | 1.03 | 36.54 |
| 7 | E-06 | 0-2.4' | 6.10 | 7.81 | 8.48 | 741.19 | 716.9355 | 715.98 | 0.96 | 24.26 | 25.21 | 2.04 | 1.39 | 65.70 | 795.0 | 52.20 | 19.91 |
| 8 | E-06 | 2.44-2.9' | 6.10 | 7.87 | 3.22 | 145.49 | 144.4289 | 143.50 | 0.92 | 1.06 | 1.99 | 0.48 | 0.33 | 22.54 | 133.6 | 11.93 | 19.09 |
| 9 | E-06 | 2.8-3.9' | 5.10 | NES[5] | 1.31 | 54.49 | 54.1427 | 52.77 | 1.37 | 0.34 | 1.71 | 0.14 | 0.10 | 13.05 | 35.32 | 0.73 | 18.29 |
| 10 | E-06 | 3.9-4' | 6.10 | 7.93 | 2.33 | 56.94 | 56.5046 | 55.50 | 1.00 | 0.44 | 1.44 | 0.14 | 0.10 | 19.86 | 64.20 | 9.60 | 19.80 |
| 11 | E-06 | 4-4.35' | 5.80 | 7.97 | 1.65 | 60.71 | 58.6418 | 57.69 | 0.95 | 2.07 | 3.02 | 0.14 | 0.10 | 12.82 | 68.60 | 3.20 | 16.34 |
| 12 | E-06 | 4.35-4.85' | 4.60 | NES[5] | 1.52 | 54.22 | 52.7575 | 51.37 | 1.39 | 1.46 | 2.86 | 0.14 | 0.10 | 16.61 | 39.65 | 1.41 | 20.33 |
| 13 | E-06 | 4.85-5.35' | 4.40 | NES[5] | 1.73 | 204.35 | 201.9656 | 199.86 | 2.10 | 2.38 | 4.49 | 1.22 | 0.83 | 23.64 | 35.36 | -1.41 | 22.07 |
| 14 | E-06 | 6-8' | 4.70 | 7.30 | 8.18 | 322.05 | 319.6979 | 318.72 | 0.98 | 2.35 | 3.33 | 2.38 | 1.62 | 19.44 | 42.37 | 0.63 | 42.80 |
| 15 | G-10 | 0-1.2' | 5.90 | 7.74 | 6.25 | 472.86 | 470.9396 | 465.80 | 5.14 | 1.92 | 7.06 | 1.70 | 1.16 | 46.82 | 352.9 | 20.01 | 23.97 |
| 16 | G-10 | 1.2-2.8' | 4.90 | 7.61 | 5.09 | 105.16 | 102.5401 | 98.95 | 3.59 | 2.62 | 6.21 | 0.41 | 0.28 | 20.74 | 57.40 | 3.35 | 25.84 |
| 17 | G-10 | 2.8-6.1' | 5.70 | NES[5] | 5.27 | 566.03 | 563.7461 | 557.91 | 5.84 | 2.28 | 8.12 | 1.50 | 1.02 | 65.50 | 380.3 | 28.36 | 33.38 |
| 18 | G-10 | 6.1-9' | 5.00 | 7.15 | 9.47 | 286.09 | 283.8583 | 280.52 | 3.34 | 2.23 | 5.57 | 2.24 | 1.52 | 38.03 | 91.50 | 3.93 | 27.73 |
| 19 | G-10 | 9-10.1' | 5.20 | 7.14 | 9.17 | 235.29 | 233.4414 | 231.18 | 2.26 | 1.85 | 4.10 | 1.50 | 1.02 | 26.30 | 89.80 | 3.17 | 26.30 |
| 20 | G-10 | 10.1-13.9' | 5.00 | 7.66 | 4.57 | 173.91 | 171.1635 | 169.04 | 2.13 | 2.74 | 4.87 | 1.22 | 0.83 | 19.31 | 65.10 | 0.78 | 23.52 |
| 21 | G-10 | 13.9-16.6' | 5.20 | 7.55 | 5.96 | 122.10 | 118.4095 | 115.41 | 3.00 | 3.69 | 6.69 | 0.75 | 0.51 | 28.65 | 74.30 | 2.94 | 28.17 |
| 22 | G-10 | 16.6-19' | 5.30 | 7.32 | 7.63 | 218.35 | 215.8369 | 213.42 | 2.42 | 2.52 | 4.93 | 1.50 | 1.02 | 30.33 | 77.50 | 2.77 | 23.10 |
| 23 | G-10 | 19-23' | 5.20 | 7.44 | 7.08 | 126.14 | 122.7524 | 120.20 | 2.56 | 3.39 | 5.95 | 0.68 | 0.46 | 33.10 | 109.4 | 5.16 | 26.63 |
| 24 | G-10 | 23-27.5' | 5.40 | 7.88 | 3.28 | 50.61 | 48.4507 | 46.62 | 1.83 | 2.16 | 3.99 | 0.14 | 0.10 | 19.62 | 170.6 | 9.63 | 20.22 |
| 25 | G-10 | 27.5-27.9' | 5.30 | NES[5] | 9.49 | 86.50 | 84.48341 | 81.07 | 3.41 | 2.02 | 5.43 | 0.27 | 0.18 | 33.57 | 1293 | 74.30 | 35.52 |
| 26 | G-10 | 27.9-30' | 5.70 | 7.71 | 34.05 | 237.70 | 235.0367 | 223.28 | 11.75 | 2.66 | 14.41 | 0.20 | 0.14 | 281.9 | 3035 | 850.0 | 51.70 |

T: for Value < MDL Non-detect

I: for Value >= MDL but < PQL

[1]Total Nitrogen (TN) is a calculated value equal to the sum of TKN and $NO_X$.

[2]Organic Nitrogen (ON) is a calculated value equal to the difference of TKN and $NH_3$.

[3]Total Inorganic Nitrogen (TIN) is a calculated value equal to the sum of $NH_3$ and $NO_X$.

[4]TOC calculated value typical range 0.58-0.70 of organic matter, using 0.68

[5]NES: for Not Enough Sample



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# Appendix H: Data Summary Reports

PRELIMINARY

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FLORIDA DEPARTMENT OF HEALTH

# Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task C.22

## GCREC Mound Data Summary Report No. 1

## Progress Report

April 2011

4423-001


HAZEN AND SAWYER
Environmental Engineers & Scientists

In association with

SCHOOL OF MINES 1874 COLORADO

AET
Applied Environmental Technology

OTIS ENVIRONMENTAL CONSULTANTS, LLC

# Florida Onsite Sewage Nitrogen Reduction Strategies Study

## TASK C.22
## PROGRESS REPORT

## GCREC Mound
## Data Summary Report No. 1

**Prepared for:**

Florida Department of Health
Division of Environmental Health
Bureau of Onsite Sewage Programs
4042 Bald Cypress Way Bin #A-08
Tallahassee, FL 32399-1713

FDOH Contract CORCL

**April 2011**

**Prepared by:**

HAZEN AND SAWYER
Environmental Engineers & Scientists

In Association With:

SCHOOL OF MINES
1874
COLORADO

# GCREC Mound Monitoring
# Data Summary Report No. 1

## 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 data summary report builds off of the Task C.21 Sample Event Report No. 1 to document the results from the first GCREC mound monitoring and sampling event conducted December 9, 2010 – December 10, 2010. The sample event report was submitted February 2011 and described the monitoring conducted including 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 in a NELAC certified laboratory. This data summary report describes the results from those efforts and the knowledge gained to date at the GCREC mound site.

## 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

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situated on 475 acres of land that were donated by Hillsborough County government. Wastewater from the GCREC 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 $ft^2$ of infiltrative area (design hydraulic loading rate of 0.65 gpd/$ft^2$) with each half of the drainfield receiving alternating doses.

## 3.2 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. In addition, a weather station is located at the GCREC facility with weather conditions recorded every minute and stored on a private website.

## 3.3 Monitoring and Sampling Locations and Identification

A schematic of the GCREC mound monitoring network is shown in Figure 1. A 25-ft by 25-ft sampling grid was staked down gradient of the mound 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. Two types of monitoring points were installed: drive point samplers and standpipe piezometers (refer to the Task C QAPP and Task C.20 Progress Reports #1 and #2 for additional detail). Each groundwater 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 (see Figure 1) at approximately 14 ft below ground surface. Approximately 145 subsurface monitoring locations have been installed at the site to date.

The nomenclature and sample identifications for this GCREC mound sampling event are listed in Table 1. Figure 2 shows a drive point sampler prior to installation while Figure 3 depicts an installed ¾-in. diameter PVC standpipe piezometer.

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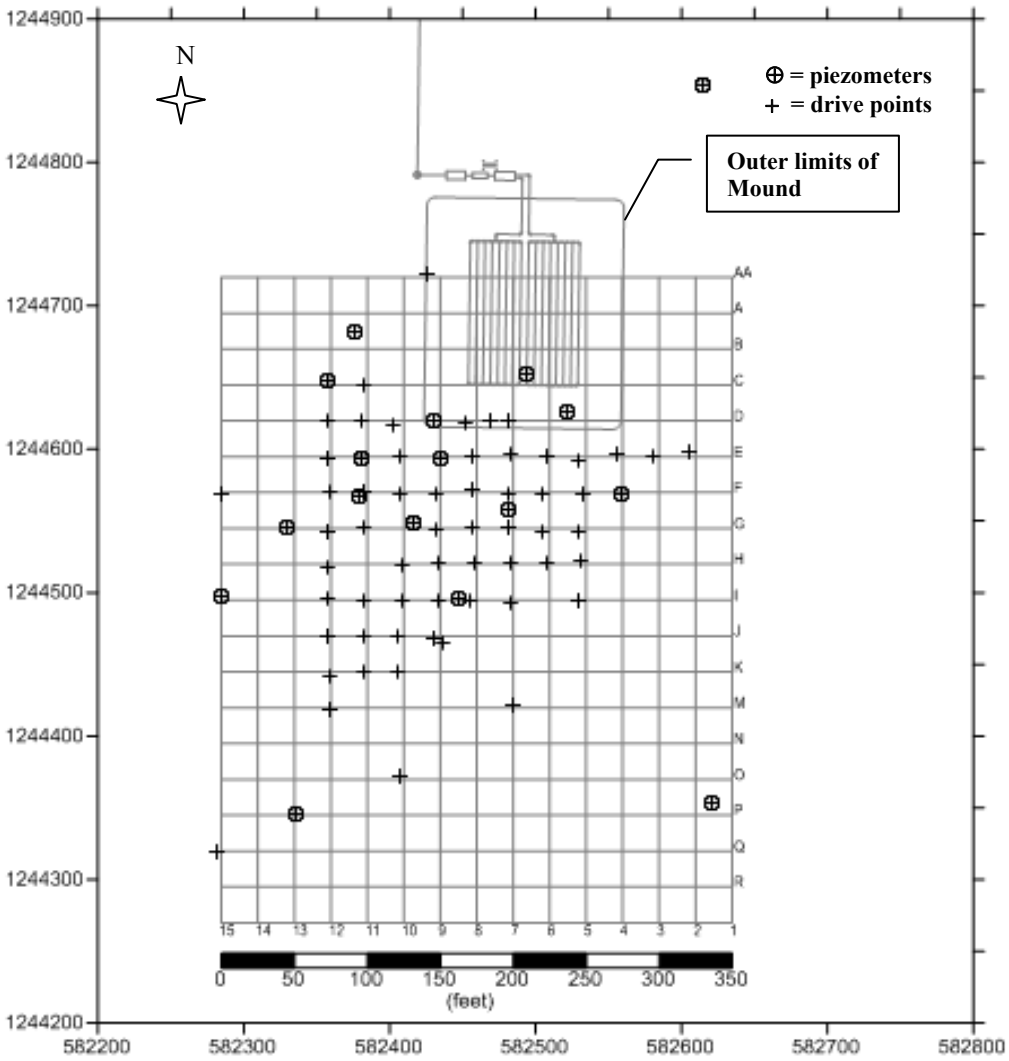


**Figure 1**
**Schematic of GCREC Monitoring Network (UTM coordinates are used)**
**⊕ denotes piezometers and + denotes drive points**

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

**Figure 3**
**Installed ¾" Diameter PVC Standpipe Piezometer**

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**Table 1**
**GCREC Mound Sample Identification**

| | Grid Location | Sample Identification | Notes | Bottom Elevation (ft) |
|---|---|---|---|---|
| 1 | EX Lift Station | STE-EX Pump Tank | Wastewater Sample | N/A |
| 2 | Bkgd, North | PZ04-BKG-9 | 1 1/4" Standpipe Piezometer, 4' screen | 118.66 |
| 3 | Bkgd, North | PZ24-BKG-26 | 2" Standpipe Piezometer, 5' screen | 101.41 |
| 4 | AA9 | DP-AA9-14 | SST Drive Point | 110.68 |
| 5 | AA9 | DP-AA9-22 | SST Drive Point | 103.08 |
| 6 | AA9 | DP-AA9-27 | SST Drive Point | 98.28 |
| 7 | C12 | PZ16-C12-28 | 3/4" Standpipe Piezometer, 1' screen | 94.75 |
| 8 | D7.5 | DP-D7.5-14 | SST Drive Point | 111.24 |
| 9 | D7.5 | DP-D7.5-20 | SST Drive Point | 105.31 |
| 10 | D7.5 | DP-D7.5-26 | SST Drive Point | 99.24 |
| 11 | D9 | DP-D09-6 | SST Drive Point | 118.35 |
| 12 | D9 | DP-D09-8 | SST Drive Point | 116.45 |
| 13 | D9 | DP-D09-15 | SST Drive Point | 109.18 |
| 14 | D9 | DP-D09-21 | SST Drive Point | 103.18 |
| 15 | D9 | DP-D09-27 | SST Drive Point | 97.18 |
| 16 | E12 | DP-E12-10 | SST Drive Point | 113.22 |
| 17 | E12 | DP-E12-15 | SST Drive Point | 108.66 |
| 18 | E12 | DP-E12-22 | SST Drive Point | 101.56 |
| 19 | E12 | DP-E12-28 | SST Drive Point | 95.71 |
| 20 | F8 | DP-F08-14 | SST Drive Point | 110.43 |
| 21 | F8 | DP-F08-20 | SST Drive Point | 103.96 |
| 22 | F8 | DP-F08-28 | SST Drive Point | 96.18 |
| 23 | F11 | DP-F11-11 | SST Drive Point | 112.68 |
| 24 | F11 | DP-F11-15 | SST Drive Point | 108.88 |
| 25 | F11 | DP-F11-18 | SST Drive Point | 105.73 |
| 26 | F11 | DP-F11-21 | SST Drive Point | 102.93 |
| 27 | F11 | DP-F11-24 | SST Drive Point | 99.88 |
| 28 | F11 | DP-F11-27 | SST Drive Point | 96.73 |
| 29 | F15 | DP-F15-14 | SST Drive Point | 108.82 |
| 30 | F15 | DP-F15-20 | SST Drive Point | 102.87 |
| 31 | F15 | DP-F15-26 | SST Drive Point | 96.97 |
| 32 | G7 | DP-G07-13 | SST Drive Point | 111.63 |

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**Table 1 (continued)**
**GCREC Mound Sample Identification**

| | Grid Location | Sample Identification | Notes | Bottom Elevation (ft) |
|---|---|---|---|---|
| 33 | G7 | DP-G07-15 | SST Drive Point | 109.56 |
| 34 | G7 | DP-G07-17 | SST Drive Point | 106.76 |
| 35 | G7 | DP-G07-21 | SST Drive Point | 103.31 |
| 36 | G7 | DP-G07-24 | SST Drive Point | 100.51 |
| 37 | G7 | DP-G07-27 | SST Drive Point | 97.61 |
| 38 | G12 | DP-G12-15 | SST Drive Point | 108.37 |
| 39 | G12 | DP-G12-21 | SST Drive Point | 102.32 |
| 40 | G12 | DP-G12-27 | SST Drive Point | 96.37 |
| 41 | I6 | DP-I06-14 | SST Drive Point | 110.24 |
| 42 | I6 | DP-I06-20 | SST Drive Point | 103.99 |
| 43 | I6 | DP-I06-26 | SST Drive Point | 97.94 |
| 44 | I15 | PZ17-I15-26 | 3/4" Standpipe Piezometer,1' screen | 97.09 |
| 45 | J9 | DP-J09-14 | SST Drive Point | 109.61 |
| 46 | J9 | DP-J09-20 | SST Drive Point | 103.36 |
| 47 | J9 | DP-J09-26 | SST Drive Point | 97.11 |
| 48 | J12 | DP-J12-15 | SST Drive Point | 108.26 |
| 49 | J12 | DP-J12-20 | SST Drive Point | 102.61 |
| 50 | J12 | DP-J12-27 | SST Drive Point | 96.36 |
| 51 | M7 | DP-M07-15 | SST Drive Point | 108.975 |
| 52 | M7 | DP-M07-21 | SST Drive Point | 102.65 |
| 53 | M7 | DP-M07-27 | SST Drive Point | 96.95 |
| 54 | N12 | DP-N12-14 | SST Drive Point | 108.4 |
| 55 | N12 | DP-N12-21 | SST Drive Point | 101.725 |
| 56 | N12 | DP-N12-27 | SST Drive Point | 95.63 |
| 57 | O10 | DP-O10-12 | SST Drive Point | 110.71 |
| 58 | O10 | DP-O10-18 | SST Drive Point | 104.56 |
| 59 | O10 | DP-O10-24 | SST Drive Point | 98.56 |
| 60 | Q15 | DP-Q15-15 | SST Drive Point | 108.2 |
| 61 | Q15 | DP-Q15-21 | SST Drive Point | 102.29 |
| 62 | Q15 | DP-Q15-26 | SST Drive Point | 96.4 |

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## 3.4 Soil Characteristics

During the instrumentation of the mound, continuous soil cores were collected to the spodic layer at four locations (south end of the mound, E9, F4, and west side of the mound), and at one location (G10) a continuous soil core was collected to the confining Hawthorn clay layer. The information on soil properties will aid in determining appropriate parameters to be used in model development. In several locations the actual elevation of the spodic layer was also determined using hand methods as shown in Figure 4. During the November 2010 drilling event, the elevation and thickness of the spodic layer was also estimated by observing the soil cuttings returned to the surface by the auger. This visual method provides general reference information only as depth based on soil cuttings is typically within ±1-2 feet.

## 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 flat tape water level meter graduated in feet (measurement accuracy is 0.01 ft).

## 3.6 Water Quality Sample Collection and Analyses

Groundwater and septic tank effluent (STE) were collected December 9-10, 2010 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 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

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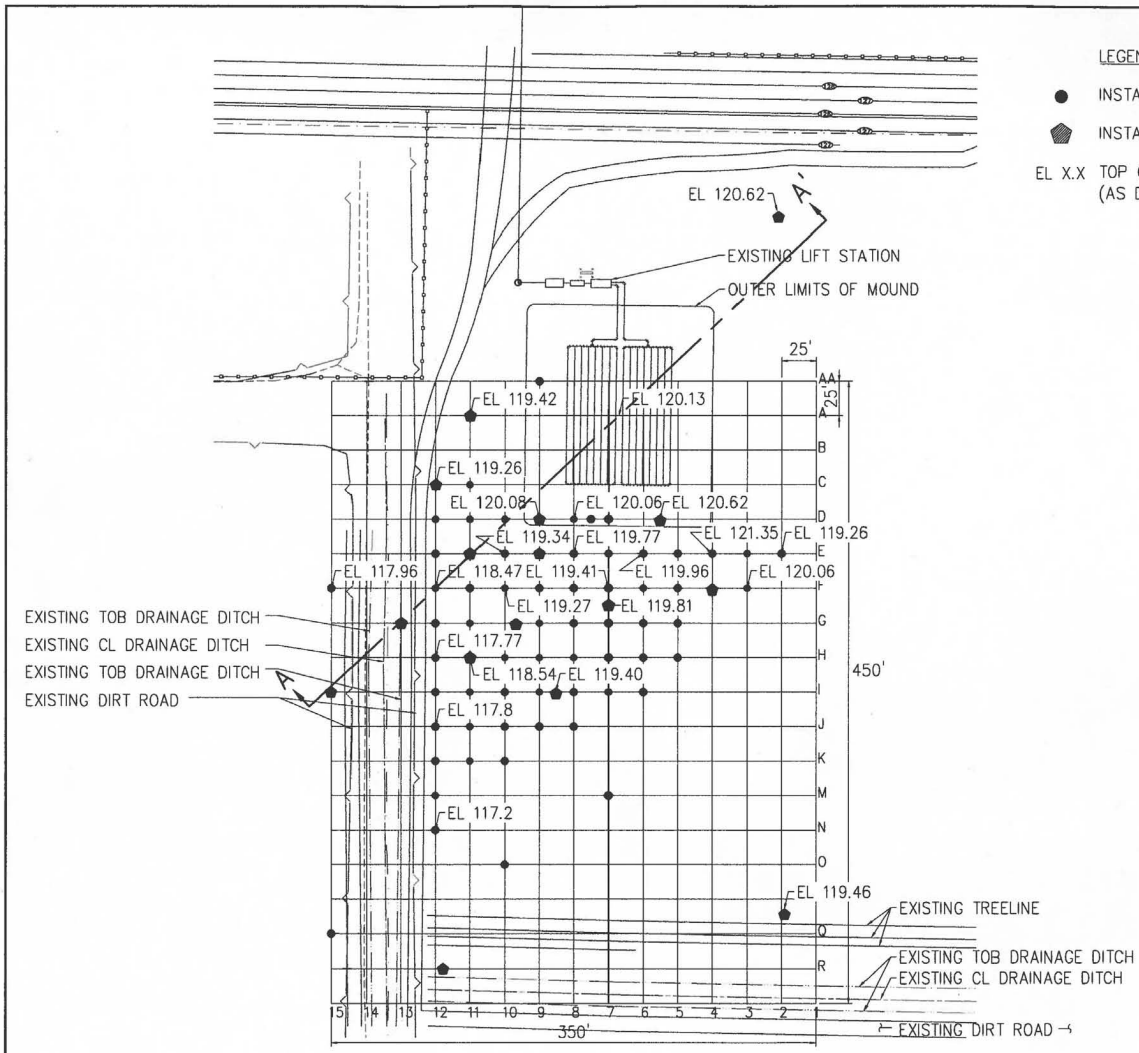
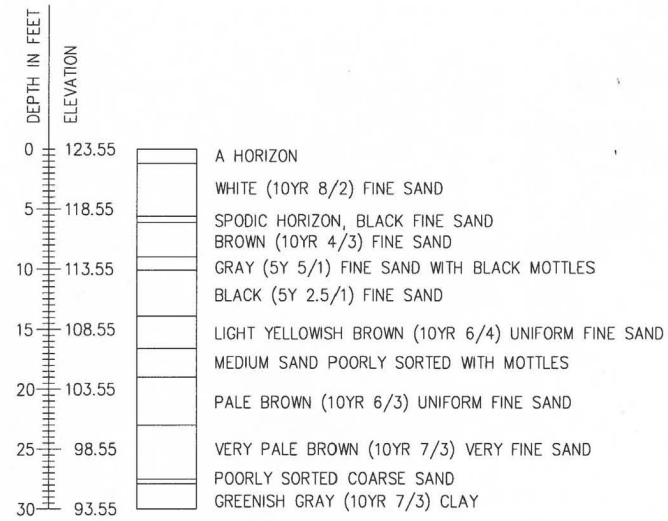
April 2011




LEGEND

- ● INSTALLED DRIVE POINT SAMPLERS
- ⬟ INSTALLED STANDPIPE PIEZOMETERS
- EL X.X TOP OF SPODIC HORIZON ELEVATION (AS DETERMINED BY HANDHELD METHODS)

N




G10 SOIL PROFILE
DETAIL 1
NTS –

| NO. | ISSUED FOR | DATE | BY | APPROVED |
|---|---|---|---|---|
| | | | | |

DESIGNED –
DRAWN –
CHECKED –
PROJ. ENGR. –
–

HAZEN AND SAWYER
Environmental Engineers & Scientists
10002 Princess Palm Avenue
Registry One Building, Suite 200
Tampa, Florida 33619
Certificate of Authorization Number: 2771

FLORIDA DEPARTMENT OF HEALTH
4052 BALD CYPRESS WAY, BIN A08
TALLAHASSEE, FL 32399-1713
(850)-245-4070

FLORIDA DEPARTMENT OF HEALTH
FLORIDA ONSITE SEWAGE NITROGEN REDUCTION STRATIGIES STUDY

FIGURE 4
TOP OF SPODIC ELEVATIONS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE
H & S JOB NUMBER 44237-001
CONTRACT NUMBER
DRAWING NUMBER

with deionized water that had been transported from the laboratory into the field along with other sample containers, and a second field blank was collected by filling sample containers with the tap water onsite used for rinsing. The field sample duplicates were collected immediately subsequent to the regular samples. The field duplicate samples taken include:

- DP-D09-15
- DP-F08-20
- DP-F15-20
- DP-G12-15
- DP-J12-20
- STE-EX Pump Tank

Field parameters (pH, specific conductance, temperature (Temp), and dissolved oxygen (DO)) were measured using portable electronic probes with probe tips placed in a flow-cell device as groundwater was being pumped. All samples were analyzed by the laboratory for: total alkalinity, total Kjeldahl nitrogen (TKN-N), ammonia nitrogen ($NH_3$-N), and nitrate/nitrite nitrogen ($NO_X$-N). Additionally, at some of the locations with elevated conductivity in previous preliminary sampling, 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.

**Table 2**
**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 |
| Total Kjeldahl Nitrogen (TKN-N) | EPA351.2 | 0.05 mg/L |
| Ammonia Nitrogen ($NH_3$-N) | EPA350.1 | 0.01 mg/L |
| Nitrate/Nitrite Nitrogen ($NO_X$-N) | EPA353.2 | 0.01 mg/L |
| Total Organic Carbon (TOC) | SM 5310B | 0.5 mg/L |
| Dissolved Organic Carbon (DOC) | SM 5310B | 1.0 mg/L |

## 3.7 Data Management

To allow for a better visualization of the data collected at the site the mapping program **Surfer** was utilized. **Surfer** is a grid-based mapping program that interpolates irregularly spaced XYZ data into a regularly spaced grid. Although there are several methods used in Surfer to fill in areas where data is missing, the Krieging method was used as the output gave the most visually pleasing graphs.

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# 4.0 Results

## 4.1 Operational Data and Site Conditions

Appendix A provides summary tables of the recorded wastewater flow data for the GCREC mound pumps between June 14, 2010 and December 10, 2010 (Day 28 through Day 207 since PNRS II test facility start-up). Wastewater flow to the mound system averaged 1,707 gpd for the five month period prior to the December sampling event. Table 3 provides the recorded meteorological data daily averages leading up to and during the sample event. Appendix B provides summary tables of the average monthly recorded meteorological data.

**Table 3**
**Meteorological Data Daily Averages Measured December 6, 2010 – December 10, 2010**

| 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) |
|---|---|---|---|---|---|---|---|
| 12-6-10 | 44.08 | 43.81 | 63.34 | 32.19 | 66 | 0 | 8.7 |
| 12-7-10 | 40.44 | 40.95 | 61.3 | 26.71 | 62 | 0 | 7.22 |
| 12-8-10 | 45.03 | 45.58 | 60.32 | 29.72 | 59 | 0 | 5.6 |
| 12-9-10 | 48.45 | 48.36 | 60.71 | 34.76 | 62 | 0.03 | 6.37 |
| 12-10-10 | 51.85 | 51.49 | 60.72 | 45.45 | 83 | 0 | 6.51 |

## 4.2 Soil Characteristics

Table 4 summarizes the general soil lithology described from the soil cores while the cross section A-A' is depicted in Figure 5. Although the four soil cores show some variability in soil over the site, a general soil profile trend is present. The top few inches at the site are typically a darker, slightly brown or reddish fine silty sand soil, followed by a light-colored, grey and/or pale yellow fine sand. Mottling is commonly visible 4 -5 feet below the ground surface. The continuous soil core from G10 shows the spodic layer (very hard and coarse with a coffee-like texture), which is approximately 5 feet thick at that location, and the soil below the spodic layer is a light or yellowish brown, fine to medium sand (Figure 6). Similar observations were made at the other sites during the November drilling event. The Hawthorne clay is considered a confining layer for the upper Floridian aquifer at the site and lies approximately 27 to 30 feet below the ground surface.

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**Table 4**
**June 2010 Small Direct Push Rig (6620 Geoprobe™)**
**Soil Core Descriptions**

| Grid Location | Identifier | Surface Elevation (ft) | Depth bgs (ft) | Description |
|---|---|---|---|---|
| South end of Mound CD6.5 | PZ10-CD6-13 | 129.51 | 0-0.4’ | Grass/fill |
| | | | 0.4-0.9’ | Gray fine sand with yellow and white mottles |
| | | | 0.9-6.6’ | Uniform yellow fine grain sand |
| | | | 6.5’ | Saturation |
| | | | 6.6-6.7’ | Dark brown (10YR 3/3) fine sand |
| | | | 6.7-10.7’ | Light gray (5Y 7/2) fine sand |
| | | | 10.7-11.5’ | Dark brown (10YR 3/3) fine sand |
| | | | 11.5-12.3’ | Yellow (5Y 7/6) fine sand |
| | | | 12.3-13.45’ | Light gray (5Y 7/2) fine sand |
| | | | 13.45-16.1’ | Spodic horizon, dark brown (7.5YR 3/3) fine sand |
| | | | 16.1-17.4’ | Brown (7.5YR 4/4) fine sand |
| E9 | PZ11-E09-10 | 124.06 | 0-2.2’ | A Horizon top soil |
| | | | 2.2-2.7’ | Pale yellow (5Y 7/3) fine sand with mottles |
| | | | 2.7-5.8’ | Yellowish brown (10YR 5/4) fine sand |
| | | | 5.8-6.9’ | Very dark brown (7.5YR 2.5/3) fine sand |
| | | | 6.1’ | Saturation |
| | | | 6.9-10.3’ | Medium brown (10YR 5/3) fine sand |
| | | | 10.3-15’ | Spodic horizon, black (10YR 2/1) fine sand |
| G10 | Abandoned PZ12 | 123.55 | 0-1.2’ | A Horizon top soil |
| | | | 1.2-2.8’ | White (10YR 8/2) fine sand |
| | | | 2.8-6.1’ | Spodic horizon, black fine sand |
| | | | 6.1-9’ | Brown (10YR 4/3) fine sand |
| | | | 9’ | Saturation |
| | | | 9-10.1’ | Gray (5Y 5/1) fine sand with black mottles |
| | | | 10.1-13.9’ | Black (5Y 2.5/1) fine sand |
| | | | 13.9-16.6’ | Light yellowish brown (10YR 6/4) uniform fine sand |
| | | | 16.6-19’ | Medium sand poorly sorted, well rounded (3mm diameter) with mottles |
| | | | 19-23’ | Pale brown (10YR 6/3) uniform fine sand |

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**Table 4 (continued)**
**June 2010 Small Direct Push Rig (6620 Geoprobe™)**
**Soil Core Descriptions**

| Grid Location | Identifier | Surface Elevation (ft) | Depth bgs (ft) | Description |
|---|---|---|---|---|
| G10 (con't) | Abandoned PZ12 | 123.55 | 23-27.5' | Very pale brown (10YR 7/3) very fine sand |
| | | | 27.5-27.9' | Poorly sorted coarse sand |
| | | | 27.9-30.0' | Greenish gray (Gley1 6/5GY) clay, Hawthorn confining layer |
| F4 | PZ13-F04-8 | 124.42 | 0-4.2' | A Horizon top soil |
| | | | 4.2-4.7' | Pale yellow (5Y 8/4) fine sand with mottles |
| | | | 4.7-13.5' | Spodic horizon, dark brown sand |
| | | | 6.3' | Saturation |
| Westside of Mound | | ~129 | 0-7.4' | Mound sand with some mottles |
| | | | 7.4-8.4' | Dark oxidized sand |
| | | | 8.4' | Saturation |
| | | | 8.4-9.4' | Saturated very pale brown fine sand |
| | | | 9.4-10' | Spodic horizon, dark brown fine sand |
| | | | 10-12' | Dark yellowish brown (10YR 4/6) fine sand |
| | | | 12-15' | Dark brown fine sand |

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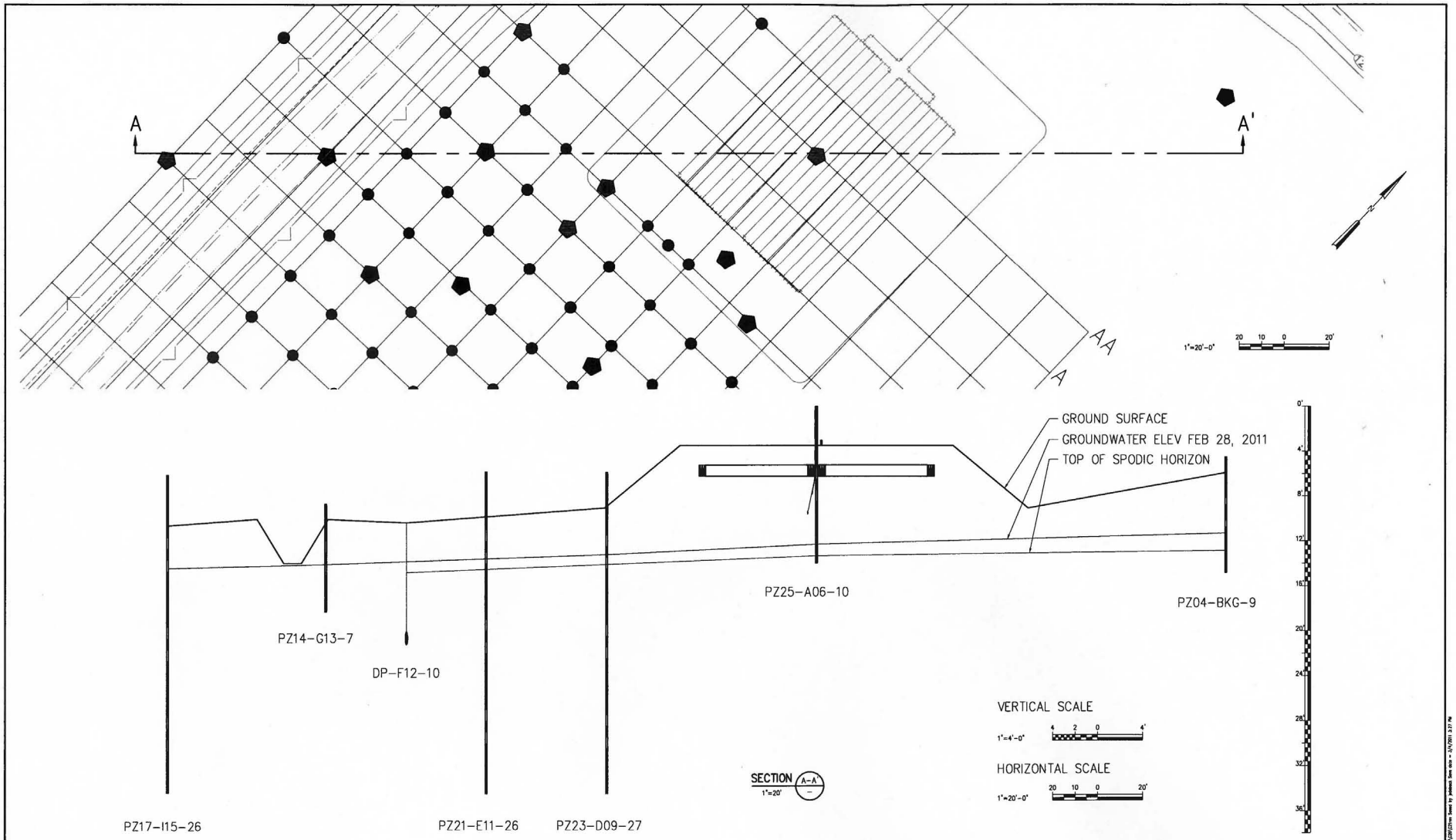


| NO. | ISSUED FOR | DATE | BY |
|---|---|---|---|
| | | | |

DESIGNED –
DRAWN –
CHECKED –
PROJ. ENGR. –
APPROVED –

HAZEN AND SAWYER
Environmental Engineers & Scientists
10002 Princess Palm Avenue
Registry One Building, Suite 200
Tampa, Florida 33619
Certificate of Authorization Number: 2771

FLORIDA DEPARTMENT OF HEALTH
4052 BALD CYPRESS WAY, BIN A08
TALLAHASSEE, FL 32399-1713
(850)-245-4070

FLORIDA DEPARTMENT OF HEALTH
FLORIDA ONSITE SEWAGE NITROGEN REDUCTION STRATIGIES STUDY

FIGURE 5
CROSS SECTION A–A'

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.

DATE
H & S JOB NUMBER 44237-001
CONTRACT NUMBER
DRAWING NUMBER

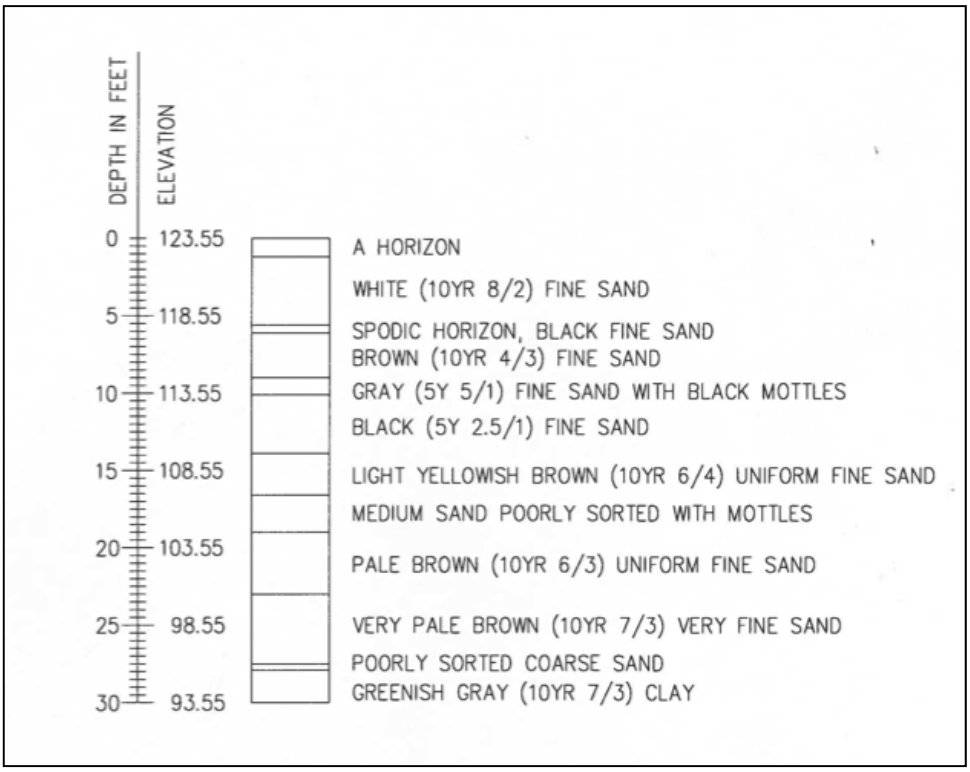


**Figure 6**
**The Continuous Soil Profile Obtained at G10**

During the installation of the shallow drive points in the summer of 2010, the elevations of the spodic layer was determined at several locations as the installation was done primarily with handheld methods. Although efforts were made to determine the elevation and thickness of the spodic layer during the November drilling event, the larger drilling rig required to penetrate the spodic layer prevented the drill operators from “feeling” (increase resistance requiring increased power) when the auger first hit the hard layer and second when it broke through the spodic. Hence the depth and thickness of the spodic layer was estimated at that time to be approximately 6 feet below the ground surface with a thickness of approximately 5.5 and 8.5 feet. Subsequently, handheld methods were used to better determine the actual elevation of the spodic layer at several additional sites. Figure 7 illustrates the top elevation of the spodic layer at the site as determined by the handheld methods. Although variations are present, the general trend follows that of the ground surface and that of the groundwater.

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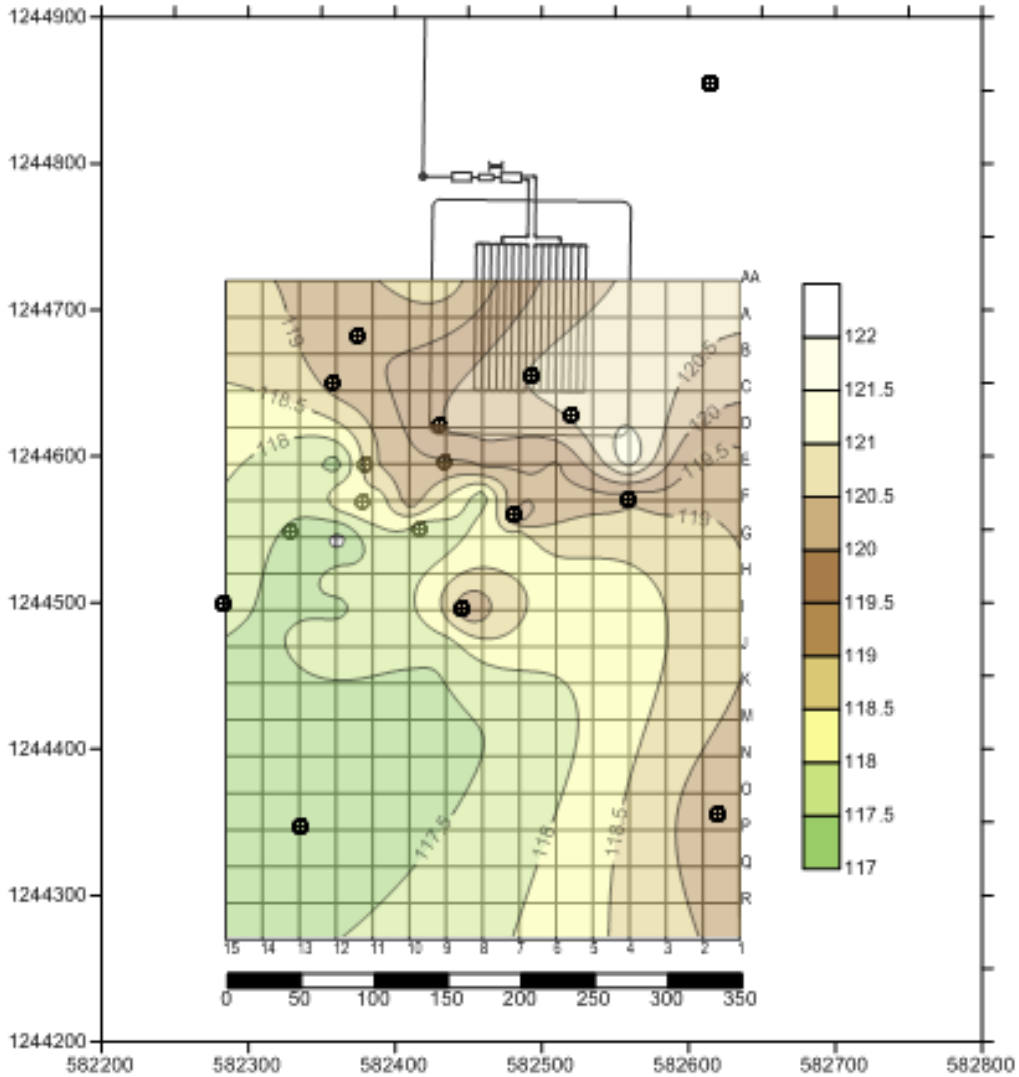


**Figure 7**
**Elevations of Spodic Layer as Determined by Hand Held Methods**
**(The locations of the piezometers are provided for reference.)**

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## 4.3 Groundwater Levels

Groundwater level monitoring has been conducted over a larger area since additional piezometers were installed in November 2010. Water levels were measured at all standpipe piezometers within the grid on December 9, 2010 for this sampling event as summarized in Table 5. Figure 8 illustrates the surficial groundwater contours as measured within the standpipe piezometers on December 9, 2010. The groundwater elevations have been found to fluctuate due to periods of dry weather and/or heavy precipitation; however, the general flow-path does not change. By continued monitoring of the groundwater elevations, a clearer picture of the gradient at the site will be gained.

**Table 5**
**Standpipe Piezometer Groundwater Level Measured December 9, 2010**

| Fig 4 Identification | Location | Identification | Water Table Elevation (ft) |
|---|---|---|---|
| 1 | Bkgd, North | PZ01-BKG-9 | 122.97 |
| 2 | Bkgd, North | PZ04-BKG-9 | 121.76 |
| 3 | Bkgd, North | PZ24-BKG-26 | 121.46 |
| 4 | Bkgd, East | PZ05-BKG-9 | 121.53 |
| 5 | Bkgd, NW | PZ06-BKG-12 | 122.09 |
| 6 | A11 | PZ15-A11-6 | 119.77 |
| 7 | C12 | PZ16-C12-28 | 119.37 |
| 8 | CD6.5 | PZ10-CD6-13 | 120.37 |
| 9 | D5.5 | PZ07-D05-7 | 120.22 |
| 10 | D9 | PZ23-D09-27 | 119.64 |
| 11 | E9 | PZ11-E09-10 | 119.57 |
| 12 | E11 | PZ21-E11-26 | 119.22 |
| 13 | E11 | PZ22-E11-15 | 119.21 |
| 14 | F4 | PZ13-F04-8 | 120.16 |
| 15 | FG7 | PZ08-FG7-6 | 119.65 |
| 16 | G9.75 | PZ19-G10-26 | 119.18 |
| 17 | G9.75 | PZ20-G10-15 | 119.17 |
| 18 | G13 | PZ14-G13-7 | 118.72 |
| 19 | H11 | PZ03-H11-6 | 119.21 |
| 20 | I8.5 | PZ09-I08-5 | 119.15 |
| 21 | I15 | PZ17-I15-26 | 118.26 |
| 22 | PQ1.75 | PZ02-P02-9 | 118.52 |
| 23 | R12 | PZ18-R12-26 | 118.22 |

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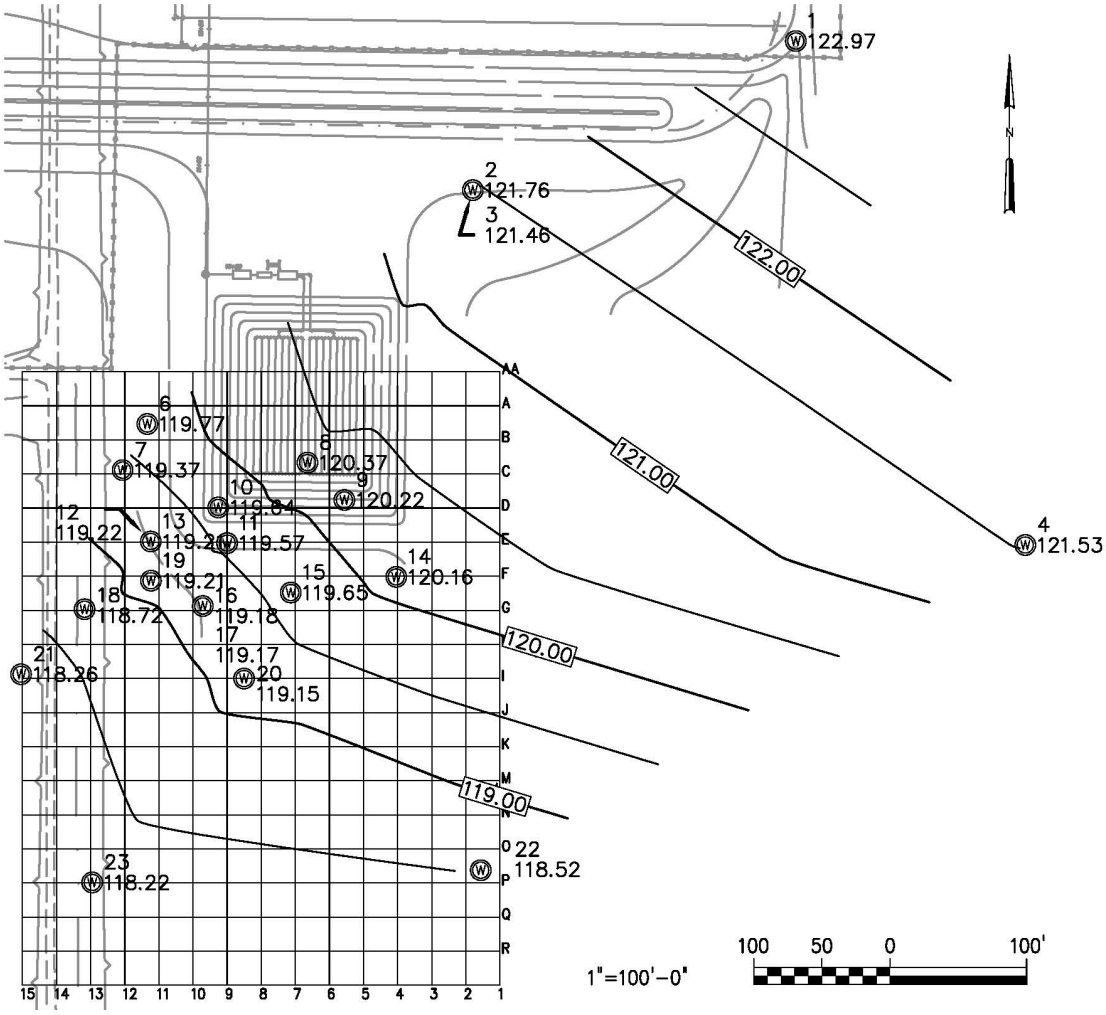


**Figure 8**
**Surficial Groundwater Contours December 9, 2010**

## 4.4 Water Quality Analyses

### 4.4.1 Field Parameters

Field parameters (temperature, pH, dissolved oxygen (DO), and specific conductivity) were measured at all the sampling locations during the December sampling event. Variations in measured values were expected as the chemical composition of the groundwater varied due to the discharge of STE. Interestingly, these variations were not large, in fact the temperature was found to range from 20.7 to 27.6 °C but the inter-

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quartile range (IQR) was between 21.8 to 22.7 °C, pH varied from 4.2 to 5.7 with an IQR from 4.8 to 5.0, DO varied from 0.4 to 3.3 mg/L with an IQR from 0.8 to 1.4 mg/L, and finally the conductivity varied from 163 to 649 µS with an IQR from 292 to 342 µS (Table 6). The small range in IQR for these field parameters may suggest little variation in the plume groundwater. For example, temperature plays a role in both the magnitude of nitrification and denitrification, but the variation in temperature at the site in December may not be significant enough for measurable rate differences across the site. Bacteria responsible for denitrification are not highly sensitive to pH fluctuations within the range measured at the site, and while near neutral pH may be optimal for denitrification; research has shown that lower pH levels have little to no impact on the process. The higher levels of DO seen at the site are likely inhibiting denitrification; however, the IQR is around 1 mg/L, which has been shown to be the limiting level, hence the DO levels may or may not have a significant impact on nitrogen transformation at the site. The complete field parameter data set is included in Appendix C.

**Table 6**
**Field Parameters**

| Field Parameters | Range | IQR |
|---|---|---|
| Temperature (°C) | 20.7-27.6 | 21.8-22.7 |
| pH | 4.2-5.7 | 4.8-5.0 |
| DO (mg/L) | 0.4-3.3 | 0.8-1.4 |
| Specific conductance (µS) | 163-649 | 292-342 |

### 4.4.2 Correlations

Correlations between various field parameters and nitrogen concentration were conducted to determine if specific types of information could be estimated in the absence of actual field data. Such estimates can then provide insight into expected nitrogen removal or can be used to approximate difficult to obtain parameter values. No significant correlations were observed with the exception of the relationship between specific conductance and the concentration of NOX (Figure 9). Because this correlation is based on one sample event this observation is not conclusive. Continued monitoring may confirm this lack of correlation or may reveal a trend not yet determined.

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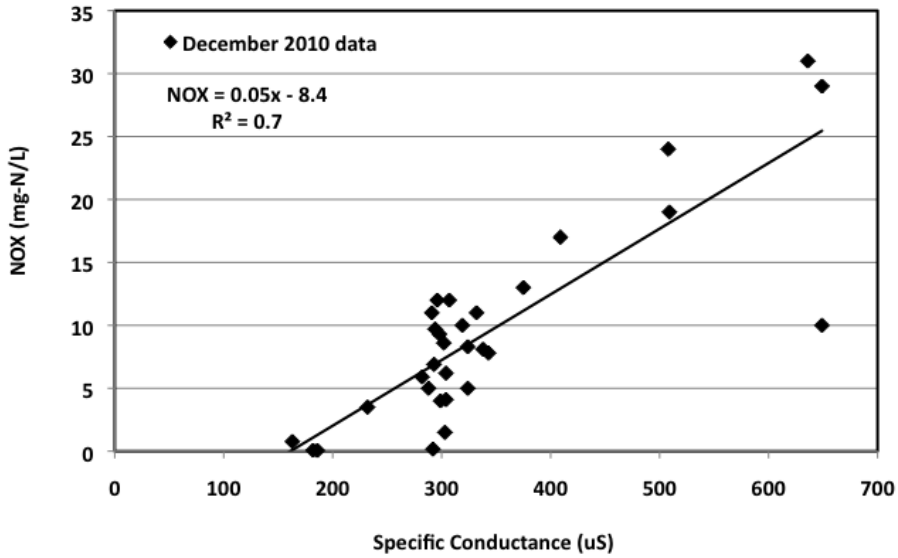


**Figure 9**
**Correlation Between the Specific Conductance (uS) and the Concentrations of Nitrate/Nitrite (mg-N/L)**

### 4.4.3 Analytical Parameters

In addition to measuring field parameters, all samples were analyzed for total alkalinity (as $CaCO_3$), total Kjeldahl nitrogen (TKN-N), ammonia nitrogen (NH3-N), and nitrate/nitrite nitrogen (NOX-N). At some of the locations with elevated conductivity in preliminary sampling, total organic carbon (TOC) and dissolved organic carbon (DOC) were included. By analyzing for the different nitrogen species and for carbon content, a clearer picture will be gained on the transformation of nitrogen within the plume. Although the December sampling event did give some insight into the current nitrogen plume, the somewhat limited dataset did not provide enough information to make any conclusive interpretations. The complete water quality analytical results for Sample Event No. 1 are listed in Table 1 of Appendix C. The summary of the water quality is presented in Table 1 of Appendix D. The laboratory report containing the raw analytical data is included in Appendix E.

### 4.4.4 Nitrate/Nitrite Concentrations with Depth

Based on this first sampling event, the general trend of the nitrogen plume at the site can be determined. Although **Surfer** is an excellent tool for mapping the information from

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the site, it cannot project a 3-dimensional view of concentrations with depth. Instead the information from the different sampling locations needed to be compiled into “slices” of similar depth and then plotted as a planar view, thus allowing the different “slices” to be compared.

With 121 drive points installed at different depths below the ground surface at 63 different locations outside of the mound, deciding on a logical way to separate the drive points into a few select groups that would represent a selection of elevation depths provided a challenge. Great care was taken to install the drive points at specific depths (e.g. 5, 7, 9, 14, 21 and 27 feet bgs), however, the reality is that the points are located at different elevations (Table 1) due to differences in ground surface elevations.

Initially, the drive points were clustered according to the approximate depth of installation (e.g. 14, 21 or 27 feet bgs); however after close examination of the actual elevation of each point, this was not a reasonable method due to the actual differences in the installed depth. Rather, the drive points were clusted into four groups depending on the actual elevation of the drive point. The first group is a ten-foot interval that comprises primarily drive points in the spodic layer, while the bottom three groups cluster monitoring points into five-foot intervals..

The concentrations of NOX in these different “slices” of groundwater are illustrated in Figures 10-13. Each map shows contours of the concentrations as estimated using the Krieging method in Surfer. The maps also show at which locations in the grid these samples were taken and at what approximate elevation. As is evident, there were a limited amount of sampling locations for each map; however, an overall trend is still visible. The lowest concentrations of NOX were found at the 95 to 100 elevation interval (Figure 10). At the 100-105 elevation level, an increase in NOX is apparent southwest of the mound, with the highest concentration around transect 15 (Figure 11). At the shallower interval (105-110 elevation), immediately below the assumed spodic layer, the highest concentration of NOX is closer to the mound with a maximum concentration around transect 12 (Figure 12). The concentrations of NOX within the spodic layer were lower than underlying elevations, yet still present in the southwesterly plume direction.

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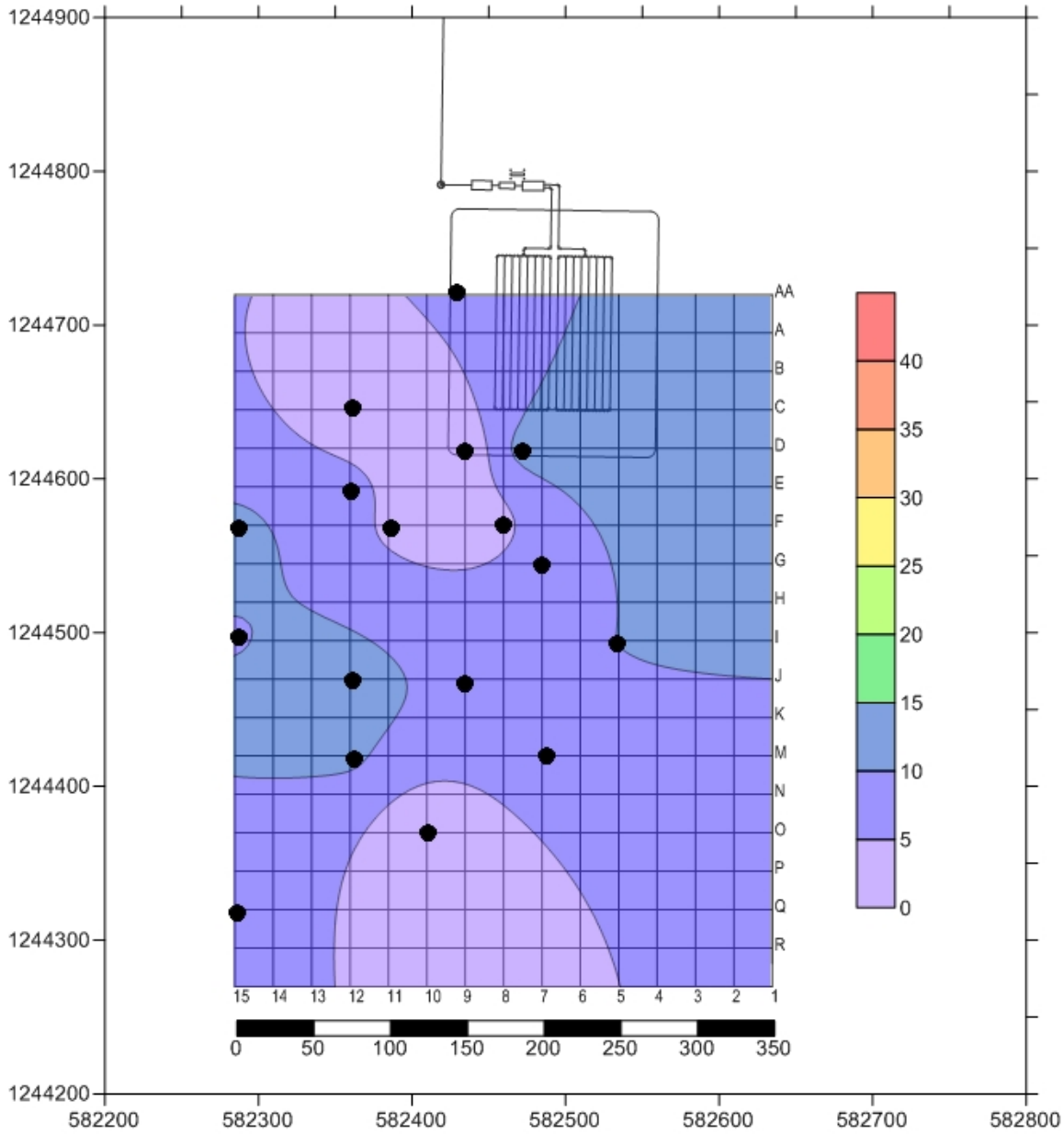


**Figure 10**
**NOX Concentrations at the 95-100' Elevation Interval**

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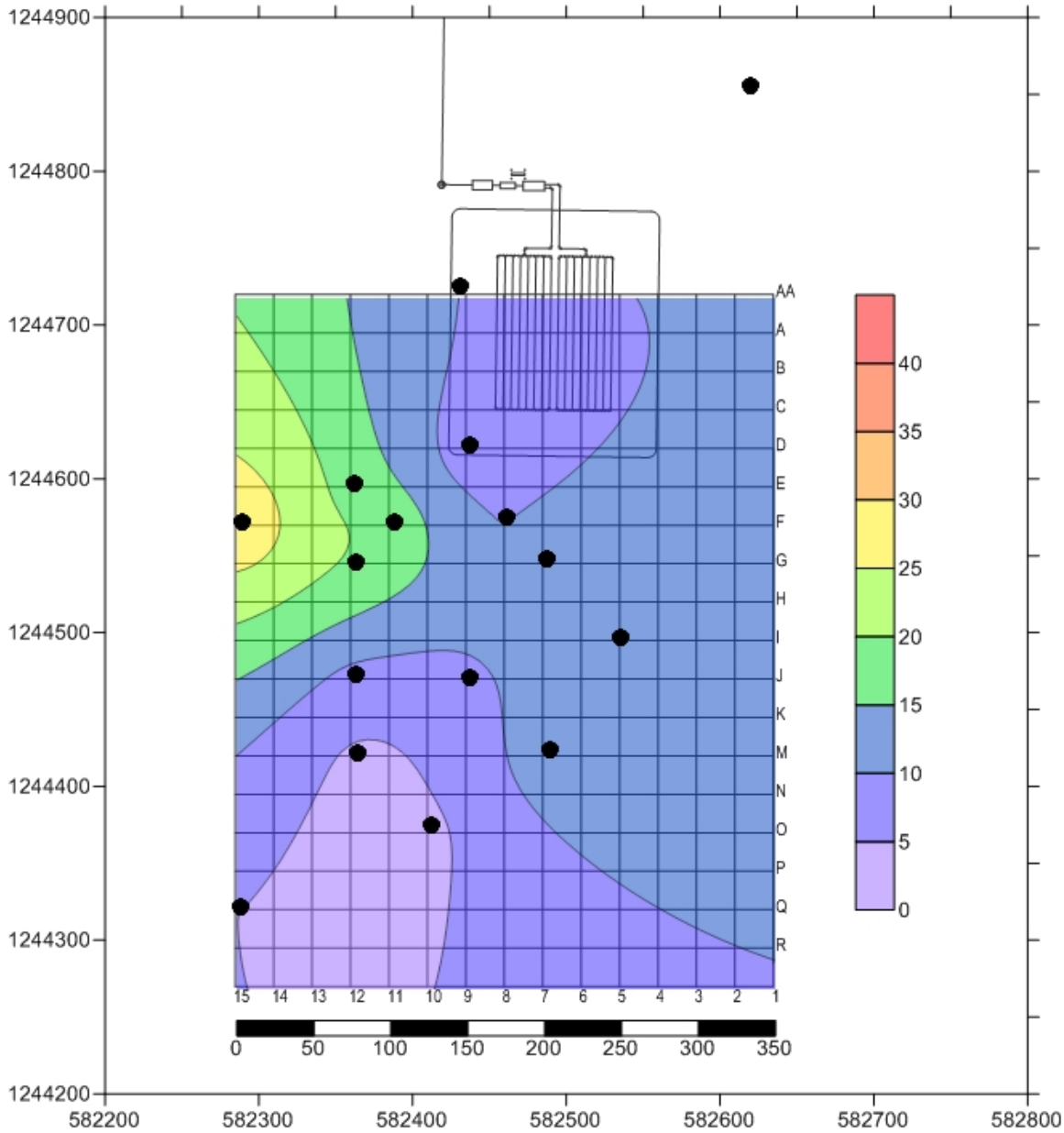


**Figure 11**
**NOX Concentrations at the 100-105' Elevation Interval**

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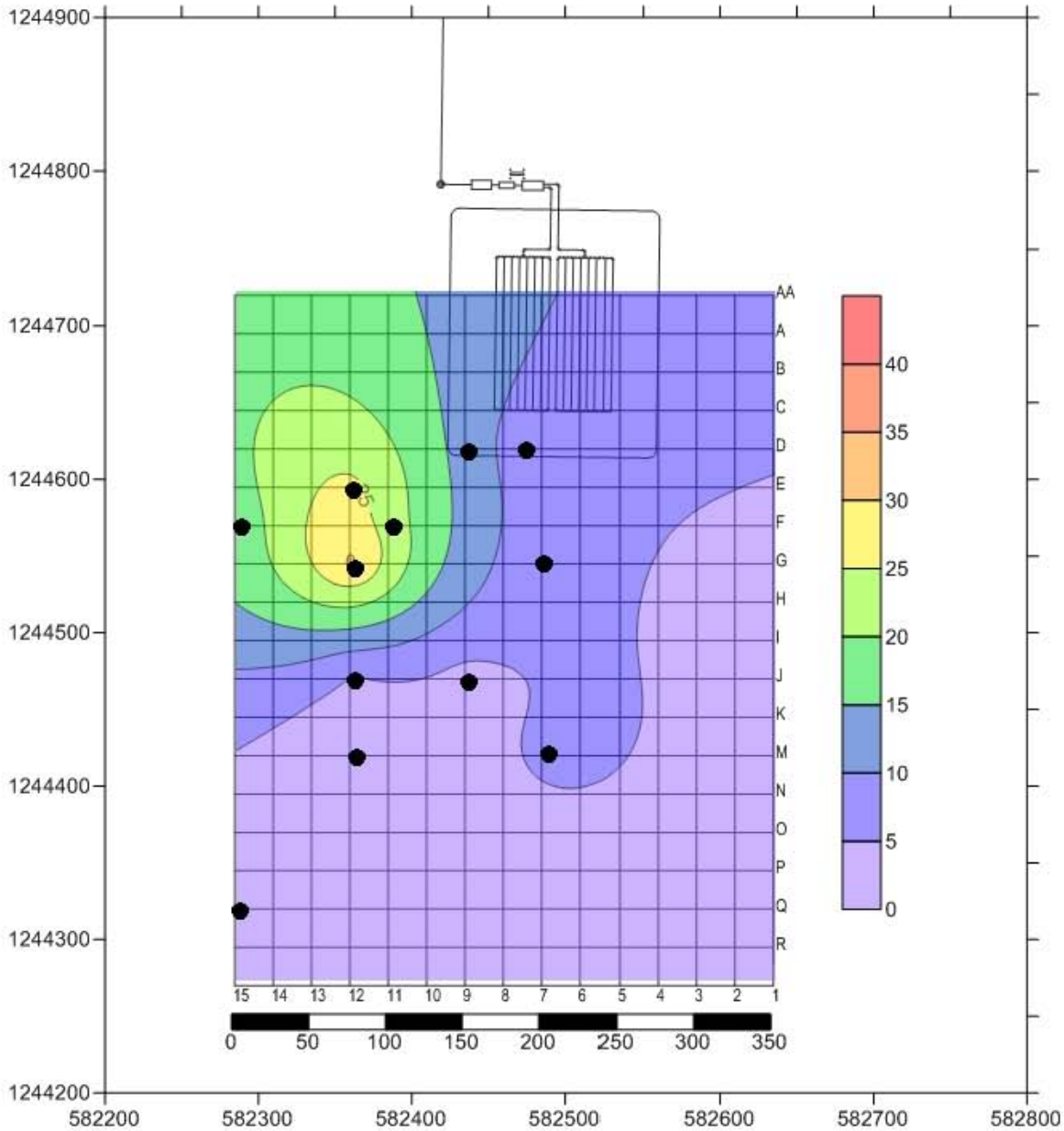


**Figure 12**
**NOX Concentrations at the 105-110' Elevation Interval**

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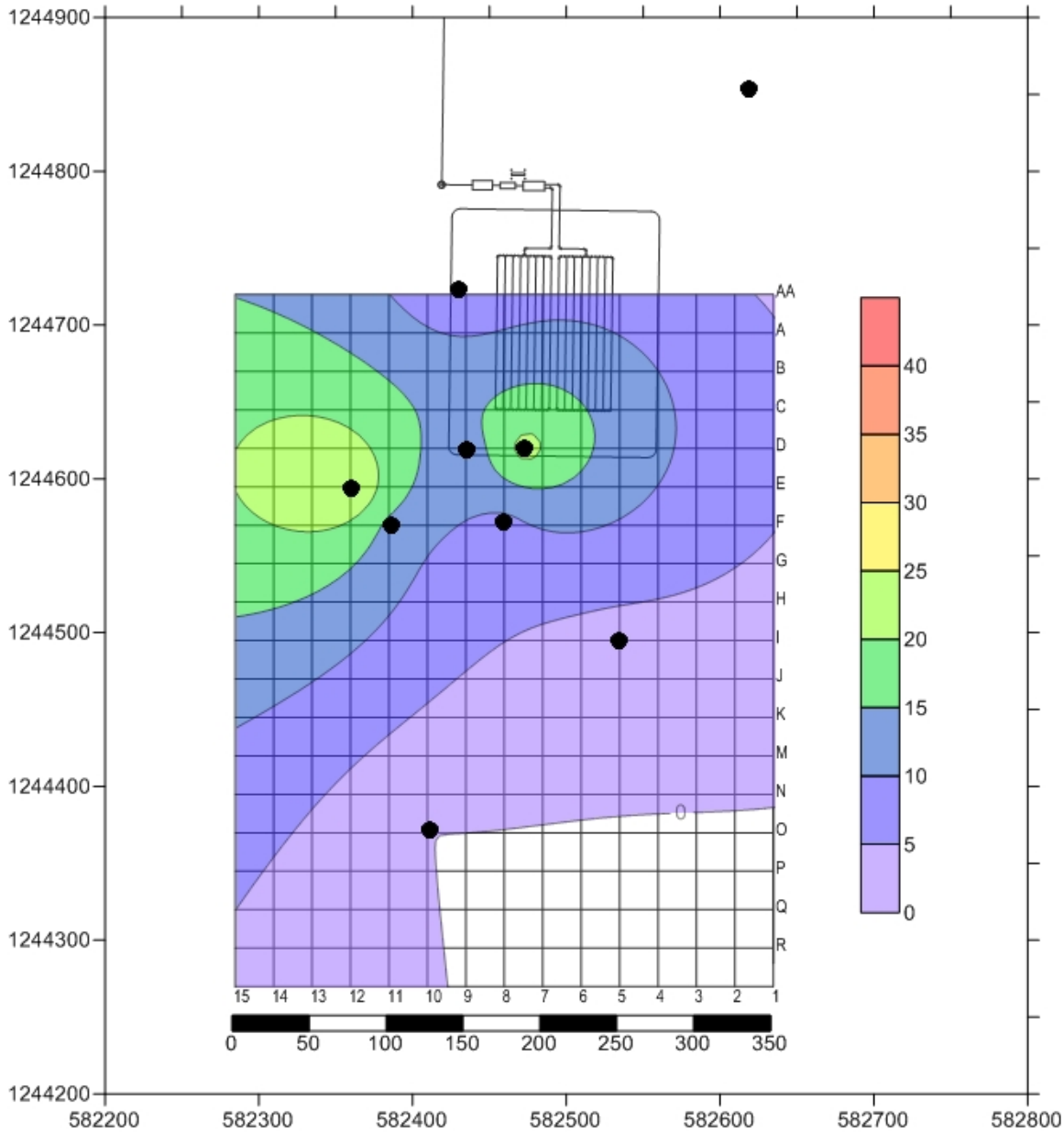


**Figure 13**
**NOX Concentrations at the 110-120' Elevation Interval**

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# 5.0 GCREC Data Summary Report No. 1: Summary and Recommendations

## 5.1 Summary

The results of this first sampling event served to identify the general trend of the NOX plume and provide the basis upon which to make adjustments and modifications to future monitoring locations. Results of Sample Event No. 1 indicate that:

- Although the groundwater fluctuates, the direction of flow does not appear to change.
- The elevation of the spodic layer appears to follow the same trend as the groundwater.
- There are small variations in field parameters over the site with no significant correlations between field parameters and NOX concentrations identified, with the exception of specific conductance and concentrations of NOX, which showed a good correlation ($R^2$=0.7).
- The nitrogen plume appears to be in a southwesterly direction with elevated concentrations in the spodic layer closer to the mound and higher elevations just below the spodic layer further away from the mound. The concentration is lowest just above the confining layer.

## 5.2 Recommendations

The following recommendations are based on the existing available information in context of the overriding goal to develop a field-monitoring framework at home sites and a simple groundwater model (Task D). The project team will continue to evaluate all results including those that result from implementation of the recommendations and make further adaptations as needed (observational method). Following is a list with select recommendations which the next sample event will address:

- Additional analyses of field parameters will give a better understanding of if and how they may correlate to nitrogen occurrence and reduction.
- Groundwater level monitoring in combination with tracer tests, will provide information needed to determine the necessary parameters for model development.
- Sampling of all locations will provide a snapshot of the site needed for plume identification and for nitrogen fate and transport determination.

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# Appendix A: GCREC Mound Wastewater Flow Data

**Table A.1**
**GCREC Mound Metered Wastewater Flow Data**

| Date Range | 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) |
|---|---|---|---|
| **Before A/C Condensate Diversion** | | | |
| 12/21/10 – 7/16/10 | 1,650 | 591 | 2,241 |
| **After A/C Condensate Diversion** | | | |
| 7/19/10 – 1/9/11 | 789 | 911 | 1,700 |

**Table A.2**
**Summary of Daily Wastewater Flows (PLC Recorded)**

| | Date Range | Average Recorded Flow (gpd) | Std. Dev. | MIN (gpd) | MAX (gpd) |
|---|---|---|---|---|---|
| **Before A/C Condensate Diversion** | | | | | |
| Pump 1 to Mound | 6/14/10 – 7/16/10 | 5,422 | 1,565 | 3,013 | 9,117 |
| Pump 2 to Mound | | - | - | - | - |
| Sum of Both Pumps | | 5,422 | 1,565 | 3,013 | 9,117 |
| **After A/C Condensate Diversion** | | | | | |
| Pump 1 to Mound | 7/16/10 – 12/10/10 | 790 | 366 | 284 | 2,640 |
| Pump 2 to Mound | | 917 | 403 | 291 | 3,090 |
| Sum of Both Pumps | | 1,707 | 749 | 584 | 5,730 |

**Table A.3**
**PLC Recorded Daily Wastewater Flows**
**(6/14/10 – 12/10/10)**

| Day Since Start-Up | Date | Pump 1 to GCREC Mound | Pump 2 to GCREC Mound | Sum Pump 1 and 2 |
|---|---|---|---|---|
| 28 | 6/14/2010 | PR | PR | - |
| 29 | 6/15/2010 | 6,436 | 0 | 6,436 |
| 30 | 6/16/2010 | 5,035 | 0 | 5,035 |
| 31 | 6/17/2010 | 7,841 | 0 | 7,841 |
| 32 | 6/18/2010 | 5,268 | 0 | 5,268 |
| 33 | 6/19/2010 | 3,668 | 0 | 3,668 |
| 34 | 6/20/2010 | 3,013 | 0 | 3,013 |
| 35 | 6/21/2010 | 5,250 | 0 | 5,250 |
| 36 | 6/22/2010 | 5,734 | 0 | 5,734 |

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| Day Since Start-Up | Date | Pump 1 to GCREC Mound | Pump 2 to GCREC Mound | Sum Pump 1 and 2 |
|---|---|---|---|---|
| 37 | 6/23/2010 | 4,672 | 0 | 4,672 |
| 38 | 6/24/2010 | 5,061 | 0 | 5,061 |
| 39 | 6/25/2010 | 5,142 | 0 | 5,142 |
| 40 | 6/26/2010 | 4,546 | 0 | 4,546 |
| 41 | 6/27/2010 | 4,044 | 0 | 4,044 |
| 42 | 6/28/2010 | 7,189 | 0 | 7,189 |
| 43 | 6/29/2010 | 4,739 | 0 | 4,739 |
| 44 | 6/30/2010 | 9,117 | 0 | 9,117 |
| 45 | 7/1/2010 | PR | PR | - |
| 46 | 7/2/2010 | NR | NR | - |
| 47 | 7/3/2010 | NR | NR | - |
| 48 | 7/4/2010 | NR | NR | - |
| 49 | 7/5/2010 | NR | NR | - |
| 50 | 7/6/2010 | NR | NR | - |
| 51 | 7/7/2010 | NR | NR | - |
| 52 | 7/8/2010 | NR | NR | - |
| 53 | 7/9/2010 | NR | NR | - |
| 54 | 7/10/2010 | NR | NR | - |
| 55 | 7/11/2010 | NR | NR | - |
| 56 | 7/12/2010 | NR | NR | - |
| 57 | 7/13/2010 | NR | NR | - |
| 58 | 7/14/2010 | NR | NR | - |
| 59 | 7/15/2010 | NR | NR | - |
| 60 | 7/16/2010 | NR | NR | - |
| 61 | 7/17/2010 | NR | NR | - |
| 62 | 7/18/2010 | NR | NR | - |
| 63 | 7/19/2010 | NR | NR | - |
| 64 | 7/20/2010 | NR | NR | - |
| 65 | 7/21/2010 | NR | NR | - |
| 66 | 7/22/2010 | NR | NR | - |
| 67 | 7/23/2010 | NR | NR | - |
| 68 | 7/24/2010 | NR | NR | - |
| 69 | 7/25/2010 | NR | NR | - |
| 70 | 7/26/2010 | NR | NR | - |
| 71 | 7/27/2010 | NR | NR | - |
| 72 | 7/28/2010 | NR | NR | - |
| 73 | 7/29/2010 | NR | NR | - |
| 74 | 7/30/2010 | PR | PR | - |

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| Day Since Start-Up | Date | Pump 1 to GCREC Mound | Pump 2 to GCREC Mound | Sum Pump 1 and 2 |
|---|---|---|---|---|
| 75 | 7/31/2010 | 485 | 639 | 1,124 |
| 76 | 8/1/2010 | 312 | 314 | 626 |
| 77 | 8/2/2010 | 1,021 | 1,192 | 2,213 |
| 78 | 8/3/2010 | 814 | 814 | 1,628 |
| 79 | 8/4/2010 | 994 | 825 | 1,819 |
| 80 | 8/5/2010 | 842 | 966 | 1,808 |
| 81 | 8/6/2010 | 982 | 793 | 1,775 |
| 82 | 8/7/2010 | 321 | 316 | 637 |
| 83 | 8/8/2010 | 319 | 463 | 782 |
| 84 | 8/9/2010 | 960 | 808 | 1,768 |
| 85 | 8/10/2010 | 780 | 943 | 1,723 |
| 86 | 8/11/2010 | 962 | 951 | 1,913 |
| 87 | 8/12/2010 | 933 | 776 | 1,709 |
| 88 | 8/13/2010 | 936 | 925 | 1,861 |
| 89 | 8/14/2010 | 457 | 466 | 923 |
| 90 | 8/15/2010 | 452 | 452 | 904 |
| 91 | 8/16/2010 | 946 | 1,363 | 2,309 |
| 92 | 8/17/2010 | 986 | 1,164 | 2,150 |
| 93 | 8/18/2010 | 930 | 1,056 | 1,986 |
| 94 | 8/19/2010 | 1,129 | 945 | 2,074 |
| 95 | 8/20/2010 | 782 | 964 | 1,746 |
| 96 | 8/21/2010 | 616 | 607 | 1,223 |
| 97 | 8/22/2010 | 450 | 456 | 906 |
| 98 | 8/23/2010 | 943 | 926 | 1,869 |
| 99 | 8/24/2010 | 1,092 | 939 | 2,031 |
| 100 | 8/25/2010 | 1,092 | 1,229 | 2,321 |
| 101 | 8/26/2010 | 1,242 | 1,085 | 2,327 |
| 102 | 8/27/2010 | 1,073 | 1,226 | 2,299 |
| 103 | 8/28/2010 | 745 | 742 | 1,487 |
| 104 | 8/29/2010 | 749 | 761 | 1,510 |
| 105 | 8/30/2010 | 917 | 1,204 | 2,121 |
| 106 | 8/31/2010 | 900 | 1,082 | 1,982 |
| 107 | 9/1/2010 | 1,053 | 1,049 | 2,102 |
| 108 | 9/2/2010 | 759 | 1,223 | 1,982 |
| 109 | 9/3/2010 | 1,659 | 1,715 | 3,374 |
| 110 | 9/4/2010 | 290 | 441 | 731 |
| 111 | 9/5/2010 | 599 | 444 | 1,043 |
| 112 | 9/6/2010 | 450 | 593 | 1,043 |

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| Day Since Start-Up | Date | Pump 1 to GCREC Mound | Pump 2 to GCREC Mound | Sum Pump 1 and 2 |
|---|---|---|---|---|
| 113 | 9/7/2010 | 1,060 | 909 | 1,969 |
| 114 | 9/8/2010 | 1,055 | 1,383 | 2,438 |
| 115 | 9/9/2010 | 746 | 904 | 1,650 |
| 116 | 9/10/2010 | 729 | 1,062 | 1,791 |
| 117 | 9/11/2010 | 284 | 594 | 878 |
| 118 | 9/12/2010 | 289 | 588 | 877 |
| 119 | 9/13/2010 | 899 | 1,067 | 1,966 |
| 120 | 9/14/2010 | 913 | 1,058 | 1,971 |
| 121 | 9/15/2010 | 748 | 1,043 | 1,791 |
| 122 | 9/16/2010 | 896 | 764 | 1,660 |
| 123 | 9/17/2010 | 897 | 920 | 1,817 |
| 124 | 9/18/2010 | 288 | 588 | 876 |
| 125 | 9/19/2010 | 292 | 437 | 729 |
| 126 | 9/20/2010 | 754 | 901 | 1,655 |
| 127 | 9/21/2010 | 881 | 749 | 1,630 |
| 128 | 9/22/2010 | 746 | 904 | 1,650 |
| 129 | 9/23/2010 | 597 | 752 | 1,349 |
| 130 | 9/24/2010 | 891 | 916 | 1,807 |
| 131 | 9/25/2010 | 286 | 300 | 586 |
| 132 | 9/26/2010 | 285 | 446 | 731 |
| 133 | 9/27/2010 | 758 | 923 | 1,681 |
| 134 | 9/28/2010 | 740 | 1,052 | 1,792 |
| 135 | 9/29/2010 | 894 | 762 | 1,656 |
| 136 | 9/30/2010 | 606 | 896 | 1,502 |
| 137 | 10/1/2010 | 750 | 893 | 1,643 |
| 138 | 10/2/2010 | 290 | 596 | 886 |
| 139 | 10/3/2010 | 287 | 441 | 728 |
| 140 | 10/4/2010 | 1,082 | 903 | 1,985 |
| 141 | 10/5/2010 | 911 | 1,071 | 1,982 |
| 142 | 10/6/2010 | 770 | 1,222 | 1,992 |
| 143 | 10/7/2010 | 906 | 925 | 1,831 |
| 144 | 10/8/2010 | 940 | 905 | 1,845 |
| 145 | 10/9/2010 | 291 | 293 | 584 |
| 146 | 10/10/2010 | 295 | 435 | 730 |
| 147 | 10/11/2010 | 732 | 934 | 1,666 |
| 148 | 10/12/2010 | 906 | 1,054 | 1,960 |
| 149 | 10/13/2010 | 934 | 1,222 | 2,156 |
| 150 | 10/14/2010 | 1,201 | 1,271 | 2,472 |

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| Day Since Start-Up | Date | Pump 1 to GCREC Mound | Pump 2 to GCREC Mound | Sum Pump 1 and 2 |
|---|---|---|---|---|
| 151 | 10/15/2010 | 292 | 739 | 1,031 |
| 152 | 10/16/2010 | 573 | 444 | 1,017 |
| 153 | 10/17/2010 | 285 | 444 | 729 |
| 154 | 10/18/2010 | 913 | 1,223 | 2,136 |
| 155 | 10/19/2010 | 1,099 | 1,274 | 2,373 |
| 156 | 10/20/2010 | 1,053 | 1,081 | 2,134 |
| 157 | 10/21/2010 | 915 | 1,078 | 1,993 |
| 158 | 10/22/2010 | 606 | 932 | 1,538 |
| 159 | 10/23/2010 | 435 | 598 | 1,033 |
| 160 | 10/24/2010 | 433 | 292 | 725 |
| 161 | 10/25/2010 | 1,260 | 1,250 | 2,510 |
| 162 | 10/26/2010 | 1,243 | 1,401 | 2,644 |
| 163 | 10/27/2010 | 931 | 1,246 | 2,177 |
| 164 | 10/28/2010 | 1,237 | 1,246 | 2,483 |
| 165 | 10/29/2010 | 930 | 1,216 | 2,146 |
| 166 | 10/30/2010 | 292 | 589 | 881 |
| 167 | 10/31/2010 | 439 | 291 | 730 |
| 168 | 11/1/2010 | 765 | 1,218 | 1,983 |
| 169 | 11/2/2010 | 906 | 1,058 | 1,964 |
| 170 | 11/3/2010 | 909 | 1,069 | 1,978 |
| 171 | 11/4/2010 | 1,060 | 909 | 1,969 |
| 172 | 11/5/2010 | 752 | 1,083 | 1,835 |
| 173 | 11/6/2010 | 446 | 593 | 1,039 |
| 174 | 11/7/2010 | 589 | 444 | 1,033 |
| 175 | 11/8/2010 | 1,067 | 1,239 | 2,306 |
| 176 | 11/9/2010 | 768 | 1,056 | 1,824 |
| 177 | 11/10/2010 | 1,661 | 1,887 | 3,548 |
| 178 | 11/11/2010 | 293 | 596 | 889 |
| 179 | 11/12/2010 | 1,309 | 1,343 | 2,652 |
| 180 | 11/13/2010 | 286 | 448 | 734 |
| 181 | 11/14/2010 | 442 | 446 | 888 |
| 182 | 11/15/2010 | 941 | 1,436 | 2,377 |
| 183 | 11/16/2010 | 1,241 | 1,103 | 2,344 |
| 184 | 11/17/2010 | 1,306 | 1,827 | 3,133 |
| 185 | 11/18/2010 | 1,269 | 1,459 | 2,728 |
| 186 | 11/19/2010 | 895 | 781 | 1,676 |
| 187 | 11/20/2010 | 286 | 761 | 1,047 |
| 188 | 11/21/2010 | 433 | 446 | 879 |

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| Day Since Start-Up | Date | Pump 1 to GCREC Mound | Pump 2 to GCREC Mound | Sum Pump 1 and 2 |
|---|---|---|---|---|
| 189 | 11/22/2010 | 744 | 1,118 | 1,862 |
| 190 | 11/23/2010 | 984 | 1,555 | 2,539 |
| 191 | 11/24/2010 | 906 | 1,073 | 1,979 |
| 192 | 11/25/2010 | 291 | 445 | 736 |
| 193 | 11/26/2010 | 440 | 294 | 734 |
| 194 | 11/27/2010 | 438 | 596 | 1,034 |
| 195 | 11/28/2010 | 293 | 443 | 736 |
| 196 | 11/29/2010 | 899 | 1,088 | 1,987 |
| 197 | 11/30/2010 | 1,880 | 2,048 | 3,928 |
| 198 | 12/1/2010 | 2,640 | 3,090 | 5,730 |
| 199 | 12/2/2010 | 892 | 1,106 | 1,998 |
| 200 | 12/3/2010 | 752 | 1,089 | 1,841 |
| 201 | 12/4/2010 | 291 | 330 | 621 |
| 202 | 12/5/2010 | 446 | 561 | 1,007 |
| 203 | 12/6/2010 | 1,116 | 1,134 | 2,250 |
| 204 | 12/7/2010 | 916 | 938 | 1,854 |
| 205 | 12/8/2010 | 1,082 | 1,284 | 2,366 |
| 206 | 12/9/2010 | 771 | 942 | 1,713 |
| 207 | 12/10/2010 | 940 | 1,280 | 2,220 |

[1]NR = No reading
[2]PR = Partial daily flow recorded

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# Appendix B: GCREC Weather Station Data

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## Table B.1
## Monthly Recorded Meteorological Data

| Period | 60cm T avg (F) | 60cm T min (F) | 60cm T max (F) | 10m T avg (F) | 10m T min (F) | 10m T max (F) | Tsoil avg -10cm (F) | Tsoil min(avg) -10cm (F) | Tsoil max(avg) -10cm (F) | 2m DewPt avg (F) | RelHum avg 2m (pct) | 2m Rain tot (in) | 2m Rain max over 15min (in) | 10m Wind avg (mph) | 10m Wind min (mph) | 10m Wind max (mph) | WDir avg 10m (deg) | ET avg (in) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan-10 | 53.1 | 23.97 | 82.38 | 53.67 | 25.75 | 80.78 | 59.67 | 51.13 | 66.63 | 44.57 | 76 | 3.19 | 0.57 | 7.6 | 0 | 32.8 | 348 | 0.05 |
| Feb-10 | 53.75 | 30.84 | 78.96 | 53.88 | 34.39 | 76.75 | 59.86 | 54.32 | 65.75 | 43.97 | 74 | 2.22 | 0.47 | 7.85 | 0 | 36.13 | 348 | 0.07 |
| Mar-10 | 59.24 | 32.89 | 82.26 | 59.54 | 37.02 | 80.42 | 62.09 | 55.31 | 68.11 | 48.75 | 73 | 6.15 | 0.44 | 8.25 | 0 | 38.27 | 289 | 0.1 |
| Apr-10 | 69.78 | 44.74 | 88.54 | 70.02 | 51.53 | 86.36 | 70.78 | 63 | 75.72 | 59.5 | 74 | 2.79 | 0.52 | 7.46 | 0 | 44.17 | 94 | 0.15 |
| May-10 | 77.78 | 62.37 | 93.63 | 77.61 | 65.19 | 91.15 | 79.11 | 73.17 | 83.97 | 68.62 | 77 | 0.89 | 0.13 | 6.75 | 0 | 31.1 | 126 | 0.18 |
| Jun-10 | 80.91 | 65.84 | 99.09 | 80.81 | 68.68 | 95.32 | 82.32 | 76.69 | 88.63 | 72.87 | 80 | 8.25 | 1.3 | 5.85 | 0 | 50.47 | 116 | 0.19 |
| Jul-10 | 80.67 | 68 | 96.21 | 80.81 | 70.7 | 93.81 | 82.58 | 77.49 | 87.03 | 74.05 | 82 | 7.3 | 0.48 | 5.95 | 0 | 35.37 | 103 | 0.18 |
| Aug-10 | 80.54 | 70.59 | 96.87 | 80.58 | 71.64 | 93.81 | 82.63 | 79.11 | 87.85 | 75.03 | 85 | 13.51 | 1.74 | 5.78 | 0 | 43.53 | 154 | 0.16 |
| Sep-10 | 78.91 | 63.43 | 95.88 | 79.14 | 67.87 | 92.93 | 80.83 | 78.17 | 83.39 | 72.11 | 82 | 3.42 | 0.55 | 6.33 | 0 | 41.6 | 84 | 0.16 |
| Oct-10 | 71.98 | 51.24 | 93 | 72.84 | 55.15 | 90.25 | 74.97 | 71.83 | 78.62 | 61.55 | 73 | 0.01 | 0.01 | 5.56 | 0 | 32 | 31 | 0.11 |
| Nov-10 | 65.75 | 39.95 | 86.77 | 66.38 | 41.73 | 84.13 | 69.47 | 64.33 | 75.34 | 56.97 | 76 | 1.24 | 0.16 | 6.52 | 0 | 30.53 | 55 | 0.07 |
| Dec-10 | 50.64 | 22.86 | 78.37 | 51.3 | 27.61 | 76.46 | 60.71 | 54.61 | 71.33 | 39.83 | 71 | 0.5 | 0.05 | 7.33 | 0 | 36.77 | 354 | 0.04 |

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# Appendix C: Water Quality Analytical Results

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Table C.1
Water Quality Analytical Results
(December 9-10, 2010)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TN (mg/L N) | TKN (mg/L N) | Organic N (mg/L N) | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N) | TOC (mg/L) | DOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **STE Sample** | | | | | | | | | | | | | | | |
| STE-EX Pump Tank | 12/10/10 9:55 | G | 19.90 | 7.33 | 410 | 0.1 | 1,273 | 56.01 | 56 | 21.00 | 35 | 0.01 | 35.01 | | |
| STE-EX Pump Tank-D | 12/10/10 9:55 | G | 19.90 | 7.33 | 410 | 0.1 | 1,273 | 64.01 | 64.00 | 3.00 | 61 | 0.01 | 61.01 | | |
| **Drivepoints** | | | | | | | | | | | | | | | |
| DPAA9-14 | 12/9/10 7:45 | G | 21.50 | 5.10 | 11 | 0.89 | 282 | 6.83 | 0.93 | 0.92 | 0.006 | 5.9 | 5.91 | | |
| DPAA9-22 | 12/9/10 7:55 | G | 23.30 | 4.90 | 2 | 1.06 | 319 | 10.82 | 0.82 | 0.81 | 0.013 | 10 | 10.01 | | |
| DPAA9-27 | 12/9/10 8:12 | G | 22.70 | 4.80 | 2 | 0.84 | 293 | 7.90 | 1.0 | 0.97 | 0.028 | 6.9 | 6.93 | | |
| DPD7.5-14 | 12/9/10 8:20 | G | 21.20 | 7.01 | 2 | 1.10 | 432 | 22.68 | 0.68 | 0.56 | 0.12 | 22 | 22.12 | 2.9 | 1.2 |
| DPD7.5-20 | 12/9/10 8:35 | G | 22.20 | 7.01 | 2 | 2.55 | 258 | 8.20 | 0.80 | 0.78 | 0.022 | 7.4 | 7.42 | | |
| DPD7.5-26 | 12/9/10 8:46 | G | 21.30 | 7.01 | 2 | 2.01 | 295 | 12.99 | 0.99 | 0.95 | 0.038 | 12 | 12.04 | | |
| DPD09-6 | 12/9/10 9:05 | G | 17.00 | 4.82 | 2 | 5.59 | 363 | 11.84 | 0.84 | 0.81 | 0.028 | 11 | 11.03 | | |
| DPD09-8 | 12/9/10 9:20 | G | 18.40 | 4.65 | 2 | 3.52 | 380 | 12.91 | 0.91 | 0.89 | 0.022 | 12 | 12.02 | | |
| DPD09-15 | 12/9/10 9:30 | G | 19.10 | 5.30 | 2 | 3.20 | 433 | 13.43 | 0.43 | 0.34 | 0.086 | 13 | 13.09 | 5.3 | 2.5 |
| DPD09-15-D | 12/9/10 9:30 | G | 19.10 | 5.30 | 14 | 3.20 | 433 | 12.41 | 0.41 | 0.41 | 0.005 | 12 | 12.01 | | |
| DPD09-21 | 12/9/10 9:50 | G | 21.70 | 5.78 | 2 | 1.35 | 300 | 7.67 | 0.27 | 0.22 | 0.053 | 7.4 | 7.45 | | |
| DPD09-27 | 12/9/10 10:05 | G | 20.20 | 5.97 | 3 | 2.26 | 270 | 1.43 | 1.10 | 1.09 | 0.01 | 0.33 | 0.34 | | |
| DPE12-10 | 12/9/10 10:45 | G | 19.20 | 5.48 | 2 | 4.68 | 491 | 27.30 | 2.30 | 2.07 | 0.23 | 25 | 25.23 | | |
| DPE12-15 | 12/9/10 10:50 | G | 22.20 | 4.88 | 2 | 2.47 | 550 | 26.88 | 0.88 | 0.63 | 0.25 | 26 | 26.25 | | |
| DPE12-22 | 12/9/10 11:05 | G | 20.40 | 5.00 | 2 | 1.95 | 464 | 19.00 | 1.00 | 0.95 | 0.049 | 18 | 18.05 | 2.3 | 1.5 |
| DPE12-28 | 12/9/10 11:20 | G | 21.90 | 5.17 | 2 | 2.01 | 297 | 10.20 | 2.30 | 2.23 | 0.069 | 7.9 | 7.97 | | |
| DPF08-14 | 12/9/10 11:45 | G | 22.40 | 7.04 | 310 | 6.09 | 1,412 | 9.40 | 0.90 | 0.71 | 0.19 | 8.5 | 8.69 | | |
| DPF08-20 | 12/9/10 12:00 | G | 23.20 | 6.34 | 3 | 1.77 | 368 | 10.87 | 0.87 | 0.83 | 0.036 | 10 | 10.04 | 3 | 2.4 |
| DPF08-20-D | 12/9/10 12:00 | G | 23.20 | 6.34 | 20 | 1.77 | 368 | 11.91 | 0.91 | 0.91 | 0.005 | 11 | 11.01 | | |
| DPF08-28 | 12/9/10 12:15 | G | 23.10 | 6.11 | 35 | 1.73 | 332 | 3.93 | 0.63 | 0.48 | 0.15 | 3.3 | 3.45 | | |
| DPF11-11 | 12/9/10 12:30 | G | 19.50 | 5.35 | 2 | 5.26 | 366 | 14.70 | 1.70 | 0.20 | 1.50 | 13 | 14.50 | | |
| DPF11-15 | 12/9/10 12:55 | G | 22.80 | 5.00 | 2 | 3.64 | 547 | 30.10 | 1.10 | 0.72 | 0.38 | 29 | 29.38 | | |
| DPF11-18 | 12/9/10 13:05 | G | 23.10 | 5.02 | 2 | 2.48 | 497 | 22.55 | 0.55 | 0.53 | 0.024 | 22 | 22.02 | 4.1 | 1.3 |
| DPF11-21 | 12/9/10 13:25 | G | 22.70 | 5.02 | 2 | 2.10 | 458 | 19.64 | 0.64 | 0.62 | 0.018 | 19 | 19.02 | | |
| DPF11-24 | 12/9/10 13:45 | G | 22.90 | 5.00 | 2 | 1.15 | 475 | 23.47 | 0.47 | 0.45 | 0.022 | 23 | 23.02 | | |
| DPF11-27 | 12/9/10 14:00 | G | 23.30 | 5.19 | 2 | 0.82 | 297 | 4.53 | 0.83 | 0.80 | 0.026 | 3.7 | 3.73 | | |
| DPF15-14 | 12/10/10 6:52 | G | 21.50 | 5.10 | 22 | 1.11 | 409 | 17.26 | 0.26 | 0.07 | 0.19 | 17 | 17.19 | | |
| DPF15-20 | 12/10/10 7:15 | G | 22.10 | 4.90 | 11 | 0.62 | 649 | 29.31 | 0.31 | 0.29 | 0.019 | 29 | 29.02 | 1.1 | 1.2 |
| DPF15-20-D | 12/10/10 7:20 | G | 22.10 | 4.90 | 7.1 | 0.62 | 649 | 29.29 | 0.29 | 0.29 | 0.005 | 29 | 29.01 | | |
| DPF15-26 | 12/10/10 7:41 | G | 21.80 | 4.90 | 2 | 0.52 | 291 | 11.54 | 0.54 | 0.52 | 0.016 | 11 | 11.02 | | |
| DPG07-15 | 12/10/10 8:25 | G | 21.40 | 5.53 | 6.1 | 3.33 | 271 | 4.79 | 0.49 | 0.45 | 0.039 | 4.3 | 4.34 | | |
| DPG07-17 | 12/10/10 8:35 | G | 21.90 | 5.36 | 5.1 | 2.19 | 312 | 7.01 | 0.31 | 0.31 | 0.005 | 6.7 | 6.71 | | |
| DPG07-21 | 12/10/10 8:50 | G | 22.90 | 5.37 | 6.1 | 1.66 | 343 | 12.51 | 0.51 | 0.51 | 0.005 | 12 | 12.01 | | |
| DPG07-24 | 12/10/10 9:00 | G | 22.90 | 5.26 | 7.1 | 1.13 | 300 | 14.50 | 0.50 | 0.50 | 0.005 | 14 | 14.01 | | |
| DPG07-27 | 12/10/10 9:15 | G | 22.50 | 5.19 | 5.1 | 1.37 | 293 | 8.44 | 0.74 | 0.74 | 0.005 | 7.7 | 7.71 | | |



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Table C.1 (con't)
Water Quality Analytical Results
(December 9-10, 2010)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TN (mg/L N) | TKN (mg/L N) | Organic N (mg/L N) | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N) | TOC (mg/L) | DOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DPG12-15 | 12/10/10 9:06 | G | 22.30 | 4.70 | 5.1 | 0.89 | 508 | 25.00 | 1.0 | 0.78 | 0.22 | 24 | 24.22 | | |
| DPG12-15-D | 12/10/10 9:38 | G | 22.30 | 4.70 | 4.1 | 0.89 | 508 | 25.10 | 1.10 | 0.91 | 0.19 | 24 | 24.19 | | |
| DPG12-21 | 12/10/10 9:52 | G | 22.70 | 4.90 | 4.1 | 0.99 | 636 | 31.06 | 0.06 | 0.06 | 0.005 | 31 | 31.01 | | |
| DPG12-27 | 12/10/10 10:08 | G | 23.10 | 4.70 | 6.1 | 0.45 | 509 | 19.68 | 0.68 | 0.46 | 0.22 | 19 | 19.22 | | |
| DPI06-14 | 12/10/10 7:10 | G | 20.40 | 5.25 | 6.1 | 1.66 | 240 | 4.30 | 1.1 | 1.10 | 0.005 | 3.2 | 3.21 | | |
| DPI06-20 | 12/10/10 7:25 | G | 21.40 | 5.03 | 2.0 | 1.80 | 367 | 15.46 | 0.46 | 0.46 | 0.005 | 15 | 15.01 | | |
| DPI06-26 | 12/10/10 7:46 | G | 21.30 | 5.01 | 2.0 | 2.36 | 302 | 10.38 | 0.38 | 0.38 | 0.005 | 10 | 10.01 | 0.75 | 1.0 |
| DPJ09-14 | 12/9/10 13:20 | G | 21.90 | 4.50 | 2.0 | 3.29 | 232 | 3.92 | 0.42 | 0.42 | 0.005 | 3.5 | 3.51 | | |
| DPJ09-20 | 12/9/10 13:36 | G | 23.20 | 4.90 | 2.0 | 1.57 | 338 | 8.15 | 0.05 | 0.05 | 0.005 | 8.1 | 8.11 | | |
| DPJ09-26 | 12/9/10 13:58 | G | 23.00 | 4.90 | 2.0 | 2.51 | 298 | 10.40 | 1.1 | 1.10 | 0.005 | 9.3 | 9.31 | | |
| DPJ12-15 | 12/9/10 12:28 | G | 22.10 | 4.80 | 2.0 | 1.50 | 288 | 5.05 | 0.05 | 0.05 | 0.005 | 5 | 5.01 | | |
| DPJ12-20 | 12/9/10 12:39 | G | 22.90 | 5.00 | 2.0 | 1.13 | 343 | 8.63 | 0.83 | 0.83 | 0.005 | 7.8 | 7.81 | 2.6 | 1.5 |
| DPJ12-20-D | 12/9/10 12:44 | G | 22.90 | 5.00 | 5.1 | 1.13 | 343 | 9.95 | 0.85 | 0.84 | 0.014 | 9.1 | 9.11 | | |
| DPJ12-27 | 12/9/10 13:00 | G | 22.60 | 4.80 | 2.0 | 1.14 | 307 | 13.10 | 1.1 | 1.10 | 0.005 | 12 | 12.01 | | |
| DPM07-15 | 12/9/10 11:32 | G | 22.20 | 4.80 | 2.0 | 0.80 | 304 | 6.62 | 0.42 | 0.42 | 0.005 | 6.2 | 6.21 | | |
| DPM07-21 | 12/9/10 11:47 | G | 22.50 | 4.90 | 2.0 | 0.58 | 375 | 13.86 | 0.86 | 0.86 | 0.005 | 13 | 13.01 | | |
| DPM07-27 | 12/9/10 12:07 | G | 22.50 | 4.80 | 2.0 | 0.49 | 302 | 9.34 | 0.74 | 0.74 | 0.005 | 8.6 | 8.61 | | |
| DPN12-14 | 12/9/10 10:36 | G | 22.10 | 5.00 | 2.0 | 1.28 | 163 | 1.03 | 0.26 | 0.26 | 0.005 | 0.77 | 0.78 | | |
| DPN12-21 | 12/9/10 10:52 | G | 22.30 | 4.90 | 2.0 | 1.91 | 304 | 4.70 | 0.60 | 0.60 | 0.005 | 4.1 | 4.11 | | |
| DPN12-27 | 12/9/10 11:14 | G | 21.60 | 5.00 | 2.0 | 2.45 | 332 | 11.99 | 0.99 | 0.99 | 0.005 | 11 | 11.01 | 1.5 | 2.0 |
| DPO10-12 | 12/9/10 9:45 | G | 21.10 | 4.30 | 2.0 | 1.31 | 186 | 0.16 | 0.10 | 0.10 | 0.005 | 0.06 | 0.07 | | |
| DPO10-18 | 12/9/10 9:58 | G | 22.20 | 4.80 | 2.0 | 0.77 | 299 | 4.54 | 0.54 | 0.54 | 0.005 | 4.0 | 4.01 | | |
| DPO10-24 | 12/9/10 10:14 | G | 21.80 | 4.20 | 2.0 | 0.69 | 182 | 0.16 | 0.09 | 0.09 | 0.005 | 0.07 | 0.08 | | |
| DPQ15-15 | 12/9/10 8:53 | G | 20.70 | 4.70 | 2.0 | 2.31 | 303 | 1.79 | 0.29 | 0.29 | 0.005 | 1.5 | 1.51 | | |
| DPQ15-21 | 12/9/10 9:05 | G | 22.60 | 5.00 | 2.0 | 1.44 | 324 | 5.90 | 0.90 | 0.90 | 0.005 | 5.0 | 5.01 | | |
| DPQ15-26 | 12/9/10 9:23 | G | 21.50 | 5.10 | 2.0 | 0.96 | 324 | 9.00 | 0.70 | 0.70 | 0.005 | 8.3 | 8.31 | | |
| **Standpipe Piezometers** | | | | | | | | | | | | | | | |
| PZ16-C12-28 | 12/9/10 8:30 | G | 27.60 | 5.60 | 11 | 0.7 | 292 | 0.29 | 0.12 | 0.10 | 0.017 | 0.17 | 0.19 | | |
| PZ04-BKG-9 | 12/10/10 8:40 | G | 21.60 | 5.30 | 8.1 | 1.1 | 73 | 0.12 | 0.11 | 0.11 | 0.005 | 0.01 | 0.02 | 2.9 | 2.8 |
| PZ24-BKG-26 | 12/10/10 8:20 | G | 24.10 | 5.10 | 4.1 | 0.7 | 296 | 12.60 | 0.60 | 0.60 | 0.005 | 12 | 12.01 | 1.3 | 1.1 |
| PZ17-I15-26 | 12/10/10 9:16 | G | 22.10 | 5.70 | 4.1 | 0.5 | 294 | 10.30 | 0.60 | 0.60 | 0.005 | 9.7 | 9.71 | 4.0 | 1.0 |
| **Blanks** | | | | | | | | | | | | | | | |
| Field Blank-DI | 12/10/10 7:53 | G | 12.10 | 5.71 | 2.0 | 9.4 | 1 | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | |
| Field Blank-TAP | 12/10/10 8:00 | G | 9.60 | 6.97 | 140 | 11.1 | 445 | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | |
| Equipment Rinsate | 12/10/10 9:42 | G | 11.90 | 7.20 | 2.0 | 2.3 | 13 | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | |

Notes
DO - Dissolved oxygen
G - Grab sample
Gray - Shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.
Yellow shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.



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# Appendix D: Summary of Water Quality Data

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Table D.1
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TOC (mg/L) | DOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **STE Sample** | | | | | | | | | | | | | | |
| STE-EX Pump Tank | n | 5 | 5 | 6 | 3 | 4 | 5 | 5 | 5 | 6 | 6 | 5 | | |
| | MEAN | 24.7 | | 258.8 | 0.1 | 899.8 | 45.3 | 45.2 | 7.7 | 32.2 | 0.1 | 37.6 | | |
| | STD. DEV. | 4.8 | | 119.3 | 0.0 | 431.8 | 17.3 | 17.2 | 9.1 | 18.4 | 0.1 | 14.7 | | |
| | MIN | 19.9 | 6.5 | 150.0 | 0.1 | 494.0 | 24.2 | 24.2 | -1.0 | 5.8 | 0.0 | 21.5 | | |
| | MAX | 30.4 | 7.3 | 410.0 | 0.1 | 1273.0 | 64.0 | 64.0 | 21.0 | 61.0 | 0.3 | 61.0 | | |
| **Drivepoints** | | | | | | | | | | | | | | |
| DP-AA9-14 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 21.5 | | 11.0 | 0.9 | 281.9 | 6.8 | 0.9 | 0.9 | 0.006 | 5.9 | 5.9 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.5 | 5.1 | 11.0 | 0.9 | 281.9 | 6.8 | 0.9 | 0.9 | 0.006 | 5.9 | 5.9 | | |
| | MAX | 21.5 | 5.1 | 11.0 | 0.9 | 281.9 | 6.8 | 0.9 | 0.9 | 0.006 | 5.9 | 5.9 | | |
| DP-AA9-22 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 23.3 | | 2.0 | 1.1 | 318.7 | 10.8 | 0.8 | 0.8 | 0.01 | 10.0 | 10.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 23.3 | 4.9 | 2.0 | 1.1 | 318.7 | 10.8 | 0.8 | 0.8 | 0.01 | 10.0 | 10.0 | | |
| | MAX | 23.3 | 4.9 | 2.0 | 1.1 | 318.7 | 10.8 | 0.8 | 0.8 | 0.01 | 10.0 | 10.0 | | |
| DP-AA9-27 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.7 | | 2.0 | 0.8 | 293.2 | 7.9 | 1.0 | 1.0 | 0.03 | 6.9 | 6.9 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.7 | 4.8 | 2.0 | 0.8 | 293.2 | 7.9 | 1.0 | 1.0 | 0.03 | 6.9 | 6.9 | | |
| | MAX | 22.7 | 4.8 | 2.0 | 0.8 | 293.2 | 7.9 | 1.0 | 1.0 | 0.03 | 6.9 | 6.9 | | |
| DPD7.5-14 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 21.2 | | 2.0 | 1.1 | 432.0 | 22.7 | 0.7 | 0.6 | 0.1 | 22.0 | 22.1 | 2.9 | 1.2 |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.2 | 7.0 | 2.0 | 1.1 | 432.0 | 22.7 | 0.7 | 0.6 | 0.1 | 22.0 | 22.1 | 2.9 | 1.2 |
| | MAX | 21.2 | 7.0 | 2.0 | 1.1 | 432.0 | 22.7 | 0.7 | 0.6 | 0.1 | 22.0 | 22.1 | 2.9 | 1.2 |
| DPD7.5-20 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.2 | | 2.0 | 2.6 | 258.0 | 8.2 | 0.8 | 0.8 | 0.02 | 7.4 | 7.4 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.2 | 7.0 | 2.0 | 2.6 | 258.0 | 8.2 | 0.8 | 0.8 | 0.02 | 7.4 | 7.4 | | |
| | MAX | 22.2 | 7.0 | 2.0 | 2.6 | 258.0 | 8.2 | 0.8 | 0.8 | 0.02 | 7.4 | 7.4 | | |
| DPD7.5-26 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 21.3 | | 2.0 | 2.0 | 295.0 | 13.0 | 1.0 | 1.0 | 0.04 | 12.0 | 12.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.3 | 7.0 | 2.0 | 2.0 | 295.0 | 13.0 | 1.0 | 1.0 | 0.04 | 12.0 | 12.0 | | |
| | MAX | 21.3 | 7.0 | 2.0 | 2.0 | 295.0 | 13.0 | 1.0 | 1.0 | 0.04 | 12.0 | 12.0 | | |



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Table D.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TOC (mg/L) | DOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DPD09-6 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 17.0 | | 2.0 | 5.6 | 363.0 | 11.8 | 0.8 | 0.8 | 0.03 | 11.0 | 11.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 17.0 | 4.8 | 2.0 | 5.6 | 363.0 | 11.8 | 0.8 | 0.8 | 0.03 | 11.0 | 11.0 | | |
| | MAX | 17.0 | 4.8 | 2.0 | 5.6 | 363.0 | 11.8 | 0.8 | 0.8 | 0.03 | 11.0 | 11.0 | | |
| DPD09-8 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 18.4 | | 2.0 | 3.5 | 380.0 | 12.9 | 0.9 | 0.9 | 0.02 | 12.0 | 12.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 18.4 | 4.7 | 2.0 | 3.5 | 380.0 | 12.9 | 0.9 | 0.9 | 0.02 | 12.0 | 12.0 | | |
| | MAX | 18.4 | 4.7 | 2.0 | 3.5 | 380.0 | 12.9 | 0.9 | 0.9 | 0.02 | 12.0 | 12.0 | | |
| DPD09-15 | n | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 |
| | MEAN | 19.1 | | 8.0 | 3.2 | 433.0 | 12.9 | 0.4 | 0.4 | 0.05 | 12.5 | 12.5 | 5.3 | 2.5 |
| | STD. DEV. | 0.0 | | 8.5 | 0.0 | 0.0 | 0.7 | 0.0 | 0.0 | 0.1 | 0.7 | 0.8 | | |
| | MIN | 19.1 | 5.3 | 2.0 | 3.2 | 433.0 | 12.4 | 0.4 | 0.3 | 0.005 | 12.0 | 12.0 | 5.3 | 2.5 |
| | MAX | 19.1 | 5.3 | 14.0 | 3.2 | 433.0 | 13.4 | 0.4 | 0.4 | 0.1 | 13.0 | 13.1 | 5.3 | 2.5 |
| DPD09-21 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 21.7 | | 2.0 | 1.4 | 300.0 | 7.7 | 0.3 | 0.2 | 0.1 | 7.4 | 7.5 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.7 | 5.8 | 2.0 | 1.4 | 300.0 | 7.7 | 0.3 | 0.2 | 0.1 | 7.4 | 7.5 | | |
| | MAX | 21.7 | 5.8 | 2.0 | 1.4 | 300.0 | 7.7 | 0.3 | 0.2 | 0.1 | 7.4 | 7.5 | | |
| DPD09-27 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 20.2 | | 3.0 | 2.3 | 270.0 | 1.4 | 1.1 | 1.1 | 0.01 | 0.3 | 0.3 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 20.2 | 6.0 | 3.0 | 2.3 | 270.0 | 1.4 | 1.1 | 1.1 | 0.01 | 0.3 | 0.3 | | |
| | MAX | 20.2 | 6.0 | 3.0 | 2.3 | 270.0 | 1.4 | 1.1 | 1.1 | 0.01 | 0.3 | 0.3 | | |
| DPE12-10 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 19.2 | | 2.0 | 4.7 | 491.0 | 27.3 | 2.3 | 2.1 | 0.2 | 25.0 | 25.2 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 19.2 | 5.5 | 2.0 | 4.7 | 491.0 | 27.3 | 2.3 | 2.1 | 0.2 | 25.0 | 25.2 | | |
| | MAX | 19.2 | 5.5 | 2.0 | 4.7 | 491.0 | 27.3 | 2.3 | 2.1 | 0.2 | 25.0 | 25.2 | | |
| DPE12-15 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.2 | | 2.0 | 2.5 | 550.0 | 26.9 | 0.9 | 0.6 | 0.3 | 26.0 | 26.3 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.2 | 4.9 | 2.0 | 2.5 | 550.0 | 26.9 | 0.9 | 0.6 | 0.3 | 26.0 | 26.3 | | |
| | MAX | 22.2 | 4.9 | 2.0 | 2.5 | 550.0 | 26.9 | 0.9 | 0.6 | 0.3 | 26.0 | 26.3 | | |



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Table D.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TOC (mg/L) | DOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DPE12-22 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 20.4 | | 2.0 | 2.0 | 464.0 | 19.0 | 1.0 | 1.0 | 0.05 | 18.0 | 18.0 | 2.3 | 1.5 |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 20.4 | 5.0 | 2.0 | 2.0 | 464.0 | 19.0 | 1.0 | 1.0 | 0.05 | 18.0 | 18.0 | 2.3 | 1.5 |
| | MAX | 20.4 | 5.0 | 2.0 | 2.0 | 464.0 | 19.0 | 1.0 | 1.0 | 0.05 | 18.0 | 18.0 | 2.3 | 1.5 |
| DPE12-28 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 21.9 | | 2.0 | 2.0 | 297.0 | 10.2 | 2.3 | 2.2 | 0.1 | 7.9 | 8.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.9 | 5.2 | 2.0 | 2.0 | 297.0 | 10.2 | 2.3 | 2.2 | 0.1 | 7.9 | 8.0 | | |
| | MAX | 21.9 | 5.2 | 2.0 | 2.0 | 297.0 | 10.2 | 2.3 | 2.2 | 0.1 | 7.9 | 8.0 | | |
| DPF08-14 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.4 | | 310.0 | 6.1 | 1412.0 | 9.4 | 0.9 | 0.7 | 0.2 | 8.5 | 8.7 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.4 | 7.0 | 310.0 | 6.1 | 1412.0 | 9.4 | 0.9 | 0.7 | 0.2 | 8.5 | 8.7 | | |
| | MAX | 22.4 | 7.0 | 310.0 | 6.1 | 1412.0 | 9.4 | 0.9 | 0.7 | 0.2 | 8.5 | 8.7 | | |
| DPF08-20 | n | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 |
| | MEAN | 23.2 | | 11.5 | 1.8 | 368.0 | 11.4 | 0.9 | 0.9 | 0.021 | 10.5 | 10.5 | 3.0 | 2.4 |
| | STD. DEV. | 0.0 | | 12.0 | 0.0 | 0.0 | 0.7 | 0.0 | 0.1 | 0.022 | 0.7 | 0.7 | | |
| | MIN | 23.2 | 6.3 | 3.0 | 1.8 | 368.0 | 10.9 | 0.9 | 0.8 | 0.005 | 10.0 | 10.0 | 3.0 | 2.4 |
| | MAX | 23.2 | 6.3 | 20.0 | 1.8 | 368.0 | 11.9 | 0.9 | 0.9 | 0.036 | 11.0 | 11.0 | 3.0 | 2.4 |
| DPF08-28 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 23.1 | | 35.0 | 1.7 | 332.0 | 3.9 | 0.6 | 0.5 | 0.2 | 3.3 | 3.5 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 23.1 | 6.1 | 35.0 | 1.7 | 332.0 | 3.9 | 0.6 | 0.5 | 0.2 | 3.3 | 3.5 | | |
| | MAX | 23.1 | 6.1 | 35.0 | 1.7 | 332.0 | 3.9 | 0.6 | 0.5 | 0.2 | 3.3 | 3.5 | | |
| DPF11-11 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 19.5 | | 2.0 | 5.3 | 366.0 | 14.7 | 1.7 | 0.2 | 1.5 | 13.0 | 14.5 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 19.5 | 5.4 | 2.0 | 5.3 | 366.0 | 14.7 | 1.7 | 0.2 | 1.5 | 13.0 | 14.5 | | |
| | MAX | 19.5 | 5.4 | 2.0 | 5.3 | 366.0 | 14.7 | 1.7 | 0.2 | 1.5 | 13.0 | 14.5 | | |
| DPF11-15 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.8 | | 2.0 | 3.6 | 547.0 | 30.1 | 1.1 | 0.7 | 0.4 | 29.0 | 29.4 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.8 | 5.0 | 2.0 | 3.6 | 547.0 | 30.1 | 1.1 | 0.7 | 0.4 | 29.0 | 29.4 | | |
| | MAX | 22.8 | 5.0 | 2.0 | 3.6 | 547.0 | 30.1 | 1.1 | 0.7 | 0.4 | 29.0 | 29.4 | | |



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Table D.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TOC (mg/L) | DOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DPF11-18 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 23.1 | | 2.0 | 2.5 | 497.0 | 22.6 | 0.6 | 0.5 | 0.02 | 22.0 | 22.0 | 4.1 | 1.3 |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 23.1 | 5.0 | 2.0 | 2.5 | 497.0 | 22.6 | 0.6 | 0.5 | 0.02 | 22.0 | 22.0 | 4.1 | 1.3 |
| | MAX | 23.1 | 5.0 | 2.0 | 2.5 | 497.0 | 22.6 | 0.6 | 0.5 | 0.02 | 22.0 | 22.0 | 4.1 | 1.3 |
| DPF11-21 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.7 | | 2.0 | 2.1 | 458.0 | 19.6 | 0.6 | 0.6 | 0.02 | 19.0 | 19.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.7 | 5.0 | 2.0 | 2.1 | 458.0 | 19.6 | 0.6 | 0.6 | 0.02 | 19.0 | 19.0 | | |
| | MAX | 22.7 | 5.0 | 2.0 | 2.1 | 458.0 | 19.6 | 0.6 | 0.6 | 0.02 | 19.0 | 19.0 | | |
| DPF11-24 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.9 | | 2.0 | 1.2 | 475.0 | 23.5 | 0.5 | 0.4 | 0.02 | 23.0 | 23.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.9 | 5.0 | 2.0 | 1.2 | 475.0 | 23.5 | 0.5 | 0.4 | 0.02 | 23.0 | 23.0 | | |
| | MAX | 22.9 | 5.0 | 2.0 | 1.2 | 475.0 | 23.5 | 0.5 | 0.4 | 0.02 | 23.0 | 23.0 | | |
| DPF11-27 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 23.3 | | 2.0 | 0.8 | 297.0 | 4.5 | 0.8 | 0.8 | 0.03 | 3.7 | 3.7 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 23.3 | 5.2 | 2.0 | 0.8 | 297.0 | 4.5 | 0.8 | 0.8 | 0.03 | 3.7 | 3.7 | | |
| | MAX | 23.3 | 5.2 | 2.0 | 0.8 | 297.0 | 4.5 | 0.8 | 0.8 | 0.03 | 3.7 | 3.7 | | |
| DPF15-14 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 21.5 | | 22.0 | 1.1 | 408.6 | 17.3 | 0.3 | 0.1 | 0.2 | 17.0 | 17.2 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.5 | 5.1 | 22.0 | 1.1 | 408.6 | 17.3 | 0.3 | 0.1 | 0.2 | 17.0 | 17.2 | | |
| | MAX | 21.5 | 5.1 | 22.0 | 1.1 | 408.6 | 17.3 | 0.3 | 0.1 | 0.2 | 17.0 | 17.2 | | |
| DPF15-20 | n | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 |
| | MEAN | 22.1 | | 9.1 | 0.6 | 649.0 | 29.3 | 0.3 | 0.3 | 0.012 | 29.0 | 29.0 | 1.1 | 1.2 |
| | STD. DEV. | 0.0 | | 2.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.010 | 0.0 | 0.0 | | |
| | MIN | 22.1 | 4.9 | 7.1 | 0.6 | 649.0 | 29.3 | 0.3 | 0.3 | 0.005 | 29.0 | 29.0 | 1.1 | 1.2 |
| | MAX | 22.1 | 4.9 | 11.0 | 0.6 | 649.0 | 29.3 | 0.3 | 0.3 | 0.019 | 29.0 | 29.0 | 1.1 | 1.2 |
| DPF15-26 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 21.8 | | 2.0 | 0.5 | 290.8 | 11.5 | 0.5 | 0.5 | 0.02 | 11.0 | 11.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.8 | 4.9 | 2.0 | 0.5 | 290.8 | 11.5 | 0.5 | 0.5 | 0.02 | 11.0 | 11.0 | | |
| | MAX | 21.8 | 4.9 | 2.0 | 0.5 | 290.8 | 11.5 | 0.5 | 0.5 | 0.02 | 11.0 | 11.0 | | |



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Table D.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TOC (mg/L) | DOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DPG07-15 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 21.4 | | 6.1 | 3.3 | 271.0 | 4.8 | 0.5 | 0.5 | 0.04 | 4.3 | 4.3 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.4 | 5.5 | 6.1 | 3.3 | 271.0 | 4.8 | 0.5 | 0.5 | 0.04 | 4.3 | 4.3 | | |
| | MAX | 21.4 | 5.5 | 6.1 | 3.3 | 271.0 | 4.8 | 0.5 | 0.5 | 0.04 | 4.3 | 4.3 | | |
| DPG07-17 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 21.9 | | 5.1 | 2.2 | 312.0 | 7.0 | 0.3 | 0.3 | 0.005 | 6.7 | 6.7 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.9 | 5.4 | 5.1 | 2.2 | 312.0 | 7.0 | 0.3 | 0.3 | 0.005 | 6.7 | 6.7 | | |
| | MAX | 21.9 | 5.4 | 5.1 | 2.2 | 312.0 | 7.0 | 0.3 | 0.3 | 0.005 | 6.7 | 6.7 | | |
| DPG07-21 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.9 | | 6.1 | 1.7 | 343.0 | 12.5 | 0.5 | 0.5 | 0.005 | 12.0 | 12.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.9 | 5.4 | 6.1 | 1.7 | 343.0 | 12.5 | 0.5 | 0.5 | 0.005 | 12.0 | 12.0 | | |
| | MAX | 22.9 | 5.4 | 6.1 | 1.7 | 343.0 | 12.5 | 0.5 | 0.5 | 0.005 | 12.0 | 12.0 | | |
| DPG07-24 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.9 | | 7.1 | 1.1 | 300.0 | 14.5 | 0.5 | 0.5 | 0.005 | 14.0 | 14.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.9 | 5.3 | 7.1 | 1.1 | 300.0 | 14.5 | 0.5 | 0.5 | 0.005 | 14.0 | 14.0 | | |
| | MAX | 22.9 | 5.3 | 7.1 | 1.1 | 300.0 | 14.5 | 0.5 | 0.5 | 0.005 | 14.0 | 14.0 | | |
| DPG07-27 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.5 | | 5.1 | 1.4 | 293.0 | 8.4 | 0.7 | 0.7 | 0.005 | 7.7 | 7.7 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.5 | 5.2 | 5.1 | 1.4 | 293.0 | 8.4 | 0.7 | 0.7 | 0.005 | 7.7 | 7.7 | | |
| | MAX | 22.5 | 5.2 | 5.1 | 1.4 | 293.0 | 8.4 | 0.7 | 0.7 | 0.005 | 7.7 | 7.7 | | |
| DPG12-15 | n | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | |
| | MEAN | 22.3 | | 4.6 | 0.9 | 508.0 | 25.1 | 1.1 | 0.8 | 0.2 | 24.0 | 24.2 | | |
| | STD. DEV. | 0.0 | | 0.7 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | | |
| | MIN | 22.3 | 4.7 | 4.1 | 0.9 | 508.0 | 25.0 | 1.0 | 0.8 | 0.2 | 24.0 | 24.2 | | |
| | MAX | 22.3 | 4.7 | 5.1 | 0.9 | 508.0 | 25.1 | 1.1 | 0.9 | 0.2 | 24.0 | 24.2 | | |
| DPG12-21 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.7 | | 4.1 | 1.0 | 636.0 | 31.1 | 0.06 | 0.1 | 0.005 | 31.0 | 31.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.7 | 4.9 | 4.1 | 1.0 | 636.0 | 31.1 | 0.06 | 0.1 | 0.005 | 31.0 | 31.0 | | |
| | MAX | 22.7 | 4.9 | 4.1 | 1.0 | 636.0 | 31.1 | 0.06 | 0.1 | 0.005 | 31.0 | 31.0 | | |



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Table D.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TOC (mg/L) | DOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DPG12-27 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 23.1 | | 6.1 | 0.5 | 509.0 | 19.7 | 0.7 | 0.5 | 0.2 | 19.0 | 19.2 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 23.1 | 4.7 | 6.1 | 0.5 | 509.0 | 19.7 | 0.7 | 0.5 | 0.2 | 19.0 | 19.2 | | |
| | MAX | 23.1 | 4.7 | 6.1 | 0.5 | 509.0 | 19.7 | 0.7 | 0.5 | 0.2 | 19.0 | 19.2 | | |
| DPI06-14 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 20.4 | | 6.1 | 1.7 | 240.0 | 4.3 | 1.1 | 1.1 | 0.005 | 3.2 | 3.2 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 20.4 | 5.3 | 6.1 | 1.7 | 240.0 | 4.3 | 1.1 | 1.1 | 0.005 | 3.2 | 3.2 | | |
| | MAX | 20.4 | 5.3 | 6.1 | 1.7 | 240.0 | 4.3 | 1.1 | 1.1 | 0.005 | 3.2 | 3.2 | | |
| DPI06-20 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 21.4 | | 2.0 | 1.8 | 367.0 | 15.5 | 0.5 | 0.5 | 0.005 | 15.0 | 15.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.4 | 5.0 | 2.0 | 1.8 | 367.0 | 15.5 | 0.5 | 0.5 | 0.005 | 15.0 | 15.0 | | |
| | MAX | 21.4 | 5.0 | 2.0 | 1.8 | 367.0 | 15.5 | 0.5 | 0.5 | 0.005 | 15.0 | 15.0 | | |
| DPI06-26 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 21.3 | | 2.0 | 2.4 | 302.0 | 10.4 | 0.4 | 0.4 | 0.005 | 10.0 | 10.0 | 0.75 | 1.0 |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.3 | 5.0 | 2.0 | 2.4 | 302.0 | 10.4 | 0.4 | 0.4 | 0.005 | 10.0 | 10.0 | 0.75 | 1.0 |
| | MAX | 21.3 | 5.0 | 2.0 | 2.4 | 302.0 | 10.4 | 0.4 | 0.4 | 0.005 | 10.0 | 10.0 | 0.75 | 1.0 |
| DPJ09-14 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 21.9 | | 2.0 | 3.3 | 232.1 | 3.9 | 0.4 | 0.4 | 0.005 | 3.5 | 3.5 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.9 | 4.5 | 2.0 | 3.3 | 232.1 | 3.9 | 0.4 | 0.4 | 0.005 | 3.5 | 3.5 | | |
| | MAX | 21.9 | 4.5 | 2.0 | 3.3 | 232.1 | 3.9 | 0.4 | 0.4 | 0.005 | 3.5 | 3.5 | | |
| DPJ09-20 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 23.2 | | 2.0 | 1.6 | 338.1 | 8.2 | 0.05 | 0.05 | 0.005 | 8.1 | 8.1 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 23.2 | 4.9 | 2.0 | 1.6 | 338.1 | 8.2 | 0.05 | 0.05 | 0.005 | 8.1 | 8.1 | | |
| | MAX | 23.2 | 4.9 | 2.0 | 1.6 | 338.1 | 8.2 | 0.05 | 0.05 | 0.005 | 8.1 | 8.1 | | |
| DPJ09-26 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 23.0 | | 2.0 | 2.5 | 298.2 | 10.4 | 1.1 | 1.1 | 0.005 | 9.3 | 9.3 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 23.0 | 4.9 | 2.0 | 2.5 | 298.2 | 10.4 | 1.1 | 1.1 | 0.005 | 9.3 | 9.3 | | |
| | MAX | 23.0 | 4.9 | 2.0 | 2.5 | 298.2 | 10.4 | 1.1 | 1.1 | 0.005 | 9.3 | 9.3 | | |



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Table D.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TOC (mg/L) | DOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DPJ12-15 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.1 | | 2.0 | 1.5 | 287.5 | 5.1 | 0.05 | 0.05 | 0.005 | 5.0 | 5.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.1 | 4.8 | 2.0 | 1.5 | 287.5 | 5.1 | 0.05 | 0.05 | 0.005 | 5.0 | 5.0 | | |
| | MAX | 22.1 | 4.8 | 2.0 | 1.5 | 287.5 | 5.1 | 0.05 | 0.05 | 0.005 | 5.0 | 5.0 | | |
| DPJ12-20 | n | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 |
| | MEAN | 22.9 | | 3.6 | 1.1 | 342.9 | 9.3 | 0.8 | 0.8 | 0.010 | 8.5 | 8.5 | 2.6 | 1.5 |
| | STD. DEV. | 0.0 | | 2.2 | 0.0 | 0.0 | 0.9 | 0.0 | 0.0 | 0.006 | 0.9 | 0.9 | | |
| | MIN | 22.9 | 5.0 | 2.0 | 1.1 | 342.9 | 8.6 | 0.8 | 0.8 | 0.005 | 7.8 | 7.8 | 2.6 | 1.5 |
| | MAX | 22.9 | 5.0 | 5.1 | 1.1 | 342.9 | 10.0 | 0.9 | 0.8 | 0.014 | 9.1 | 9.1 | 2.6 | 1.5 |
| DPJ12-27 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.6 | 0.0 | 2.0 | 1.1 | 307.1 | 13.1 | 1.1 | 1.1 | 0.005 | 12.0 | 12.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.6 | 4.8 | 2.0 | 1.1 | 307.1 | 13.1 | 1.1 | 1.1 | 0.005 | 12.0 | 12.0 | | |
| | MAX | 22.6 | 4.8 | 2.0 | 1.1 | 307.1 | 13.1 | 1.1 | 1.1 | 0.005 | 12.0 | 12.0 | | |
| DPM07-15 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.2 | | 2.0 | 0.8 | 304.0 | 6.6 | 0.4 | 0.4 | 0.005 | 6.2 | 6.2 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.2 | 4.8 | 2.0 | 0.8 | 304.0 | 6.6 | 0.4 | 0.4 | 0.005 | 6.2 | 6.2 | | |
| | MAX | 22.2 | 4.8 | 2.0 | 0.8 | 304.0 | 6.6 | 0.4 | 0.4 | 0.005 | 6.2 | 6.2 | | |
| DPM07-21 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.5 | | 2.0 | 0.6 | 374.9 | 13.9 | 0.9 | 0.9 | 0.0 | 13.0 | 13.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.5 | 4.9 | 2.0 | 0.6 | 374.9 | 13.9 | 0.9 | 0.9 | 0.005 | 13.0 | 13.0 | | |
| | MAX | 22.5 | 4.9 | 2.0 | 0.6 | 374.9 | 13.9 | 0.9 | 0.9 | 0.005 | 13.0 | 13.0 | | |
| DPM07-27 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.5 | | 2.0 | 0.5 | 301.5 | 9.3 | 0.7 | 0.7 | 0.005 | 8.6 | 8.6 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.5 | 4.8 | 2.0 | 0.5 | 301.5 | 9.3 | 0.7 | 0.7 | 0.005 | 8.6 | 8.6 | | |
| | MAX | 22.5 | 4.8 | 2.0 | 0.5 | 301.5 | 9.3 | 0.7 | 0.7 | 0.005 | 8.6 | 8.6 | | |
| DPN12-14 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.1 | | 2.0 | 1.3 | 163.4 | 1.0 | 0.3 | 0.3 | 0.005 | 0.8 | 0.8 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.1 | 5.0 | 2.0 | 1.3 | 163.4 | 1.0 | 0.3 | 0.3 | 0.005 | 0.8 | 0.8 | | |
| | MAX | 22.1 | 5.0 | 2.0 | 1.3 | 163.4 | 1.0 | 0.3 | 0.3 | 0.005 | 0.8 | 0.8 | | |



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Table D.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TOC (mg/L) | DOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DPN12-21 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.3 | | 2.0 | 1.9 | 304.1 | 4.7 | 0.6 | 0.6 | 0.005 | 4.1 | 4.1 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.3 | 4.9 | 2.0 | 1.9 | 304.1 | 4.7 | 0.6 | 0.6 | 0.005 | 4.1 | 4.1 | | |
| | MAX | 22.3 | 4.9 | 2.0 | 1.9 | 304.1 | 4.7 | 0.6 | 0.6 | 0.005 | 4.1 | 4.1 | | |
| DPN12-27 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 21.6 | | 2.0 | 2.5 | 331.6 | 12.0 | 1.0 | 1.0 | 0.005 | 11.0 | 11.0 | 1.5 | 2.0 |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.6 | 5.0 | 2.0 | 2.5 | 331.6 | 12.0 | 1.0 | 1.0 | 0.005 | 11.0 | 11.0 | 1.5 | 2.0 |
| | MAX | 21.6 | 5.0 | 2.0 | 2.5 | 331.6 | 12.0 | 1.0 | 1.0 | 0.005 | 11.0 | 11.0 | 1.5 | 2.0 |
| DPO10-12 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 21.1 | | 2.0 | 1.3 | 186.4 | 0.2 | 0.1 | 0.1 | 0.005 | 0.06 | 0.07 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.1 | 4.3 | 2.0 | 1.3 | 186.4 | 0.2 | 0.1 | 0.1 | 0.005 | 0.06 | 0.07 | | |
| | MAX | 21.1 | 4.3 | 2.0 | 1.3 | 186.4 | 0.2 | 0.1 | 0.1 | 0.005 | 0.06 | 0.07 | | |
| DPO10-18 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.2 | | 2.0 | 0.8 | 298.6 | 4.5 | 0.5 | 0.5 | 0.005 | 4.0 | 4.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.2 | 4.8 | 2.0 | 0.8 | 298.6 | 4.5 | 0.5 | 0.5 | 0.005 | 4.0 | 4.0 | | |
| | MAX | 22.2 | 4.8 | 2.0 | 0.8 | 298.6 | 4.5 | 0.5 | 0.5 | 0.005 | 4.0 | 4.0 | | |
| DPO10-24 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 21.8 | | 2.0 | 0.7 | 182.2 | 0.2 | 0.09 | 0.1 | 0.005 | 0.1 | 0.1 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.8 | 4.2 | 2.0 | 0.7 | 182.2 | 0.2 | 0.09 | 0.1 | 0.005 | 0.1 | 0.1 | | |
| | MAX | 21.8 | 4.2 | 2.0 | 0.7 | 182.2 | 0.2 | 0.09 | 0.1 | 0.005 | 0.1 | 0.1 | | |
| DPQ15-15 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 20.7 | | 2.0 | 2.3 | 303.4 | 1.8 | 0.3 | 0.3 | 0.005 | 1.5 | 1.5 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 20.7 | 4.7 | 2.0 | 2.3 | 303.4 | 1.8 | 0.3 | 0.3 | 0.005 | 1.5 | 1.5 | | |
| | MAX | 20.7 | 4.7 | 2.0 | 2.3 | 303.4 | 1.8 | 0.3 | 0.3 | 0.005 | 1.5 | 1.5 | | |
| DPQ15-21 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 22.6 | | 2.0 | 1.4 | 323.6 | 5.9 | 0.9 | 0.9 | 0.005 | 5.0 | 5.0 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.6 | 5.0 | 2.0 | 1.4 | 323.6 | 5.9 | 0.9 | 0.9 | 0.005 | 5.0 | 5.0 | | |
| | MAX | 22.6 | 5.0 | 2.0 | 1.4 | 323.6 | 5.9 | 0.9 | 0.9 | 0.005 | 5.0 | 5.0 | | |



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Table D.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TOC (mg/L) | DOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DPQ15-26 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 21.5 | | 2.0 | 1.0 | 324.0 | 9.0 | 0.7 | 0.7 | 0.005 | 8.3 | 8.3 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.5 | 5.1 | 2.0 | 1.0 | 324.0 | 9.0 | 0.7 | 0.7 | 0.005 | 8.3 | 8.3 | | |
| | MAX | 21.5 | 5.1 | 2.0 | 1.0 | 324.0 | 9.0 | 0.7 | 0.7 | 0.005 | 8.3 | 8.3 | | |
| **Standpipe Piezometers** | | | | | | | | | | | | | | |
| PZ16-C12-28 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 27.6 | | 11.0 | 0.7 | 291.8 | 0.3 | 0.12 | 0.1 | 0.017 | 0.2 | 0.2 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 27.6 | 5.6 | 11.0 | 0.7 | 291.8 | 0.3 | 0.12 | 0.1 | 0.017 | 0.2 | 0.2 | | |
| | MAX | 27.6 | 5.6 | 11.0 | 0.7 | 291.8 | 0.3 | 0.12 | 0.1 | 0.017 | 0.2 | 0.2 | | |
| PZ04-BKG-9 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 21.6 | | 8.1 | 1.1 | 72.9 | 0.1 | 0.11 | 0.1 | 0.005 | 0.01 | 0.02 | 2.9 | 2.8 |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 21.6 | 5.3 | 8.1 | 1.1 | 72.9 | 0.1 | 0.11 | 0.1 | 0.005 | 0.01 | 0.02 | 2.9 | 2.8 |
| | MAX | 21.6 | 5.3 | 8.1 | 1.1 | 72.9 | 0.1 | 0.11 | 0.1 | 0.005 | 0.01 | 0.02 | 2.9 | 2.8 |
| PZ24-BKG-26 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 24.1 | | 4.1 | 0.7 | 296.2 | 12.6 | 0.6 | 0.6 | 0.005 | 12.0 | 12.0 | 1.3 | 1.1 |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 24.1 | 5.1 | 4.1 | 0.7 | 296.2 | 12.6 | 0.6 | 0.6 | 0.005 | 12.0 | 12.0 | 1.3 | 1.1 |
| | MAX | 24.1 | 5.1 | 4.1 | 0.7 | 296.2 | 12.6 | 0.6 | 0.6 | 0.005 | 12.0 | 12.0 | 1.3 | 1.1 |
| PZ17-I15-26 | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 22.1 | | 4.1 | 0.5 | 294.1 | 10.3 | 0.6 | 0.6 | 0.005 | 9.7 | 9.7 | 4.0 | 1.0 |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 22.1 | 5.7 | 4.1 | 0.5 | 294.1 | 10.3 | 0.6 | 0.6 | 0.005 | 9.7 | 9.7 | 4.0 | 1.0 |
| | MAX | 22.1 | 5.7 | 4.1 | 0.5 | 294.1 | 10.3 | 0.6 | 0.6 | 0.005 | 9.7 | 9.7 | 4.0 | 1.0 |



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Table D.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TOC (mg/L) | DOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blanks** | | | | | | | | | | | | | | |
| FB-DI | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 12.1 | | 2.0 | 9.4 | 1.5 | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 12.1 | 5.7 | 2.0 | 9.4 | 1.5 | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | |
| | MAX | 12.1 | 5.7 | 2.0 | 9.4 | 1.5 | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | |
| FB-TAP | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 9.6 | | 140.0 | 11.1 | 445.0 | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 9.6 | 7.0 | 140.0 | 11.1 | 445.0 | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | |
| | MAX | 9.6 | 7.0 | 140.0 | 11.1 | 445.0 | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | |
| Equipment Rinsate | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | MEAN | 11.9 | | 2.0 | 2.3 | 13.2 | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | |
| | STD. DEV. | | | | | | | | | | | | | |
| | MIN | 11.9 | 7.2 | 2.0 | 2.3 | 13.2 | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | |
| | MAX | 11.9 | 7.2 | 2.0 | 2.3 | 13.2 | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | |

Notes:

[1]Total Nitrogen (TN) is a calculated value equal to the sum of TKN and $NO_x$

[2]Organic Nitrogen (ON) is a calculated value equal to the difference of TKN and $NH_3$

[3]Total Inorganic Nitrogen (TIN) is a calculated value equal to the sum of $NH_3$ and $NO_x$

DO - Dissolved oxygen

Gray-shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.

Yellow-shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit, value used for statistical analyses.

# Appendix E: Laboratory Report

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**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa FLORIDA, 33619**

**December 24, 2010**
**Work Order: 1003007**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-AA9-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-01** | | | | | | |
| Date/Time Collected | | **12/09/10 07:45** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 07:45 | LRW |
| Water Temperature | °C | 21.5 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 07:45 | LRW |
| Specific conductance | umhos/cm | 282 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 07:45 | LRW |
| Dissolved Oxygen | mg/L | 0.9 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 07:45 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.006 I | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 11 | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.93 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 5.9 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-AA9-22** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-02** | | | | | | |
| Date/Time Collected | | **12/09/10 07:55** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 07:55 | LRW |
| Water Temperature | °C | 23.3 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 07:55 | LRW |
| Specific conductance | umhos/cm | 319 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 07:55 | LRW |
| Dissolved Oxygen | mg/L | 1.1 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 07:55 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.013 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.82 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 10 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-AA9-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-03** | | | | | | |
| Date/Time Collected | | **12/09/10 08:12** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |

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**Tampa FLORIDA, 33619**

**December 24, 2010**
**Work Order: 1003007**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-AA9-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-03** | | | | | | |
| Date/Time Collected | | **12/09/10 08:12** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 08:12 | LRW |
| Water Temperature | °C | 22.7 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 08:12 | LRW |
| Specific conductance | umhos/cm | 293 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 08:12 | LRW |
| Dissolved Oxygen | mg/L | 0.8 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 08:12 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.028 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.0 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 6.9 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-D7.5-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-04** | | | | | | |
| Date/Time Collected | | **12/09/10 08:20** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.12 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.68 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |
| Total Organic Carbon | mg/L | 2.9 | SM 5310B | 1.0 | 0.50 | | 12/11/10 10:36 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 22 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.2 I | SM 5310B | 4.0 | 1.0 | 12/10/10 12:00 | 12/11/10 10:36 | MEJ |
| Sample Description | | **DP-D7.5-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-05** | | | | | | |
| Date/Time Collected | | **12/09/10 08:35** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.022 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.80 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 7.4 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |

**Hazen and Sawyer**
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**December 24, 2010**
**Work Order: 1003007**

## Laboratory Report

**Project Name** GCREC Mound Groundwater Analyses

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D7.5-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-05** | | | | | | |
| Date/Time Collected | | **12/09/10 08:35** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| Sample Description | | **DP-D7.5-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-06** | | | | | | |
| Date/Time Collected | | **12/09/10 08:46** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.038 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.99 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 12 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-D09-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-07** | | | | | | |
| Date/Time Collected | | **12/09/10 09:05** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.028 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.84 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 11 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-D09-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-08** | | | | | | |
| Date/Time Collected | | **12/09/10 09:20** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.022 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.91 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D09-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-08** | | | | | | |
| Date/Time Collected | | **12/09/10 09:20** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| Nitrate+Nitrite (as N) | mg/L | 12 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-D09-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-09** | | | | | | |
| Date/Time Collected | | **12/09/10 09:30** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.086 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 I | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.43 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |
| Total Organic Carbon | mg/L | 5.3 | SM 5310B | 1.0 | 0.50 | | 12/11/10 10:36 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 13 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.5 I | SM 5310B | 4.0 | 1.0 | 12/10/10 12:00 | 12/11/10 10:36 | MEJ |
| Sample Description | | **DP-D09-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-10** | | | | | | |
| Date/Time Collected | | **12/09/10 09:50** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.053 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 I | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.27 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 7.4 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-D09-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-11** | | | | | | |
| Date/Time Collected | | **12/09/10 10:05** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D09-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-11** | | | | | | |
| Date/Time Collected | | **12/09/10 10:05** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.10 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 0.33 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-E12-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-12** | | | | | | |
| Date/Time Collected | | **12/09/10 10:45** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.23 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 2.3 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 25 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-E12-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-13** | | | | | | |
| Date/Time Collected | | **12/09/10 10:50** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.25 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.88 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 26 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |

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**December 24, 2010**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E12-22** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-14** | | | | | | |
| Date/Time Collected | | **12/09/10 11:05** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.049 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.0 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |
| Total Organic Carbon | mg/L | 2.3 | SM 5310B | 1.0 | 0.50 | | 12/11/10 10:36 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 18 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.5 I | SM 5310B | 4.0 | 1.0 | 12/10/10 12:00 | 12/11/10 10:36 | MEJ |
| Sample Description | | **DP-E12-28** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-15** | | | | | | |
| Date/Time Collected | | **12/09/10 11:20** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.069 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 I | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 2.3 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 7.9 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-F08-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-16** | | | | | | |
| Date/Time Collected | | **12/09/10 11:45** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.19 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 310 | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.90 | EPA 351.2 | 0.20 | 0.05 | 12/16/10 13:34 | 12/17/10 16:37 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 8.5 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa FLORIDA, 33619**

**December 24, 2010**
**Work Order: 1003007**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F08-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-17** | | | | | | |
| Date/Time Collected | | **12/09/10 12:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.036 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.87 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Total Organic Carbon | mg/L | 3.0 | SM 5310B | 1.0 | 0.50 | | 12/11/10 10:36 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 10 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.4 I | SM 5310B | 4.0 | 1.0 | 12/10/10 12:00 | 12/11/10 10:36 | MEJ |
| Sample Description | | **DP-F08-28** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-18** | | | | | | |
| Date/Time Collected | | **12/09/10 12:10** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.15 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 35 | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.63 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 3.3 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-F11-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-19** | | | | | | |
| Date/Time Collected | | **12/09/10 12:30** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 1.5 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 I | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.7 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 13 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F11-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-20** | | | | | | |
| Date/Time Collected | | **12/09/10 12:55** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.38 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 29 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-F11-18** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-21** | | | | | | |
| Date/Time Collected | | **12/09/10 13:05** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.024 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.55 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Total Organic Carbon | mg/L | 4.1 | SM 5310B | 1.0 | 0.50 | | 12/11/10 10:36 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 22 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.3 I | SM 5310B | 4.0 | 1.0 | 12/10/10 12:00 | 12/11/10 10:36 | MEJ |
| Sample Description | | **DP-F11-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-22** | | | | | | |
| Date/Time Collected | | **12/09/10 13:25** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.018 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.64 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 19 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F11-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-23** | | | | | | |
| Date/Time Collected | | **12/09/10 13:45** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.022 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.47 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 23 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-F11-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-24** | | | | | | |
| Date/Time Collected | | **12/09/10 14:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.026 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.83 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 3.7 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-F15-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-25** | | | | | | |
| Date/Time Collected | | **12/10/10 06:52** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 12/10/10 06:52 | LRW |
| Water Temperature | °C | 21.5 | DEP FT1400 | 0.1 | 0.1 | | 12/10/10 06:52 | LRW |
| Specific conductance | umhos/cm | 409 | DEP FT1200 | 0.1 | 0.1 | | 12/10/10 06:52 | LRW |
| Dissolved Oxygen | mg/L | 1.1 | DEP FT1500 | 0.1 | 0.1 | | 12/10/10 06:52 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.19 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 22 | SM 2320B | 8.0 | 2.0 | | 12/11/10 11:19 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.26 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 17 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |

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**December 24, 2010**
**Work Order: 1003007**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F15-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-26** | | | | | | |
| Date/Time Collected | | **12/10/10 07:15** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 12/10/10 07:15 | LRW |
| Water Temperature | °C | 22.1 | DEP FT1400 | 0.1 | 0.1 | | 12/10/10 07:15 | LRW |
| Specific conductance | umhos/cm | 649 | DEP FT1200 | 0.1 | 0.1 | | 12/10/10 07:15 | LRW |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 12/10/10 07:15 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.019 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 11 | SM 2320B | 8.0 | 2.0 | | 12/11/10 11:19 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.31 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Total Organic Carbon | mg/L | 1.1 | SM 5310B | 1.0 | 0.50 | | 12/11/10 10:36 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 29 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.2 I | SM 5310B | 4.0 | 1.0 | 12/10/10 12:00 | 12/11/10 10:36 | MEJ |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F15-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-27** | | | | | | |
| Date/Time Collected | | **12/10/10 07:41** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 12/10/10 07:41 | LRW |
| Water Temperature | °C | 21.8 | DEP FT1400 | 0.1 | 0.1 | | 12/10/10 07:41 | LRW |
| Specific conductance | umhos/cm | 291 | DEP FT1200 | 0.1 | 0.1 | | 12/10/10 07:41 | LRW |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 12/10/10 07:41 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.016 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/11/10 11:19 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.54 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 11 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-29** | | | | | | |
| Date/Time Collected | | **12/10/10 08:25** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.039 | EPA 350.1 | 0.010 | 0.005 | | 12/11/10 15:50 | SMD |
| Total Alkalinity | mg/L | 6.1 I | SM 2320B | 8.0 | 2.0 | | 12/11/10 11:19 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.49 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 4.3 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| Sample Description | | **DP-G07-17** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-30** | | | | | | |
| Date/Time Collected | | **12/10/10 08:35** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 5.1 I | SM 2320B | 8.0 | 2.0 | | 12/11/10 11:19 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.31 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 6.7 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| Sample Description | | **DP-G07-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-31** | | | | | | |
| Date/Time Collected | | **12/10/10 08:50** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 6.1 I | SM 2320B | 8.0 | 2.0 | | 12/11/10 11:19 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.51 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 12 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-32** | | | | | | |
| Date/Time Collected | | **12/10/10 09:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 7.1 I | SM 2320B | 8.0 | 2.0 | | 12/11/10 11:19 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.50 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 14 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| Sample Description | | **DP-G07-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-33** | | | | | | |
| Date/Time Collected | | **12/10/10 09:15** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 5.1 I | SM 2320B | 8.0 | 2.0 | | 12/11/10 11:19 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.74 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 7.7 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| Sample Description | | **DP-G12-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-34** | | | | | | |
| Date/Time Collected | | **12/10/10 09:36** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 12/10/10 09:36 | LRW |
| Water Temperature | °C | 22.3 | DEP FT1400 | 0.1 | 0.1 | | 12/10/10 09:36 | LRW |
| Specific conductance | umhos/cm | 508 | DEP FT1200 | 0.1 | 0.1 | | 12/10/10 09:36 | LRW |
| Dissolved Oxygen | mg/L | 0.9 | DEP FT1500 | 0.1 | 0.1 | | 12/10/10 09:36 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.22 | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 5.1 I | SM 2320B | 8.0 | 2.0 | | 12/14/10 17:00 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.0 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 24 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa FLORIDA, 33619**

**December 24, 2010**
**Work Order: 1003007**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-35** | | | | | | |
| Date/Time Collected | | **12/10/10 09:52** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 12/10/10 09:52 | LRW |
| Water Temperature | °C | 22.7 | DEP FT1400 | 0.1 | 0.1 | | 12/10/10 09:52 | LRW |
| Specific conductance | umhos/cm | 636 | DEP FT1200 | 0.1 | 0.1 | | 12/10/10 09:52 | LRW |
| Dissolved Oxygen | mg/L | 1.0 | DEP FT1500 | 0.1 | 0.1 | | 12/10/10 09:52 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 4.1 I | SM 2320B | 8.0 | 2.0 | | 12/11/10 11:19 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.06 I | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 31 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-36** | | | | | | |
| Date/Time Collected | | **12/10/10 10:08** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 12/10/10 10:08 | LRW |
| Water Temperature | °C | 23.1 | DEP FT1400 | 0.1 | 0.1 | | 12/10/10 10:08 | LRW |
| Specific conductance | umhos/cm | 509 | DEP FT1200 | 0.1 | 0.1 | | 12/10/10 10:08 | LRW |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 12/10/10 10:08 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.22 | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 6.1 I | SM 2320B | 8.0 | 2.0 | | 12/11/10 11:19 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.68 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 19 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I06-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-37** | | | | | | |
| Date/Time Collected | | **12/10/10 07:10** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Inorganics** | | | | | | | | |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
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**December 24, 2010**
**Work Order: 1003007**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I06-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-37** | | | | | | |
| Date/Time Collected | | **12/10/10 07:10** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 6.1 I | SM 2320B | 8.0 | 2.0 | | 12/11/10 11:19 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 3.2 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| Sample Description | | **DP-I06-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-38** | | | | | | |
| Date/Time Collected | | **12/10/10 07:25** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/11/10 11:19 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.46 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 15 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| Sample Description | | **DP-I06-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-39** | | | | | | |
| Date/Time Collected | | **12/10/10 07:45** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/11/10 11:19 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.38 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Total Organic Carbon | mg/L | 0.75 I | SM 5310B | 1.0 | 0.50 | | 12/11/10 10:36 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 10 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.0 U | SM 5310B | 4.0 | 1.0 | 12/10/10 12:00 | 12/11/10 10:36 | MEJ |

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**10002 Princess Palm Avenue Suite 200**
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**December 24, 2010**
**Work Order: 1003007**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J09-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-40** | | | | | | |
| Date/Time Collected | | **12/09/10 13:20** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.5 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 13:20 | LRW |
| Water Temperature | °C | 21.9 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 13:20 | LRW |
| Specific conductance | umhos/cm | 232 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 13:20 | LRW |
| Dissolved Oxygen | mg/L | 3.3 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 13:20 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.42 | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 3.5 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-J09-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-41** | | | | | | |
| Date/Time Collected | | **12/09/10 13:36** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 13:36 | LRW |
| Water Temperature | °C | 23.2 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 13:36 | LRW |
| Specific conductance | umhos/cm | 338 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 13:36 | LRW |
| Dissolved Oxygen | mg/L | 1.6 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 13:36 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.05 U | EPA 351.2 | 0.20 | 0.05 | 12/17/10 16:00 | 12/20/10 15:20 | SMD |
| Nitrate+Nitrite (as N) | mg/L | 8.1 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-J09-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-42** | | | | | | |
| Date/Time Collected | | **12/09/10 13:58** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |

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**10002 Princess Palm Avenue Suite 200**
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**December 24, 2010**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J09-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-42** | | | | | | |
| Date/Time Collected | | **12/09/10 13:58** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 13:58 | LRW |
| Water Temperature | °C | 23.0 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 13:58 | LRW |
| Specific conductance | umhos/cm | 298 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 13:58 | LRW |
| Dissolved Oxygen | mg/L | 2.5 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 13:58 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 9.3 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-J12-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-43** | | | | | | |
| Date/Time Collected | | **12/09/10 12:28** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 12:28 | LRW |
| Water Temperature | °C | 22.1 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 12:28 | LRW |
| Specific conductance | umhos/cm | 288 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 12:28 | LRW |
| Dissolved Oxygen | mg/L | 1.5 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 12:28 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.05 U | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 5.0 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:58 | SMD |
| Sample Description | | **DP-J12-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-44** | | | | | | |
| Date/Time Collected | | **12/09/10 12:39** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 12:39 | LRW |
| Water Temperature | °C | 22.9 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 12:39 | LRW |

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**December 24, 2010**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J12-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-44** | | | | | | |
| Date/Time Collected | | **12/09/10 12:39** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| Specific conductance | umhos/cm | 343 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 12:39 | LRW |
| Dissolved Oxygen | mg/L | 1.1 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 12:39 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.83 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Total Organic Carbon | mg/L | 2.6 | SM 5310B | 1.0 | 0.50 | | 12/11/10 10:36 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 7.8 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.5 I | SM 5310B | 4.0 | 1.0 | 12/10/10 12:00 | 12/11/10 10:36 | MEJ |
| Sample Description | | **DP-J12-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-45** | | | | | | |
| Date/Time Collected | | **12/09/10 13:00** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 13:00 | LRW |
| Water Temperature | °C | 22.6 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 13:00 | LRW |
| Specific conductance | umhos/cm | 307 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 13:00 | LRW |
| Dissolved Oxygen | mg/L | 1.1 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 13:00 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 12 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| Sample Description | | **DP-M07-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-46** | | | | | | |
| Date/Time Collected | | **12/09/10 11:32** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-M07-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-46** | | | | | | |
| Date/Time Collected | | **12/09/10 11:32** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 11:32 | LRW |
| Water Temperature | °C | 22.2 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 11:32 | LRW |
| Specific conductance | umhos/cm | 304 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 11:32 | LRW |
| Dissolved Oxygen | mg/L | 0.8 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 11:32 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.42 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 6.2 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| Sample Description | | **DP-M07-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-47** | | | | | | |
| Date/Time Collected | | **12/09/10 11:47** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 11:47 | LRW |
| Water Temperature | °C | 22.5 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 11:47 | LRW |
| Specific conductance | umhos/cm | 375 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 11:47 | LRW |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 11:47 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.86 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 13 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| Sample Description | | **DP-M07-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-48** | | | | | | |
| Date/Time Collected | | **12/09/10 12:07** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 12:07 | LRW |
| Water Temperature | °C | 22.5 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 12:07 | LRW |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa FLORIDA, 33619**

**December 24, 2010**
**Work Order: 1003007**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-M07-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-48** | | | | | | |
| Date/Time Collected | | **12/09/10 12:07** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| Specific conductance | umhos/cm | 302 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 12:07 | LRW |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 12:07 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.74 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 8.6 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| Sample Description | | **DP-N12-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-49** | | | | | | |
| Date/Time Collected | | **12/09/10 10:36** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 10:36 | LRW |
| Water Temperature | °C | 22.1 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 10:36 | LRW |
| Specific conductance | umhos/cm | 163 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 10:36 | LRW |
| Dissolved Oxygen | mg/L | 1.3 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 10:36 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.26 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 0.77 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| Sample Description | | **DP-N12-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-50** | | | | | | |
| Date/Time Collected | | **12/09/10 10:52** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 10:52 | LRW |
| Water Temperature | °C | 22.3 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 10:52 | LRW |
| Specific conductance | umhos/cm | 304 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 10:52 | LRW |
| Dissolved Oxygen | mg/L | 1.9 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 10:52 | LRW |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-N12-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-50** | | | | | | |
| Date/Time Collected | | **12/09/10 10:52** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.60 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 4.1 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| Sample Description | | **DP-N12-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-51** | | | | | | |
| Date/Time Collected | | **12/09/10 11:14** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 11:14 | LRW |
| Water Temperature | °C | 21.6 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 11:14 | LRW |
| Specific conductance | umhos/cm | 332 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 11:14 | LRW |
| Dissolved Oxygen | mg/L | 2.4 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 11:14 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.99 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Total Organic Carbon | mg/L | 1.5 | SM 5310B | 1.0 | 0.50 | | 12/11/10 10:36 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 11 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.0 I | SM 5310B | 4.0 | 1.0 | 12/10/10 12:00 | 12/11/10 10:36 | MEJ |
| Sample Description | | **DP-O10-12** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-52** | | | | | | |
| Date/Time Collected | | **12/09/10 09:45** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.3 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 09:45 | LRW |
| Water Temperature | °C | 21.1 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 09:45 | LRW |

**Hazen and Sawyer**
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**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-O10-12** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-52** | | | | | | |
| Date/Time Collected | | **12/09/10 09:45** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| Specific conductance | umhos/cm | 186 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 09:45 | LRW |
| Dissolved Oxygen | mg/L | 1.3 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 09:45 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.10 I | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 0.06 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| Sample Description | | **DP-O10-18** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-53** | | | | | | |
| Date/Time Collected | | **12/09/10 09:58** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 09:58 | LRW |
| Water Temperature | °C | 22.2 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 09:58 | LRW |
| Specific conductance | umhos/cm | 299 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 09:58 | LRW |
| Dissolved Oxygen | mg/L | 0.8 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 09:58 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.54 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 4.0 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| Sample Description | | **DP-O10-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-54** | | | | | | |
| Date/Time Collected | | **12/09/10 10:16** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.2 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 10:16 | LRW |
| Water Temperature | °C | 21.8 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 10:16 | LRW |
| Specific conductance | umhos/cm | 182 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 10:16 | LRW |
| Dissolved Oxygen | mg/L | 0.7 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 10:16 | LRW |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-O10-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-54** | | | | | | |
| Date/Time Collected | | **12/09/10 10:16** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.09 I | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 0.07 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| Sample Description | | **DP-Q15-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-55** | | | | | | |
| Date/Time Collected | | **12/09/10 08:53** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 08:53 | LRW |
| Water Temperature | °C | 20.7 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 08:53 | LRW |
| Specific conductance | umhos/cm | 303 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 08:53 | LRW |
| Dissolved Oxygen | mg/L | 2.3 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 08:53 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.29 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 1.5 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| Sample Description | | **DP-Q15-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-56** | | | | | | |
| Date/Time Collected | | **12/09/10 09:05** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 09:05 | LRW |
| Water Temperature | °C | 22.6 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 09:05 | LRW |
| Specific conductance | umhos/cm | 324 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 09:05 | LRW |
| Dissolved Oxygen | mg/L | 1.4 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 09:05 | LRW |
| **Inorganics** | | | | | | | | |

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**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-Q15-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-56** | | | | | | |
| Date/Time Collected | | **12/09/10 09:05** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 I | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.90 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 5.0 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| Sample Description | | **DP-Q15-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-57** | | | | | | |
| Date/Time Collected | | **12/09/10 09:23** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 09:23 | LRW |
| Water Temperature | °C | 21.5 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 09:23 | LRW |
| Specific conductance | umhos/cm | 324 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 09:23 | LRW |
| Dissolved Oxygen | mg/L | 1.0 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 09:23 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 12/10/10 10:27 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.70 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 8.3 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| Sample Description | | **PZ16-C12-28** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-58** | | | | | | |
| Date/Time Collected | | **12/09/10 08:31** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.6 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 08:31 | LRW |
| Water Temperature | °C | 27.6 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 08:31 | LRW |
| Specific conductance | umhos/cm | 292 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 08:31 | LRW |
| Dissolved Oxygen | mg/L | 0.8 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 08:31 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.017 | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:01 | MEJ |
| Total Alkalinity | mg/L | 11 | SM 2320B | 8.0 | 2.0 | | 12/14/10 17:00 | JMK |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ16-C12-28** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-58** | | | | | | |
| Date/Time Collected | | **12/09/10 08:31** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| Total Kjeldahl Nitrogen | mg/L | 0.12 I | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 0.17 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| Sample Description | | **STE-EX Pump Tank** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-59** | | | | | | |
| Date/Time Collected | | **12/10/10 09:55** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 35 | EPA 350.1 | 0.010 | 0.005 | | 12/20/10 14:22 | SMD |
| Total Alkalinity | mg/L | 410 | SM 2320B | 8.0 | 2.0 | | 12/14/10 17:00 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 56 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 0.01 U | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| Sample Description | | **Field Blank-DI** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-60** | | | | | | |
| Date/Time Collected | | **12/10/10 07:55** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:01 | MEJ |
| Total Alkalinity | mg/L | 2.0 I | SM 2320B | 8.0 | 2.0 | | 12/14/10 17:00 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.05 U | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 0.01 U | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| Sample Description | | **Field Blank-TAP** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-61** | | | | | | |
| Date/Time Collected | | **12/10/10 08:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:01 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **Field Blank-TAP** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-61** | | | | | | |
| Date/Time Collected | | **12/10/10 08:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| Total Alkalinity | mg/L | 140 | SM 2320B | 8.0 | 2.0 | | 12/14/10 17:00 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.05 U | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 0.01 U | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| Sample Description | | **Equipment Rinsate** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-62** | | | | | | |
| Date/Time Collected | | **12/10/10 09:42** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 7.2 | DEP FT1100 | 0.1 | 0.1 | | 12/10/10 09:42 | LRW |
| Water Temperature | °C | 11.9 | DEP FT1400 | 0.1 | 0.1 | | 12/10/10 09:42 | LRW |
| Specific conductance | umhos/cm | 13 | DEP FT1200 | 0.1 | 0.1 | | 12/10/10 09:42 | LRW |
| Dissolved Oxygen | mg/L | 2.3 | DEP FT1500 | 0.1 | 0.1 | | 12/10/10 09:42 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:01 | MEJ |
| Total Alkalinity | mg/L | 2.0 I | SM 2320B | 8.0 | 2.0 | | 12/14/10 17:00 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.05 U | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 0.01 U | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| Sample Description | | **DP-D09-15-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-63** | | | | | | |
| Date/Time Collected | | **12/09/10 09:35** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:01 | MEJ |
| Total Alkalinity | mg/L | 14 | SM 2320B | 8.0 | 2.0 | | 12/14/10 17:00 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.41 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 12 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
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**December 24, 2010**
**Work Order: 1003007**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F08-20-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-64** | | | | | | |
| Date/Time Collected | | **12/10/10 07:20** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 12/10/10 07:20 | LRW |
| Water Temperature | °C | 22.1 | DEP FT1400 | 0.1 | 0.1 | | 12/10/10 07:20 | LRW |
| Specific conductance | umhos/cm | 649 | DEP FT1200 | 0.1 | 0.1 | | 12/10/10 07:20 | LRW |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 12/10/10 07:20 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:01 | MEJ |
| Total Alkalinity | mg/L | 20 | SM 2320B | 8.0 | 2.0 | | 12/14/10 17:00 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.91 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 11 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F15-20-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-65** | | | | | | |
| Date/Time Collected | | **12/10/10 07:20** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 12/10/10 07:20 | LRW |
| Water Temperature | °C | 22.1 | DEP FT1400 | 0.1 | 0.1 | | 12/10/10 07:20 | LRW |
| Specific conductance | umhos/cm | 649 | DEP FT1200 | 0.1 | 0.1 | | 12/10/10 07:20 | LRW |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 12/10/10 07:20 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:01 | MEJ |
| Total Alkalinity | mg/L | 7.1 I | SM 2320B | 8.0 | 2.0 | | 12/14/10 17:00 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.29 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 29 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-15-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-66** | | | | | | |
| Date/Time Collected | | **12/10/10 09:38** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Field Parameters** | | | | | | | | |

**Hazen and Sawyer**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-15-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-66** | | | | | | |
| Date/Time Collected | | **12/10/10 09:38** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 12/10/10 09:38 | LRW |
| Water Temperature | °C | 22.3 | DEP FT1400 | 0.1 | 0.1 | | 12/10/10 09:38 | LRW |
| Specific conductance | umhos/cm | 508 | DEP FT1200 | 0.1 | 0.1 | | 12/10/10 09:38 | LRW |
| Dissolved Oxygen | mg/L | 0.9 | DEP FT1500 | 0.1 | 0.1 | | 12/10/10 09:38 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.19 | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:01 | MEJ |
| Total Alkalinity | mg/L | 4.1 I | SM 2320B | 8.0 | 2.0 | | 12/14/10 17:00 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 24 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| Sample Description | | **DP-J12-20-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-67** | | | | | | |
| Date/Time Collected | | **12/09/10 12:39** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/09/10 15:32** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 12/09/10 12:39 | LRW |
| Water Temperature | °C | 22.9 | DEP FT1400 | 0.1 | 0.1 | | 12/09/10 12:39 | LRW |
| Specific conductance | umhos/cm | 343 | DEP FT1200 | 0.1 | 0.1 | | 12/09/10 12:39 | LRW |
| Dissolved Oxygen | mg/L | 1.1 | DEP FT1500 | 0.1 | 0.1 | | 12/09/10 12:39 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.014 | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:01 | MEJ |
| Total Alkalinity | mg/L | 5.1 I | SM 2320B | 8.0 | 2.0 | | 12/14/10 17:00 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.85 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 9.1 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 17:05 | SMD |
| Sample Description | | **STE-EX Pump Tank-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-68** | | | | | | |
| Date/Time Collected | | **12/10/10 10:05** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 61 | EPA 350.1 | 0.010 | 0.005 | | 12/20/10 14:22 | SMD |
| Total Alkalinity | mg/L | 410 | SM 2320B | 8.0 | 2.0 | | 12/14/10 17:00 | JMK |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **STE-EX Pump Tank-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-68** | | | | | | |
| Date/Time Collected | | **12/10/10 10:05** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| Total Kjeldahl Nitrogen | mg/L | 64 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Nitrate+Nitrite (as N) | mg/L | 0.01 U | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| Sample Description | | **PZ04-BKG-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-69** | | | | | | |
| Date/Time Collected | | **12/10/10 08:40** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.3 | DEP FT1100 | 0.1 | 0.1 | | 12/10/10 08:40 | LRW |
| Water Temperature | °C | 21.6 | DEP FT1400 | 0.1 | 0.1 | | 12/10/10 08:40 | LRW |
| Specific conductance | umhos/cm | 73 | DEP FT1200 | 0.1 | 0.1 | | 12/10/10 08:40 | LRW |
| Dissolved Oxygen | mg/L | 1.1 | DEP FT1500 | 0.1 | 0.1 | | 12/10/10 08:40 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:01 | MEJ |
| Total Alkalinity | mg/L | 8.1 | SM 2320B | 8.0 | 2.0 | | 12/14/10 17:00 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.11 I | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Total Organic Carbon | mg/L | 2.9 | SM 5310B | 1.0 | 0.50 | | 12/11/10 10:36 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 0.01 U | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.8 I | SM 5310B | 4.0 | 1.0 | 12/10/10 12:00 | 12/11/10 10:36 | MEJ |
| Sample Description | | **PZ24-BKG-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-70** | | | | | | |
| Date/Time Collected | | **12/10/10 08:21** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 12/10/10 08:21 | LRW |
| Water Temperature | °C | 24.1 | DEP FT1400 | 0.1 | 0.1 | | 12/10/10 08:21 | LRW |
| Specific conductance | umhos/cm | 296 | DEP FT1200 | 0.1 | 0.1 | | 12/10/10 08:21 | LRW |
| Dissolved Oxygen | mg/L | 0.7 | DEP FT1500 | 0.1 | 0.1 | | 12/10/10 08:21 | LRW |
| **Inorganics** | | | | | | | | |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ24-BKG-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-70** | | | | | | |
| Date/Time Collected | | **12/10/10 08:21** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:01 | MEJ |
| Total Alkalinity | mg/L | 4.1 I | SM 2320B | 8.0 | 2.0 | | 12/14/10 17:00 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.60 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Total Organic Carbon | mg/L | 1.3 | SM 5310B | 1.0 | 0.50 | | 12/11/10 10:36 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 12 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.1 I | SM 5310B | 4.0 | 1.0 | 12/10/10 12:00 | 12/11/10 10:36 | MEJ |
| Sample Description | | **PZ17-I15-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1003007-71** | | | | | | |
| Date/Time Collected | | **12/10/10 09:17** | | | | | | |
| Collected by | | **Larry Ward** | | | | | | |
| Date/Time Received | | **12/10/10 11:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.7 | DEP FT1100 | 0.1 | 0.1 | | 12/10/10 09:17 | LRW |
| Water Temperature | °C | 22.1 | DEP FT1400 | 0.1 | 0.1 | | 12/10/10 09:17 | LRW |
| Specific conductance | umhos/cm | 294 | DEP FT1200 | 0.1 | 0.1 | | 12/10/10 09:17 | LRW |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 12/10/10 09:17 | LRW |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 12/17/10 14:01 | MEJ |
| Total Alkalinity | mg/L | 4.1 I | SM 2320B | 8.0 | 2.0 | | 12/14/10 17:00 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.60 | EPA 351.2 | 0.20 | 0.05 | 12/21/10 11:30 | 12/22/10 17:15 | SMB |
| Total Organic Carbon | mg/L | 4.0 | SM 5310B | 1.0 | 0.50 | | 12/11/10 10:36 | MEJ |
| Nitrate+Nitrite (as N) | mg/L | 9.7 | EPA 353.2 | 0.04 | 0.01 | | 12/14/10 16:47 | SMD |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.0 U | SM 5310B | 4.0 | 1.0 | 12/10/10 12:00 | 12/11/10 10:36 | MEJ |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BL01007 - alkalinity** | | | | | | | | | | |
| **Blank (BL01007-BLK1)** | | | | | Prepared & Analyzed: 12/10/10 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BL01007-BLK2)** | | | | | Prepared & Analyzed: 12/10/10 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BL01007-BS1)** | | | | | Prepared & Analyzed: 12/10/10 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 95 | 90-110 | | 20 |
| **LCS (BL01007-BS2)** | | | | | Prepared & Analyzed: 12/10/10 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 95 | 90-110 | | 20 |
| **Matrix Spike (BL01007-MS1)** | | **Source: 1003007-01** | | | Prepared & Analyzed: 12/10/10 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 11 | 95 | 80-120 | | 26 |
| **Matrix Spike (BL01007-MS2)** | | **Source: 1003007-18** | | | Prepared & Analyzed: 12/10/10 | | | | | |
| Total Alkalinity | 160 | 8.0 | 2.0 | mg/L | 120 | 35 | 100 | 80-120 | | 26 |
| **Matrix Spike Dup (BL01007-MSD1)** | | **Source: 1003007-01** | | | Prepared & Analyzed: 12/10/10 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 11 | 95 | 80-120 | 0 | 26 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BL01007 - alkalinity** | | | | | | | | | | |
| **Matrix Spike Dup (BL01007-MSD2)** | | **Source: 1003007-18** | | | Prepared & Analyzed: 12/10/10 | | | | | |
| Total Alkalinity | 160 | 8.0 | 2.0 | mg/L | 120 | 35 | 100 | 80-120 | 0 | 26 |
| **Batch BL01018 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BL01018-BLK1)** | | | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **Blank (BL01018-BLK2)** | | | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 0.0161 I | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BL01018-BS1)** | | | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 0.750 | 0.04 | 0.01 | mg/L | 0.80 | | 94 | 90-110 | | |
| **LCS (BL01018-BS2)** | | | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 0.776 | 0.04 | 0.01 | mg/L | 0.80 | | 97 | 90-110 | | |
| **Matrix Spike (BL01018-MS1)** | | **Source: 1003007-01** | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 15.5 | 0.04 | 0.01 | mg/L | 10 | 5.86 | 96 | 77-119 | | |
| **Matrix Spike (BL01018-MS2)** | | **Source: 1003007-21** | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 128 | 0.04 | 0.01 | mg/L | 100 | 22.3 | 105 | 77-119 | | |
| **Matrix Spike Dup (BL01018-MSD1)** | | **Source: 1003007-01** | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 14.9 | 0.04 | 0.01 | mg/L | 10 | 5.86 | 90 | 77-119 | 4 | 20 |
| **Matrix Spike Dup (BL01018-MSD2)** | | **Source: 1003007-21** | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 133 | 0.04 | 0.01 | mg/L | 100 | 22.3 | 110 | 77-119 | 4 | 20 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BL01103 - TOC prep** | | | | | | | | | | |
| **Blank (BL01103-BLK1)** | | | | | Prepared & Analyzed: 12/11/10 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BL01103-BS1)** | | | | | Prepared & Analyzed: 12/11/10 | | | | | |
| Total Organic Carbon | 9.36 | 1.0 | 0.50 | mg/L | 10 | | 94 | 90-110 | | |
| **Batch BL01105 - alkalinity** | | | | | | | | | | |
| **Blank (BL01105-BLK1)** | | | | | Prepared & Analyzed: 12/11/10 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BL01105-BS1)** | | | | | Prepared & Analyzed: 12/11/10 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 95 | 90-110 | | 20 |
| **Matrix Spike (BL01105-MS1)** | | **Source: 1003007-25** | | | Prepared & Analyzed: 12/11/10 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 22 | 95 | 80-120 | | 26 |
| **Matrix Spike Dup (BL01105-MSD1)** | | **Source: 1003007-25** | | | Prepared & Analyzed: 12/11/10 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 22 | 95 | 80-120 | 0 | 26 |
| **Batch BL01108 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BL01108-BLK1)** | | | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 0.0121 I | 0.04 | 0.01 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BL01108 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **LCS (BL01108-BS1)** | | | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 0.744 | 0.04 | 0.01 | mg/L | 0.80 | | 93 | 90-110 | | |
| **Matrix Spike (BL01108-MS1)** | | **Source: 1003007-67** | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 13.2 | 0.04 | 0.01 | mg/L | 5.0 | 9.11 | 83 | 77-119 | | |
| **Matrix Spike Dup (BL01108-MSD1)** | | **Source: 1003007-67** | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 13.6 | 0.04 | 0.01 | mg/L | 5.0 | 9.11 | 91 | 77-119 | 3 | 20 |
| **Batch BL01109 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BL01109-BLK1)** | | | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **Blank (BL01109-BLK2)** | | | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BL01109-BS1)** | | | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 0.766 | 0.04 | 0.01 | mg/L | 0.80 | | 96 | 90-110 | | |
| **LCS (BL01109-BS2)** | | | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 0.783 | 0.04 | 0.01 | mg/L | 0.80 | | 98 | 90-110 | | |
| **Matrix Spike (BL01109-MS1)** | | **Source: 1003007-60** | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 1.01 | 0.04 | 0.01 | mg/L | 1.0 | ND | 101 | 77-119 | | |
| **Matrix Spike (BL01109-MS2)** | | **Source: 1003007-61** | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 1.03 | 0.04 | 0.01 | mg/L | 1.0 | ND | 103 | 77-119 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BL01109 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Matrix Spike Dup (BL01109-MSD1)** | | **Source: 1003007-60** | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 0.991 | 0.04 | 0.01 | mg/L | 1.0 | ND | 99 | 77-119 | 2 | 20 |
| **Matrix Spike Dup (BL01109-MSD2)** | | **Source: 1003007-61** | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Nitrate+Nitrite (as N) | 0.900 | 0.04 | 0.01 | mg/L | 1.0 | ND | 90 | 77-119 | 14 | 20 |
| **Batch BL01326 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BL01326-BLK1)** | | | | | Prepared & Analyzed: 12/11/10 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BL01326-BLK2)** | | | | | Prepared & Analyzed: 12/11/10 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BL01326-BS1)** | | | | | Prepared & Analyzed: 12/11/10 | | | | | |
| Ammonia as N | 0.51 | 0.010 | 0.005 | mg/L | 0.50 | | 102 | 90-110 | | |
| **LCS (BL01326-BS2)** | | | | | Prepared & Analyzed: 12/11/10 | | | | | |
| Ammonia as N | 0.73 | 0.010 | 0.005 | mg/L | 0.75 | | 97 | 90-110 | | |
| **Matrix Spike (BL01326-MS1)** | | **Source: 1003007-04** | | | Prepared & Analyzed: 12/11/10 | | | | | |
| Ammonia as N | 0.63 | 0.010 | 0.005 | mg/L | 0.50 | 0.12 | 102 | 90-110 | | |
| **Matrix Spike (BL01326-MS2)** | | **Source: 1003007-17** | | | Prepared & Analyzed: 12/11/10 | | | | | |
| Ammonia as N | 0.50 | 0.010 | 0.005 | mg/L | 0.50 | 0.036 | 93 | 90-110 | | |
| **Matrix Spike Dup (BL01326-MSD1)** | | **Source: 1003007-04** | | | Prepared & Analyzed: 12/11/10 | | | | | |
| Ammonia as N | 0.64 | 0.010 | 0.005 | mg/L | 0.50 | 0.12 | 104 | 90-110 | 2 | 10 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BL01326 - Ammonia by SEAL** | | | | | | | | | | |
| **Matrix Spike Dup (BL01326-MSD2)** | | **Source: 1003007-17** | | | Prepared & Analyzed: 12/11/10 | | | | | |
| Ammonia as N | 0.50 | 0.010 | 0.005 | mg/L | 0.50 | 0.036 | 93 | 90-110 | 0.4 | 10 |
| **Batch BL01502 - alkalinity** | | | | | | | | | | |
| **Blank (BL01502-BLK1)** | | | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BL01502-BLK2)** | | | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BL01502-BS1)** | | | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 104 | 90-110 | | 20 |
| **LCS (BL01502-BS2)** | | | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 104 | 90-110 | | 20 |
| **Matrix Spike (BL01502-MS2)** | | **Source: 1003007-69** | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 8.1 | 93 | 80-120 | | 26 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BL01502 - alkalinity** | | | | | | | | | | |
| **Matrix Spike Dup (BL01502-MSD2)** | | **Source: 1003007-69** | | | Prepared & Analyzed: 12/14/10 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 8.1 | 93 | 80-120 | 0 | 26 |
| **Batch BL01614 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BL01614-BLK1)** | | | | | Prepared: 12/16/10 Analyzed: 12/17/10 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BL01614-BLK2)** | | | | | Prepared: 12/16/10 Analyzed: 12/17/10 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BL01614-BS1)** | | | | | Prepared: 12/16/10 Analyzed: 12/17/10 | | | | | |
| Total Kjeldahl Nitrogen | 2.74 | 0.20 | 0.05 | mg/L | 2.5 | | 110 | 90-110 | | |
| **LCS (BL01614-BS2)** | | | | | Prepared: 12/16/10 Analyzed: 12/17/10 | | | | | |
| Total Kjeldahl Nitrogen | 2.75 | 0.20 | 0.05 | mg/L | 2.5 | | 110 | 90-110 | | |
| **Matrix Spike (BL01614-MS1)** | | **Source: 1003007-01** | | | Prepared: 12/16/10 Analyzed: 12/17/10 | | | | | |
| Total Kjeldahl Nitrogen | 3.44 | 0.20 | 0.05 | mg/L | 2.5 | 0.931 | 100 | 80-120 | | |
| **Matrix Spike Dup (BL01614-MSD1)** | | **Source: 1003007-01** | | | Prepared: 12/16/10 Analyzed: 12/17/10 | | | | | |
| Total Kjeldahl Nitrogen | 3.58 | 0.20 | 0.05 | mg/L | 2.5 | 0.931 | 106 | 80-120 | 4 | 20 |
| **Batch BL01634 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BL01634-BLK1)** | | | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BL01634 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BL01634-BLK2)** | | | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BL01634-BS1)** | | | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | | 108 | 90-110 | | |
| **LCS (BL01634-BS2)** | | | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | | 106 | 90-110 | | |
| **Matrix Spike (BL01634-MS1)** | | **Source: 1003007-54** | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.46 | 0.010 | 0.005 | mg/L | 0.50 | ND | 92 | 90-110 | | |
| **Matrix Spike (BL01634-MS2)** | | **Source: 1003007-34** | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.77 | 0.010 | 0.005 | mg/L | 0.50 | 0.22 | 110 | 90-110 | | |
| **Matrix Spike Dup (BL01634-MSD1)** | | **Source: 1003007-54** | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.46 | 0.010 | 0.005 | mg/L | 0.50 | ND | 92 | 90-110 | 0.5 | 10 |
| **Matrix Spike Dup (BL01634-MSD2)** | | **Source: 1003007-34** | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.76 | 0.010 | 0.005 | mg/L | 0.50 | 0.22 | 109 | 90-110 | 0.7 | 10 |
| **Batch BL01730 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BL01730-BLK1)** | | | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BL01730-BLK2)** | | | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BL01730 - Ammonia by SEAL** | | | | | | | | | | |
| **LCS (BL01730-BS1)** | | | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.50 | 0.010 | 0.005 | mg/L | 0.50 | | 99 | 90-110 | | |
| **LCS (BL01730-BS2)** | | | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.49 | 0.010 | 0.005 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BL01730-MS1)** | | **Source: 1003007-62** | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | ND | 104 | 90-110 | | |
| **Matrix Spike (BL01730-MS2)** | | **Source: 1003007-71** | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.50 | 0.010 | 0.005 | mg/L | 0.50 | ND | 99 | 90-110 | | |
| **Matrix Spike Dup (BL01730-MSD1)** | | **Source: 1003007-62** | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.51 | 0.010 | 0.005 | mg/L | 0.50 | ND | 102 | 90-110 | 3 | 10 |
| **Matrix Spike Dup (BL01730-MSD2)** | | **Source: 1003007-71** | | | Prepared & Analyzed: 12/17/10 | | | | | |
| Ammonia as N | 0.50 | 0.010 | 0.005 | mg/L | 0.50 | ND | 99 | 90-110 | 0.04 | 10 |
| **Batch BL01803 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BL01803-BLK1)** | | | | | Prepared: 12/17/10 Analyzed: 12/20/10 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BL01803-BLK2)** | | | | | Prepared: 12/17/10 Analyzed: 12/20/10 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BL01803-BS1)** | | | | | Prepared: 12/17/10 Analyzed: 12/20/10 | | | | | |
| Total Kjeldahl Nitrogen | 2.63 | 0.20 | 0.05 | mg/L | 2.5 | | 105 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BL01803 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **LCS (BL01803-BS2)** | | | | | Prepared: 12/17/10 Analyzed: 12/20/10 | | | | | |
| Total Kjeldahl Nitrogen | 2.68 | 0.20 | 0.05 | mg/L | 2.5 | | 107 | 90-110 | | |
| **Matrix Spike (BL01803-MS2)** | | **Source: 1003007-21** | | | Prepared: 12/17/10 Analyzed: 12/20/10 | | | | | |
| Total Kjeldahl Nitrogen | 2.87 | 0.20 | 0.05 | mg/L | 2.5 | 0.549 | 93 | 80-120 | | |
| **Matrix Spike Dup (BL01803-MSD2)** | | **Source: 1003007-21** | | | Prepared: 12/17/10 Analyzed: 12/20/10 | | | | | |
| Total Kjeldahl Nitrogen | 2.79 | 0.20 | 0.05 | mg/L | 2.5 | 0.549 | 90 | 80-120 | 3 | 20 |
| **Batch BL02102 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BL02102-BLK1)** | | | | | Prepared & Analyzed: 12/20/10 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BL02102-BLK2)** | | | | | Prepared & Analyzed: 12/20/10 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BL02102-BLK3)** | | | | | Prepared: 12/20/10 Analyzed: 12/22/10 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BL02102-BS1)** | | | | | Prepared & Analyzed: 12/20/10 | | | | | |
| Ammonia as N | 0.51 | 0.010 | 0.005 | mg/L | 0.50 | | 102 | 90-110 | | |
| **LCS (BL02102-BS2)** | | | | | Prepared & Analyzed: 12/20/10 | | | | | |
| Ammonia as N | 0.51 | 0.010 | 0.005 | mg/L | 0.50 | | 101 | 90-110 | | |
| **LCS (BL02102-BS3)** | | | | | Prepared: 12/20/10 Analyzed: 12/22/10 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | | 106 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BL02207 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BL02207-BLK1)** | | | | | Prepared: 12/21/10 | Analyzed: 12/22/10 | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BL02207-BLK2)** | | | | | Prepared: 12/21/10 | Analyzed: 12/22/10 | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BL02207-BS1)** | | | | | Prepared: 12/21/10 | Analyzed: 12/22/10 | | | | |
| Total Kjeldahl Nitrogen | 2.61 | 0.20 | 0.05 | mg/L | 2.5 | | 104 | 90-110 | | |
| **LCS (BL02207-BS2)** | | | | | Prepared: 12/21/10 | Analyzed: 12/22/10 | | | | |
| Total Kjeldahl Nitrogen | 2.30 | 0.20 | 0.05 | mg/L | 2.5 | | 92 | 90-110 | | |
| **Matrix Spike (BL02207-MS1)** | | **Source: 1003007-42** | | | Prepared: 12/21/10 | Analyzed: 12/22/10 | | | | |
| Total Kjeldahl Nitrogen | 3.43 | 0.20 | 0.05 | mg/L | 2.5 | 1.07 | 94 | 80-120 | | |
| **Matrix Spike (BL02207-MS2)** | | **Source: 1003007-60** | | | Prepared: 12/21/10 | Analyzed: 12/22/10 | | | | |
| Total Kjeldahl Nitrogen | 2.43 | 0.20 | 0.05 | mg/L | 2.5 | ND | 97 | 80-120 | | |
| **Matrix Spike Dup (BL02207-MSD1)** | | **Source: 1003007-42** | | | Prepared: 12/21/10 | Analyzed: 12/22/10 | | | | |
| Total Kjeldahl Nitrogen | 3.61 | 0.20 | 0.05 | mg/L | 2.5 | 1.07 | 101 | 80-120 | 5 | 20 |
| **Matrix Spike Dup (BL02207-MSD2)** | | **Source: 1003007-60** | | | Prepared: 12/21/10 | Analyzed: 12/22/10 | | | | |
| Total Kjeldahl Nitrogen | 2.50 | 0.20 | 0.05 | mg/L | 2.5 | ND | 100 | 80-120 | 3 | 20 |

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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BL01104 - DOC prep** | | | | | | | | | | |
| **Blank (BL01104-BLK1)** | | | | | Prepared: 12/10/10 | Analyzed: 12/11/10 | | | | |
| Dissolved Organic Carbon | 1.0 U | 4.0 | 1.0 | mg/L | | | | | | |
| **LCS (BL01104-BS1)** | | | | | Prepared: 12/10/10 | Analyzed: 12/11/10 | | | | |
| Dissolved Organic Carbon | 9.11 | 4.0 | 1.0 | mg/L | 10 | | 91 | 90-110 | | |
| **Matrix Spike (BL01104-MS1)** | | **Source: 1003007-71** | | | Prepared: 12/10/10 | Analyzed: 12/11/10 | | | | |
| Dissolved Organic Carbon | 10.8 | 4.0 | 1.0 | mg/L | 10 | ND | 108 | 85-125 | | |
| **Matrix Spike Dup (BL01104-MSD1)** | | **Source: 1003007-71** | | | Prepared: 12/10/10 | Analyzed: 12/11/10 | | | | |
| Dissolved Organic Carbon | 10.9 | 4.0 | 1.0 | mg/L | 10 | ND | 109 | 85-125 | 0.5 | 25 |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa FLORIDA, 33619**

**December 24, 2010**
**Work Order: 1003007**

## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below.
Questions regarding this report should be directed to Client Services at 813-855-1844.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1003007

| | |
|---|---|
| Client Name: Hazan and Sawyer | Contact / Phone: Josephin Edeback-Hirst 813-630-4498 |
| Project Name / Location: GCREC Mound Groundwater Analyses | jedeback@hazanandsawyer.com |
| Samplers: (Signature) Gary Ward | |

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 1LaG, Cool DOC | Field pH | Field DO | Field Cond | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-AA 9-14 | 12/9/10 | 0745 | GW | | X | 1 | 1 | | | 5.1 | 0.89 | 281.9 | | |
| 02 | DP-AA 9-22 | | 0755 | GW | | X | 1 | 1 | | | 4.9 | 1.06 | 318.7 | | |
| 03 | DP-AA 9-27 | | 0812 | GW | | X | 1 | 1 | | | 4.8 | 0.84 | 292.2 | | |
| 58 | P214-C12-28 | | 0831 | GW | | X | 1 | 1 | | | 5.6 | 0.70 | 291.8 | | |
| 55 | DP Q 15-15 | | 0853 | GW | | X | 1 | 1 | | | 4.7 | 2.31 | 303.4 | | |
| 56 | DP-Q 15-21 | | 0905 | GW | | X | 1 | 1 | | | 5.0 | 1.44 | 323.6 | | |
| 57 | DP-Q 15-26 | | 0923 | GW | | X | 1 | 1 | | | 5.1 | 0.94 | 324.0 | | |
| 52 | DP-O-10-12 | | 0945 | GW | | X | 1 | 1 | | | 4.3 | 1.31 | 186.4 | | |
| 53 | DP-O-10-18 | | 0958 | GW | | X | 1 | 1 | | | 4.8 | 0.77 | 298.4 | | |
| 54 | DP-O 10-24 | | 1014 | GW | | X | 1 | 1 | | | 4.2 | 0.66 | 182.2 | | |
| 49 | DP-N 12-14 | | 10:36 | GW | | X | 1 | 1 | | | 5.0 | 1.28 | 163.4 | | |
| 50 | DP-N 12-21 | | 10:52 | GW | | X | 1 | 1 | | | 4.9 | 1.91 | 304.1 | | |

| Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|
| Containers Prepared/ Relinquished: | 1200 12-08-10 | Gary Ward | 12/8/10 12:20 |
| Gary Ward | 12/9/10 1532 | | |
| | | | |
| | | | |
| | | | |

Seal intact? Y N (N/A)
Samples intact upon arrival? (Y) N N/A
Received on (ice)? Temp_____ (Y) N N/A
Proper preservatives indicated? (Y) N N/A
Rec'd within holding time? (Y) N N/A
Volatiles rec'd w/out headspace Y N (N/A)
Proper containers used? (Y) N N/A

**Instructions / Remarks**

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1003007

| | |
|---|---|
| Client Name: Hazan and Sawyer | Contact / Phone: Josephin Edeback-Hirst 813-630-4498 |
| Project Name / Location: GCREC Mound Groundwater Analyses | jedeback@hazanandsawyer.com |
| Samplers: (Signature) Larry Ward | |

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 1LaG, Cool DOC | Field pH | Field DO | Field Cond | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 ~~34~~ | DP-M07-15 | 12/9/10 | 1132 | GW | | X | 1 | 1 | | | 4.8 | 0.80 | 304.0 | | |
| 47 ~~34~~ | DP-M07-21 | | 1147 | GW | | X | 1 | 1 | | | 4.9 | 0.58 | 374.9 | | |
| 48 | DP-M07-27 | | 1207 | GW | | X | 1 | 1 | | | 4.8 | 0.49 | 301.5 | | |
| 43 | DP-J12-15 | | 1228 | GW | | X | 1 | 1 | | | 4.8 | 1.50 | 287.5 | | |
| 44 | DP-J12-20 | | 1239 | GW | | X | 1 | 1 | | | 5.0 | 1.13 | 342.9 | | |
| | ~~J12-20D~~ dup 12/9/10 | | ~~1244~~ | GW | | X | 1 | 1 | | | ~~5.0~~ | ~~1.13~~ | ~~342.9~~ | | |
| 45 | DP-J-12-27 | | 1300 | GW | | X | 1 | 1 | | | 4.8 | 1.14 | 307.1 | | |
| 40 | DP-J-09-14 | | 1320 | GW | | X | 1 | 1 | | | 4.5 | 2.29 | 232.1 | | |
| 41 | DP-J-09-20 | | 1334 | GW | | X | 1 | 1 | | | 4.9 | 1.57 | 338.1 | | |
| 42 | DP-J-09-21 | | 1358 | GW | | X | 1 | 1 | | | 4.9 | 2.51 | 298.2 | | |
| | | | | GW | | X | 1 | 1 | | | | | | | |
| | | | | GW | | X | 1 | 1 | | | | | | | |

| Relinquished | Date/Time | Received | Date/Time |
|---|---|---|---|
| Containers Prepared/ Relinquished: | 1200 12-08-10 | Received: Larry Ward | 12/8/10 1220 |
| Relinquished: Larry Ward | 12/9/10 1532 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1003007

| | |
|---|---|
| Client Name: Hazan and Sawyer | Contact / Phone: Josephin Edeback-Hirst 813-630-4498 |
| Project Name / Location: GCREC Mound Groundwater Analyses | jedeback@hazanandsawyer.com |
| Samplers: (Signature) Larry R. Ward / Joseph Hirst | |

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 1LaG, Cool DOC | Field pH | Field DO | Field Cond | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | DP-D12-27 | 12/9/10 | 11:14 | GW | | X | 1 | 1 | 2 | 1 | 5.0 | 2.45 | 231.6 | | |
| 04 | DP-D7.5-14 | 12/9/10 | 8:20 | GW | | X | 1 | 1 | 2 | 1 | 7.01 | 1.10 | 432 | | |
| 09 | DP-D09-15 | 12/9/10 | 9:30 | GW | | X | 1 | 1 | 2 | 1 | 5.30 | 3.20 | 433 | | |
| 14 | DP-E12-22 | 12/9/10 | 11:05 | GW | | X | 1 | 1 | 2 | 1 | 5.00 | 1.95 | 464 | | |
| 17 | DP-F08-20 | 12/9/10 | 12:00 | GW | | X | 1 | 1 | 2 | 1 | 6.34 | 1.77 | 368 | | |
| 21 | DP-F11-18 | 12/9/10 | 1:05 | GW | | X | 1 | 1 | 2 | 1 | 5.0 | 1.13 | 342.8 | | |
| 67 | DP 5 12-20 | ↓ | 1239 | GW | | X | 1 | 1 | 2 | 1 | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

| | | | |
|---|---|---|---|
| Containers Prepared/ Relinquished: HH | Date/Time: 1145 12-8-10 | Received: Larry Ward | Date/Time: 12/8/10 1220 |
| Relinquished: Larry Ward | Date/Time: 12/9 1532 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N (N/A)

Samples intact upon arrival? (Y) N N/A

Received on ice? Temp_____ (Y) N N/A

Proper preservatives indicated? (Y) N N/A

Rec'd within holding time? (Y) N N/A

Volatiles rec'd w/out headspace Y N (N/A)

Proper containers used? (Y) N N/A

**Instructions / Remarks**

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1003007

| Client Name | Contact / Phone: |
|---|---|
| Hazan and Sawyer | Josephin Edeback-Hirst 813-630-4498 |
| Project Name / Location | jedeback@hazanandsawyer.com |
| GCREC Mound Groundwater Analyses | |

Samplers: (Signature) Josefin Hirst

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date (2010) | Time | Matrix | Composite | Grab | 1LP, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 1LaG, Cool DOC | Field pH | Field DO | Field Cond | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 05 | DP-D7.5-20 | 12/9 | 8:35 | GW | | X | 1 | 1 | | | 7.01 | 2.55 | 258 | | 2 |
| 06 | DP-D7.5-26 | 12/9 | 8:46 | GW | | X | 1 | 1 | | | 7.01 | 2.01 | 295 | | 2 |
| 07 | D9-D09-6 | 12/9 | 9:05 | GW | | X | 1 | 1 | | | 4.82 | 5.59 | 363 | | 2 |
| 08 | DP-D09-8 | 12/9 | 9:20 | GW | | X | 1 | 1 | | | 4.65 | 3.52 | 380 | | 2 |
| 63 | DP-D09-15-D | 12/9 | 9:35 | GW | | X | 1 | 1 | | | 5.30 | 3.20 | 433 | | 2 |
| 10 | DP-D09-21 | 12/9 | 9:50 | GW | | X | 1 | 1 | | | 5.78 | 1.35 | 300 | | 2 |
| 11 | DP-D09-27 | 12/9 | 10:05 | GW | | X | 1 | 1 | | | 5.97 | 4.41 | 270 | | 2 |
| 12 | DP-E12-10 | 12/9 | 10:45 | GW | | X | 1 | 1 | | | 5.48 | 4.68 | 491 | | 2 |
| 13 | DP-E12-15 | 12/9 | 10:50 | GW | | X | 1 | 1 | | | 4.88 | 2.47 | 550 | | 2 |
| 15 | DP-E12-28 | 12/9 | 11:20 | GW | | X | 1 | 1 | | | 5.17 | 2.01 | 297 | | 2 |
| 16 | DP-F08-14 | 12/9 | 11:45 | GW | | X | 1 | 1 | | | 7.04 | 6.09 | 1412 | | 2 |
| | | | | GW | | X | 1 | 1 | | | | | | | |

| Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|
| Containers Prepared: | 1200 12-08-10 | Josefin Hirst | 12-09-10 |
| Josefin Hirst | 12-09-10 | Lay Ward | 10/9/10 1400 |
| Lay Ward | 10/9/10 1532 | | |
| | | | |
| | | | |

Seal intact? Y N N/A
Samples intact upon arrival? Y N N/A
Received on ice? Temp_____ Y N N/A
Proper preservatives indicated? Y N N/A
Rec'd within holding time? Y N N/A
Volatiles rec'd w/out headspace Y N N/A
Proper containers used? Y N N/A

Instructions / Remarks

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1003007

| Client Name | Contact / Phone: |
|---|---|
| Hazan and Sawyer | Josephin Edeback-Hirst 813-630-4498 |
| Project Name / Location | jedeback@hazanandsawyer.com |
| GCREC Mound Groundwater Analyses | |
| Samplers: (Signature) Josephin Hirst | |

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 1LaG, Cool DOC | Field pH | Field DO | Field Cond | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18 | DP-F08-28 | 12/9/10 | 12:10 | GW | | X | 1 | 1 | | | 6.11 | 1.73 | 332 | | 2 |
| 19 | DP-F11-11 | 12/9/10 | 12:30 | GW | | X | 1 | 1 | | | 5.35 | 5.26 | 366 | | 2 |
| 20 | DP-F11-15 | 12/9/10 | 12:55 | GW | | X | 1 | 1 | | | 5.00 | 3.64 | 547 | | 2 |
| 22 | DP-F11-21 | 12/9/10 | 1:25 | GW | | X | 1 | 1 | | | 5.02 | 2.10 | 458 | | 2 |
| 23 | DP-F11-24 | 12/9/10 | 1:45 | GW | | X | 1 | 1 | | | 5.00 | 1.15 | 475 | | 2 |
| 24 | DP-F11-27 | 12/9/10 | 2:00 | GW | | X | 1 | 1 | | | 5.19 | 0.82 | 297 | | 2 |
| | | | | ~~GW~~ | | ~~X~~ | ~~1~~ | ~~1~~ | | | | | | | |
| | | | | ~~GW~~ | | ~~X~~ | ~~1~~ | ~~1~~ | | | | | | | |
| | | | | ~~GW~~ | | ~~X~~ | ~~1~~ | ~~1~~ | | | | | | | |
| | | | | ~~GW~~ | | ~~X~~ | ~~1~~ | ~~1~~ | | | | | | | |
| | | | | ~~GW~~ | | ~~X~~ | ~~1~~ | ~~1~~ | | | | | | | |
| | | | | ~~GW~~ | | ~~X~~ | ~~1~~ | ~~1~~ | | | | | | | |

| | | | |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 1200 12-08-10 | Received: Josephin Hirst | Date/Time: 12-09-10 |
| Relinquished: Josephin Hirst | Date/Time: 12-09-10 | Received: Zay Ward | Date/Time: 12-9-10 1200 |
| Relinquished: Zay Ward | Date/Time: 1532 12-9-10 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

| | | | |
|---|---|---|---|
| Seal intact? | Y N | (N/A) | |
| Samples intact upon arrival? | (Y) | N | N/A |
| Received on ice? Temp_____ | (Y) | N | N/A |
| Proper preservatives indicated? | (Y) | N | N/A |
| Rec'd within holding time? | (Y) | N | N/A |
| Volatiles rec'd w/out headspace | Y N | (N/A) | |
| Proper containers used? | (Y) | N | N/A |

**Instructions / Remarks**

Chain of Custody.xls
Rev Date 11/15/11

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1003007

Client Name: Hazan and Sawyer

Contact / Phone: Josephin Edeback-Hirst 813-630-4498

Project Name / Location: GCREC Mound Groundwater Analyses

jedeback@hazanandsawyer.com

Samplers: (Signature) Josephin Hirst / Zay Ward

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 1LaG, Cool DOC | Field pH | Field DO | Field Cond | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 37 | DP-I06-14 | 12/10/10 | 7:10 | GW | | X | 1 | 1 | | | 5.25 | 1.66 | 240 | | 2 |
| 38 | DP-I06-20 | 12/10/10 | 7:25 | GW | | X | 1 | 1 | | | 5.03 | 1.80 | 367 | | 2 |
| 60 | Field Blank - DI | 12/10/10 | 7:55 | GW | | X | 1 | 1 | | | 5.71 | 9.44 | 1.49 | | 2 |
| 61 | Field Blank - TAP | 12/10/10 | 8:00 | GW | | X | 1 | 1 | | | 6.97 | 11.07 | 445 | | 2 |
| 29 | DP-G07-15 | 12/10/10 | 8:25 | GW | | X | 1 | 1 | | | 5.53 | 3.33 | 271 | | 2 |
| 30 | DP-G07-17 | 12/10/10 | 8:35 | GW | | X | 1 | 1 | | | 5.36 | 2.19 | 312 | | 2 |
| 31 | DP-G07-21 | 12/10/10 | 8:50 | GW | | X | 1 | 1 | | | 5.37 | 1.66 | 343 | | 2 |
| 32 | DP-G07-24 | 12/10/10 | 9:00 | GW | | X | 1 | 1 | | | 5.26 | 1.13 | 300 | | 2 |
| 33 | DP-G07-27 | 12/10/10 | 9:15 | GW | | X | 1 | 1 | | | 5.19 | 1.37 | 293 | | 2 |
| 59 | STE-Ex Pump Tank | 12/10/10 | 9:55 | GW | | X | 1 | 1 | | | 7.33 | 0.10 | 1273 | | 2 |
| 68 | STE-Ex Pump Tank-D | 12/10/10 | 10:05 | GW | | X | 1 | 1 | | | 7.33 | 0.10 | 1273 | | 2 |
| 25 | DP-F15-14 | 12/10/10 | 0652 | GW | | X | 1 | 1 | | | 5.1 | 1.11 | 428.6 | | |

| Containers Prepared: / Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|
| [illegible] | 1200 12-08-10 | Zay Ward | 12/8/10 1220 |
| Zay Ward | 12/10/10 1155 | | |
| | | | |
| | | | |
| | | | |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks

Chain of Custody

Chain of Custody.xls
Rev.Date: 11/16/11

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1003007

| | |
|---|---|
| Client Name: Hazan and Sawyer | Contact / Phone: Josephin Edeback-Hirst 813-630-4498 |
| Project Name / Location: GCREC Mound Groundwater Analyses | jedeback@hazanandsawyer.com |
| Samplers: (Signature) Zay Ward | |

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 1LaG, Cool DOC | Field pH | Field DO | Field Cond | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | DP- F15-14 | 12/10/10 | 0652 | GW | | X | 1 | 1 | | | 5.1 | ~~21.5~~ 1.71 LPD 12/10/10 | 408.6 | | |
| 65 ~~24~~ | DP- F15-20D | | 0720 | GW | | X | 1 | 1 | ✗ | ✗ | 4.9 | 0.62 | 649 | | |
| 27 | DP- F15-26 | | 0741 | GW | | X | 1 | 1 | | | 4.9 | 0.52 | 290.8 | | |
| 34 | DP- G12-15 | | 0936 | GW | | X | 1 | 1 | | | 4.7 | 0.89 | 508 | | |
| 66 | DP- G12-15D | | 0938 | GW | | X | 1 | 1 | | | 4.7 | 0.89 | 508 | | |
| 35 | DP-G12-21 | | 0952 | GW | | X | 1 | 1 | | | 4.9 | 0.99 | 636 | | |
| 36 | DP-G12 27 | | 1008 | GW | | X | 1 | 1 | | | 4.7 | 0.45 | 509 | | |
| 62 | Equip Rinsate | | 0942 | GW | | X | 1 | 1 | | | 7.2 | 2.31 | 13.2 | | |
| | | | | ~~GW~~ | | ~~X~~ | ~~1~~ | ~~1~~ | | | | | | | |
| | | | | ~~GW~~ | | ~~X~~ | ~~1~~ | ~~1~~ | | | | | | | |
| | | | | ~~GW~~ | | ~~X~~ | ~~1~~ | ~~1~~ | | | | | | | |
| | | | | ~~GW~~ | | ~~X~~ | ~~1~~ | ~~1~~ | | | | | | | |

| | | | |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: | Received: Zay Ward | Date/Time: 12/8/10 1020 |
| Relinquished: Zay Ward | Date/Time: 12/10/10 1155 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace Y N N/A

Proper containers used? Y N N/A

**Instructions / Remarks**

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1003007

| | |
|---|---|
| Client Name: Hazan and Sawyer | Contact / Phone: Josephin Edeback-Hirst 813-630-4498 |
| Project Name / Location: GCREC Mound Groundwater Analyses | jedeback@hazanandsawyer.com |
| Samplers: (Signature) [illegible] / Ley Ward | |

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 1LaG, Cool DOC | Field pH | Field DO | Field Cond | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 39 | DP-I06-26 | 12/10/10 | 7:45 | GW | | X | 1 | 1 | 2 | 1 | 5.01 | 2.36 | 302 | | 5 |
| ~~26~~ | ~~DP-F15-20~~ | ~~12/10/10~~ | ~~0715~~ | ~~GW~~ | | ~~X~~ | ~~1~~ | ~~1~~ | ~~2~~ | ~~1~~ | ~~4.9~~ | ~~0.62~~ | ~~649~~ | sampled | |
| 70 | PZ 24-BKG-26 | 1 | 0821 | GW | | X | 1 | 1 | 2 | 1 | 5.1 | 0.70 | 296.2 | | |
| 69 | PZ 04-BKG-9 | | 0840 | GW | | X | 1 | 1 | 2 | 1 | 5.3 | 72.9 | 1.10 | | |
| 71 | PZ 17-115-26 | | 0917 | GW | | X | 1 | 1 | 2 | 1 | 5.7 | 0.52 | 294.1 | | |
| | ~~DP-F15-20D~~ | | 0 | ~~GW~~ | | ~~X~~ | ~~1~~ | ~~1~~ | ~~2~~ | ~~1~~ | | | | | |
| 64 | DP-F15-20D | 12/10/10 | 0720 | GW | | X | 1 | 1 | | | 4.9 | 0.62 | 649 | | |

| Containers Prepared/ Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|
| HH | 1145 12-8-10 | Ley Ward | 12/8/10 1220 |
| Relinquished: Ley Ward | Date/Time: 12/10/10 1155 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | DWR 29-14 | Sample ID | 01 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-_____ | SAL-SAM-65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0745 | | | | | 5.1 | 21.5 | 281.9 | 0.89 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | Oct 29 - 22 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | 12/9/10 | Sample ID | 02 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-____ | SAL-SAM - 65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0755 | 1.5 | | | | 4.9 | 23.3 | 318.7 | 1.04 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | Apr 9- 27 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | 03 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-_____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0812 | | | | | 4.8 | 22.7 | 293.2 | 0.84 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007.04 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-D7.5-14 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 5/16 | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | 14 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | 5/16 | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |

| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 8:20 am | 1 | 3 | | | 7.01 | 21.2 | 432 | 1.10 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | JMH (Hazen & Sawyer) | | | | | SAMPLER(S) SIGNATURES: | [illegible] | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | (PP) PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | 8:10 | SAMPLING ENDED | 8: | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | Cold | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007-05 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | DP-D7.5-20 | Sample ID | DP-D7.5-20 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | 20 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | 5/16" | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 9:35 | 1.5 | | 3.5 | | 7.01 | 22.2 | 258 | 2.55 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | Joseph Hirst | | | | SAMPLER(S) SIGNATURES: | | Joseph Hirst | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | | | |
| COMMENTS | | | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007-06 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-07.5-26 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | 5/16 | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 8:46 | 2 | | | | 7.01 | 26.3 | 295 | 2.01 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joseph Hirst | | | | | SAMPLER(S) SIGNATURES: | Joseph Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | 1 | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007-07 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-D09-6 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | 1/4" | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 9:05 | 0.5 | | | | ~~7.01~~ 4.92 | 17.0 | 363 | 5.59 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joseph Hirst | | | | | SAMPLER(S) SIGNATURES: | Joseph Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007-08 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-D09-8 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | 1 4" | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 9:20 | 0.5 | | | | 4.65 | 18.4 | 380 | 3.52 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joseph Hirst | | | | | SAMPLER(S) SIGNATURES: | Joseph Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007-09;63 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-D09-15 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 9:30 | 1 | | | | 5.30 | 19.1 | 433 | 3.20 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Josefin Hörst | | | | | SAMPLER(S) SIGNATURES: | Josefin Hörst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007-10 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-D09-21 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | 5/16 | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 9:50 | 1.5 | | | | 5.78 | 21.7 | 300 | 1.35 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joseph Hirst | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/1/10 | SAL Project # | 1003007 - 11 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-D09 - 27 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | 5/16 | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |

| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-____ | SAL-SAM-63-____ | SAL-SAM-55-___ | SAL-SAM-0____ | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 10:05 | 2 | | 5 | | 5.97 | 20.2 | 270 | 4.97 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joselin Hirst | | | | | SAMPLER(S) SIGNATURES: | Joselin Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/1/10 | SAL Project # | 1003007-12 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-E 12-10 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | 1/4" | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 10:45 | 0.5 | | 3.5 | | 5.48 | 19.2 | 491 | 4.68 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joxton Hirst | | | | SAMPLER(S) SIGNATURES: | Joxton Hirst | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007-13 | Phone: | |
| Well Number | | Sample ID | DP-E12-15 | Project Name | GCREC Mound Groundwater Analyses |
| | | | | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | 5/16" | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 10250 | 1 | | 3.5 | | 4.88 | 22.2 | 550 | 2.47 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joshua Hirst | | | | SAMPLER(S) SIGNATURES: | Joshua Hirst | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007-14 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-E12-22 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | 5/16" | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 11:05 | 1.5 | ~~3.5~~ | 3.5 | | 5.00 | 20.4 | 464 | 1.75 ~~3.24~~ | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Jordan Hirst | | | | | SAMPLER(S) SIGNATURES: | Jordan Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007-15 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-E12-28 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 11:20 | 2 | | | | 5.17 | 21.9 | 297 | 2.01 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joseph Hirst | | | | | SAMPLER(S) SIGNATURES: | Joseph Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007 - 16 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-F08-14 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 11:45 | 1 | | | | 7.04 | 22.4 | 1412 | 6.09 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
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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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Josefin Hirst | | | | | SAMPLER(S) SIGNATURES: | Josefin Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | foam in water at beginning + in sample bottle | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007-17 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-F08-20 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 12:00 | 1.5 | | 4 | | 6.34 | 23.2 | 368 | 1.77 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joscelin Hirst | | | | | SAMPLER(S) SIGNATURES: | Joscelin Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007-18 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-F08-28 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | 5/16" | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 12:10 | 1 | 2 | 4 | | 5.96 | 22.2 | 322 | 3.90 | | | |
| 12:15 | 2 | 2 | 4 | | 6.11 | 23.1 | 332 | 1.43 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joyelin Hirst | | | | | SAMPLER(S) SIGNATURES: | Joselin Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007-19 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-F11-11 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 12:30 | 0.5 | | | 5.35 | ~~6.57~~ 6.4 | 19.5 | 366 | 5.26 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joseph Hirst | | | | SAMPLER(S) SIGNATURES: | Joseph Hirst | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007-20 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-F11-15 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | 5/16" | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 12:55 | 1 | | 4 | | 5.00 | 22.8 | 547 | 3.64 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Josefin Hirst | | | | | SAMPLER(S) SIGNATURES: | Josefin Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007-21 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-F11-18 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1:05 | 1.25 | | | | 5.02 | 23.1 | 497 | 2.48 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Josefin Hirst | | | | | SAMPLER(S) SIGNATURES: | Josefin Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | 1003007 | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 22 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-F11-21 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1:21 | 1 | | | | 4.98 | 21.7 | 465 | 3.88 | | | |
| 1:25 | 0.5 | | | | 5.02 | 22.7 | 458 | 2.10 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joachim Hirst | | | | | SAMPLER(S) SIGNATURES: | Joachim Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | 1003007 | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 23 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-F11-24 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1:40 | 1 | 1.5 | | | 5.08 | 21.9 | 484 | 3.28 | | | |
| 1:45 | 0.5 | 1.5 | | | 5.00 | 22.9 | 475 | 1.15 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joseph Hirst | | | | | SAMPLER(S) SIGNATURES: | Joseph Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | 100 | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007.24 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-F11-27 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1:55 | 1 | 2 | 4 | | 5.24 | 23.1 | 301 | 1.79 | | | |
| 2:00 | 2 | 2 | 4 | | 5.19 | 23.3 | 297 | 0.82 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joshua Hirst | | | | | SAMPLER(S) SIGNATURES: | Joshua Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | DP-F15-14 | Sample ID | 25 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0652 | | 1.0 | | | 5.1 | 21.5 | 408.4 | 1.11 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 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"=1.47, 12"5.88 | | | | | | | | | | | |
| TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016 | | | | | | | | | | | |

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | Tony Ward | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | Clear | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007- | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | DP-E15-~~201~~ 20 | Sample ID | 26 and 65 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0715 | | 2.0 | | | 4.9 | 22.1 | 649 | 0.42 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | SAMPLER(S) SIGNATURES: | Jay Wood | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | (Y) N | CLEANING STEPS | DI x2 | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | (Y) N | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | Clear | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | ~~DP FIS~~ 12/10/12 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | DP FIS 26 | Sample ID | 27 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1741 | | 2.0 | | | 4.9 | 21.5 | 290.8 | 6.52 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | Zy Wind | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | DI x 4 | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | (Y) N N/A | | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | | Clear | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007-29 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-G07-15 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 8:25 | 1 | | | | 5.53 | 21.4 | 271 | 3.33 ~~3.62~~ | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joshua Hirst | | | | | SAMPLER(S) SIGNATURES: | Joshua Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007-30 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-607-17 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | 5/16" | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 8:35 | 1.25 | | | | 5.36 | 21.9 | 312 | 2.19 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joseph Hirst | | | | | SAMPLER(S) SIGNATURES: | Joseph Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007-31 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-607-21 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8:45 | 1.0 | 1.5 | | | 5.38 | 22.1 | 341 | 3.48 | | | |
| 8:50 | 0.5 | 1.5 | | | 5.37 | 22.9 | 343 | 1.66 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joseph Hart | | | SAMPLER(S) SIGNATURES: | Joseph Hart | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007-32 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | PP-607-24 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-_____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8:55 | 1 | 1.75 | | | ~~5.25~~ 5.11 | 22.2 | 302 | 2.61 | | | |
| 9:00 | .75 | 1.75 | | | 5.26 | 22.9 | 300 | 1.13 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joxtra Hirst | | | | | SAMPLER(S) SIGNATURES: | Josefa Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007-33 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-G07-27 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-_____ | SAL-SAM-65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 9:05 | 1 | 2 | | | 5.39 | 20.5 | 302 | 3.11 | | | |
| 9:15 | 1 | 2 | | | 5.19 | 22.5 | 293 | 1.37 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joshua Hirst | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | DP-012-15 | Sample ID | 34 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0926 | | | | | 4.7 | 22.3 | 509 | 0.89 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | Zay Ward | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | Clear | | | | | | | | |
| COMMENTS | | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | DP- G12-21 | Sample ID | 35 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-_____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0952 | | | | | 4.9 | 22.7 | 636 | 0.99 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | Zay Ward | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | DP 612-27 | Sample ID | 36 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-_____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 10.08 | | | | | 4.7 | 23.1 | 509 | 0.45 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | Jay Wood | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007-37 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-I06-14 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-_____ | SAL-SAM-65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 9:10 | 1 | | | | 5.25 | 20.4 | 240 | 1.66 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | Joshua Hirst | | | | SAMPLER(S) SIGNATURES: | Joseph Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007-38 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-I06-20 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | 5/16" | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 7:22 | 1 | 1.5 | | | 5.07 | 21.1 | 359 | 2.98 | | | |
| 7:25 | 0.5 | 1.5 | | | 5.03 | 21.4 | 367 | 1.80 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joseph Hirst | | | | | SAMPLER(S) SIGNATURES: | Joseph Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007-39 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | DP-I06-26 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | 5/16" | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 7:34 | 1 | 2 | | | 5.11 | 20.2 | 311 | 2.63 | | | |
| 7:46 | 1 | 2 | | | 5.01 | 21.3 | 302 | 2.36 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joshua Hirst | | | | | SAMPLER(S) SIGNATURES: | Joshua Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | J09-14 | Sample ID | 4D | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED |
| INST. ID | | | | | SAL-SAM-63-_____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1320 | | | | | 4.5 | 21.9 | 232.1 | 3.29 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| Date Sampled | ~~J09-1~~ 12/9/10 | SAL Project # | 1003007 | Phone: | |
| Well Number | J09-2d | Sample ID | 41 | Project Name | GCREC Mound Groundwater Analyses |
| | | | | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1326 | | | | | 4.9 | 23.2 | 338.1 | 1.57 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | J09 06 | Sample ID | 42 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1358 | | | | | 4.9 | 23.0 | 298.2 | 2.51 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 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"=1.47, 12"5.88 | | | | | | | | | | | |
| TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016 | | | | | | | | | | | |

## SAMPLING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | | | |
| COMMENTS | | | | | | | | | | | |
| PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump | | | | | | | | | | | |
| TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon | | | | | | | | | | | |
| Reviewed By: | | | | | | | Date: | | | | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | J 12-15 | Sample ID | 43 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-_____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 12:28 | | | | | 4.8 | 22.1 | 287.5 | 1.50 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | SAMPLER(S) SIGNATURES: | | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | | SAL Project # | 1003067 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | J-12-20 | Sample ID | 44 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1239 | | | | | 5.0 | 22.9 | 342.9 | 1.13 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
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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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | J12-27 | Sample ID | 45 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-_____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 13:00 | | | | | 4.8 | 22.6 | 307.1 | 1.14 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | ~~M07-15~~ 12/9/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | M07-15 | Sample ID | 46 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1132 | | | | | 4.8 | 22.2 | 304.0 | 0.80 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | ~~M07~~ 12/9/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | M07-21 | Sample ID | 47 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1147 | | | | | 4.9 | 22.5 | 374.9 | 0.58 | | | |
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| | | | | | | | | | | | |
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| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/9/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | M07-27 | Sample ID | 48 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-_____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1207 | | | | | 4.8 | 22.5 | 301.5 | 0.49 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | DP N12 14 | Sample ID | 49 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1036 | | | | | 5.0 | 22.1 | 169.4 | 1.28 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 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"=1.47, 12"5.88 | | | | | | | | | | | |
| TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016 | | | | | | | | | | | |

## SAMPLING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | | | |
| COMMENTS | | | | | | | | | | | |
| PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump | | | | | | | | | | | |
| TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon | | | | | | | | | | | |
| Reviewed By: | | | | | | | Date: | | | | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | N12- 21 | Sample ID | 50 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1052 | | | | | 4.9 | 22.3 | 304.1 | 1.91 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | N12-27 | Sample ID | N 12/10/10 45 51 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1104 | | | | | 5.0 | 21.4 | 331.6 | 2.45 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | SAMPLER(S) SIGNATURES: | | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 2 P. 010 - 12 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | 52 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0945 | | | | | 4.3 | 21.1 | 186.4 | 1.31 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | DP 010-18 | Sample ID | 53 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0958 | | | | | 4.8 | 22.2 | 298.4 | 0.77 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | DP 01a 24 | Sample ID | 54 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1014 | | | | | 4.2 | 21.8 | 182.2 | 0.44 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | ~~Q15-15~~ 12/9/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | Q15-15 | Sample ID | 55 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-_____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0853 | | | | | 4.7 | 20.7 | 702.4 | 2.31 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 0853 | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | Q15-21 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | 56 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-_____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0905 | | | | | 5.0 | 22.6 | 323.6 | 1.44 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | Q15 24 | Sample ID | 57 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0923 | | | | | 5.1 | 21.5 | 324.0 | 0.94 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 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"=1.47, 12"5.88 | | | | | | | | | | | |
| TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016 | | | | | | | | | | | |

## SAMPLING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | | | |
| COMMENTS | | | | | | | | | | | |
| PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump | | | | | | | | | | | |
| TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon | | | | | | | | | | | |
| Reviewed By: | | | | | | | Date: | | | | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | MW 12/10/10 | Contact: | |
| | | | | Phone: | |
| Date Sampled | 6-12-18 | SAL Project # | ~~3007~~ 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | 58 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 6.03 | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | 28.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | 0.43 | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 0825 | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| | 0.50 | 0.50 | | | 5.4 | 27.2 | 2898 | 0.78 | | | |
| | 0.50 | 1.0 | | | 5.4 | 27.2 | 2901 | 0.77 | | | |
| 0830 | 0.50 | 1.50 | | | 5.6 | 27.2 | 2916 | 0.70 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:



Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | -68 | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007-59 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | STE - Ex. Pump Tank | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 9:55 | | | | | 7.33 | 19.9 | 1273 | 0.10 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joseph Hart | | | | SAMPLER(S) SIGNATURES: | Joseph Hart | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | (Y) N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007-60 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | Field Blank - DI | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED |
| INST. ID | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7:53 | | | | | 5.71 | 12.1 | 1.49 | 9.44 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Joselin Hirst | | | | | SAMPLER(S) SIGNATURES: | Joselin Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007-61 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | | Sample ID | Field Blank - TAP | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 8:00 | | | | | 6.97 | 9.6 | 445 | 11.07 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | Jordan Hirst | | | | | SAMPLER(S) SIGNATURES: | Jordan Hirst | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | Equip. Rinsate | Sample ID | 62 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0942 | | | | | 7.2 | 11.9 | 13.2 | 231 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | Jay Ward | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | Clear | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | DP-F15-20 | Sample ID | 64 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-____ | SAL-SAM-0____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0720 | | 1.50 | | | 4.4 | 22.1 | 649 | 0.62 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | Zay Ward | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | DP 612-15 D | Sample ID | 66 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0_____ | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0938 | | | | | 4.7 | 22.3 | 508 | 0.89 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | Jay Wu | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | Clear | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | J12-20D | Sample ID | X 67 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-____ | SAL-SAM - 65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1244 | | | | | 5.0 | 22.9 | 342.9 | 1.13 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | SAMPLER(S) SIGNATURES: | | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/11 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ04-BKG 9 | Sample ID | 69 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 7.21 | PURGE PUMP CODE: PP GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.10 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0840 | 0.50 | | | 7.27 | 5.3 | 21.6 | 72.9 | 1.10 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 0840 | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ 24- BKG 24 | Sample ID | 70 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 2.0 | WELL CAPACITY (gal/ft) | 0.1628 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 10.11 | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | 24.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | 2.58 | 1/4 WELL VOLUME | 0.64 | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 0803 | PURGE TIME END | | TOTAL PURGED | | |
| INST. ID | | | | SAL-SAM-63-____ | SAL-SAM - 65-_____ | SAL-SAM-63-_____ | SAL-SAM-55-__ | SAL-SAM-0____ | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0814 | 2.75 | 2.75 | 0.25 | 10.17 | 5.2 | 24.0 | 293.9 | 1.12 | | | |
| 0817 | 0.75 | 3.50 | " | 10.17 | 5.1 | 24.1 | 295.1 | 0.72 | | | |
| 0820 | 0.75 | 4.25 | " | 10.17 | 5.1 | 24.1 | 295.2 | 0.70 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 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"=1.47, 12"5.88 | | | | | | | | | | | |
| TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016 | | | | | | | | | | | |

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | | SAMPLER(S) SIGNATURES: | | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | 0821 | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |
| PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump | | | | | | | | | |
| TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon | | | | | | | | | |
| Reviewed By: | | | | | | Date: | | | |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazan and Sawyer | Location: | | Contact: | |
| | | | | Phone: | |
| Date Sampled | 12/10/10 | SAL Project # | 1003007 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ17-115-26 | Sample ID | 71 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK To UNK | Static Depth to Water (Feet) | 9.04 | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | 26.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.33 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 1.01 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 0905 | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0909 | 0.40 | 0.40 | 0.10 | 9.06 | 5.7 | 22.1 | 290.1 | 0.88 | | | |
| 0912 | 0.40 | 0.80 | " | 9.05 | 5.7 | 22.1 | 292.4 | 0.60 | | | |
| 0916 | 0.40 | 1.20 | " | 9.05 | 5.7 | 22.1 | 294.1 | 0.52 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | | | SAMPLER(S) SIGNATURES: | Zay Wo | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 0917 | SAMPLING ENDED | | FIELD CLEANED | Y (N) | CLEANING STEPS | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | Clear | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

FLORIDA DEPARTMENT OF HEALTH

# Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task C.22

## GCREC Mound Data Summary Report No. 2

## Progress Report

June 2011

4423-001


HAZEN AND SAWYER
Environmental Engineers & Scientists

In association with

SCHOOL OF MINES 1874 COLORADO

AET
Applied Environmental Technology

OTIS ENVIRONMENTAL CONSULTANTS, LLC

# Florida Onsite Sewage Nitrogen Reduction Strategies Study

## TASK C.22
## PROGRESS REPORT

## GCREC Mound
## Data Summary Report No. 2

**Prepared for:**

Florida Department of Health
Division of Environmental Health
Bureau of Onsite Sewage Programs
4042 Bald Cypress Way Bin #A-08
Tallahassee, FL 32399-1713

FDOH Contract CORCL

**June 2011**

**Prepared by:**

HAZEN AND SAWYER
Environmental Engineers & Scientists

In Association With:

SCHOOL OF MINES
1874
COLORADO

# GCREC Mound Monitoring
# Data Summary Report No. 2

## 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 data summary report documents data that was collected from the second GCREC mound monitoring and sampling event which was conducted March 29, 2011 through April 1, 2011 and April 4, 2011. The sample event report was submitted as Sample Event Report No. 2, April 2011, as deliverable under Task C.21. 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 in 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. Wastewater from the GCREC research offices and onsite dormitories flow to an existing

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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 $ft^2$ of infiltrative area (design hydraulic loading rate of 0.65 $gpd/ft^2$) with each half of the drainfield receiving alternating doses.

## 3.2 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 A 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 B provides summary tables of the average monthly recorded meteorological data.

**Table 1**
**Meteorological Data Daily Averages Measured March 26, 2011 – April 5, 2011**

| 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) |
|---|---|---|---|---|---|---|---|---|
| March 26, 2011 | 69.49 | 70.52 | 71.53 | 59.89 | 76 | 0.00 | 4.77 | 0.13 |
| March 27, 2011 | 73.02 | 73.86 | 71.73 | 62.09 | 74 | 0.00 | 7.26 | 0.15 |
| March 28, 2011 | 67.36 | 67.62 | 71.14 | 64.41 | 91 | 1.82 | 9.42 | 0.06 |
| March 29, 2011 | 70.74 | 70.66 | 70.23 | 64.36 | 83 | 0.00 | 5.99 | 0.12 |
| March 30, 2011 | 73.54 | 73.21 | 71.81 | 67.05 | 83 | 0.51 | 11.20 | 0.14 |
| March 31, 2011 | 67.68 | 68.11 | 69.88 | 64.39 | 90 | 2.95 | 11.14 | 0.05 |
| April 1, 2011 | 67.29 | 67.53 | 69.33 | 55.71 | 71 | 0.01 | 6.36 | 0.14 |
| April 2, 2011 | 67.08 | 68.19 | 69.22 | 54.35 | 69 | 0.00 | 4.77 | 0.15 |
| April 3, 2011 | 70.09 | 70.36 | 69.75 | 58.16 | 71 | 0.00 | 7.87 | 0.16 |
| April 4, 2011 | 75.19 | 74.87 | 71.37 | 65.41 | 76 | 0.02 | 9.41 | 0.17 |
| April 5, 2011 | 65.4 | 65.85 | 70.88 | 61.49 | 88 | 0.78 | 7.75 | 0.09 |

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## 3.3 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 ¾-in., 1¼-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 ¾-in. diameter PVC standpipe piezometer. A complete list of all installed drive points and standpipe piezometers are included in Appendix C.

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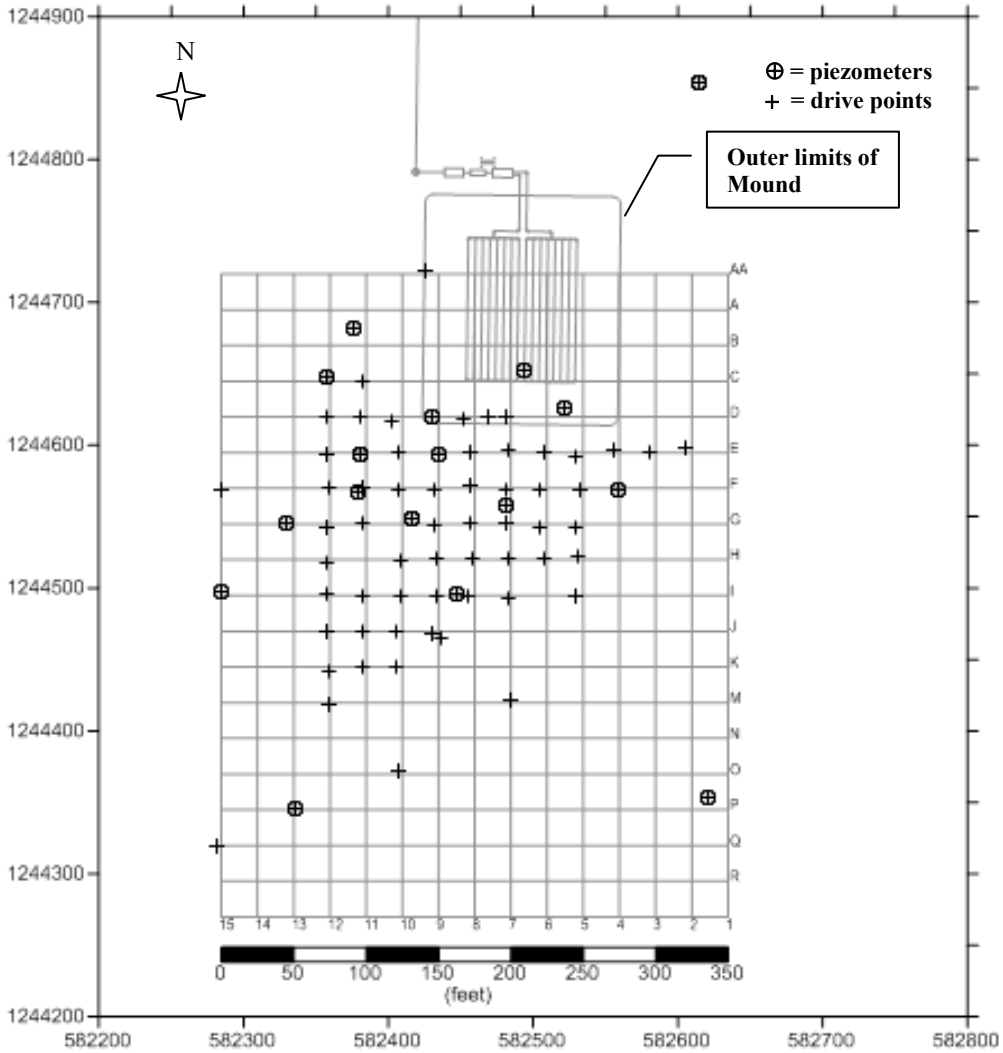


**Figure 1**
**Schematic of GCREC Monitoring Network (UTM coordinates are used)**
**⊕ denotes piezometers and + denotes drive points**

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

**Figure 3**
**Installed ¾" Diameter PVC Standpipe Piezometer**

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## 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. Groundwater elevations were monitored daily in March and April, 2011 during a time of heavy precipitation.

## 3.6 Water Quality Sample Collection and Analyses

Groundwater and septic tank effluent (STE) were collected March 29, 2011 through April 1, 2011 and April 4, 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 supplied by the laboratory.

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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; a second field blank was collected by filling a sample container with the tap water used for rinsing. 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 flow-cell device as groundwater was being pumped. All samples were analyzed by the laboratory for total alkalinity, total Kjeldahl nitrogen (TKN-N), ammonia nitrogen ($NH_3$-N), and nitrate/nitrite nitrogen ($NO_X$-N). Additionally, at some of the locations with elevated conductivity in previous preliminary sampling, 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.

**Table 2**
**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 |
| Total Kjeldahl Nitrogen (TKN-N) | EPA351.2 | 0.05 mg/L |
| Ammonia Nitrogen ($NH_3$-N) | EPA350.1 | 0.01 mg/L |
| Nitrate/Nitrite Nitrogen ($NO_X$-N) | EPA353.2 | 0.01 mg/L |
| Total Organic Carbon (TOC) | SM 5310B | 0.5 mg/L |
| Dissolved Organic Carbon (DOC) | SM 5310B | 1.0 mg/L |

## 3.7 Data Management and Graphing

To allow for a better visualization of the data collected at the site the mapping program **Surfer** was utilized. **Surfer** is a grid-based mapping program that interpolates irregularly spaced XYZ data into a regularly spaced grid. Although there are several methods used in **Surfer** to fill in areas where data is missing, the Kriging method was used as the output gave the most informative graphs. Of note, it is important to realize that the output is based on the program interpolation between known data points, and thus should not be assumed to illustrate reality, but instead an approximation. Furthermore, because **Surfer** cannot project a 3-dimensional view of concentrations with depth, the concentrations of NOx-N from the different sampling locations were compiled into horizontal “slices” of

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similar depth and then plotted as a planar view, thus allowing the different “slices” to be compared.

# 4.0 Results

## 4.1 Soil Characteristics

During the instrumentation of the mound, continuous 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 results of the analysis are presented in Table 3. Although the four shallow soil cores (CD6.5, E9, F4, and near A9) show some variability in soil over the site, a general soil profile trend is present. The top few inches at the site are typically a darker, slightly brown or red fine, silty soil, followed by a light-colored, grey and/or pale yellow fine sand. Mottling is commonly visible 4-5 feet below the ground surface. The continuous soil core from G10 shows the spodic layer (black fine sand with a coffee-like texture). The spodic layer is approximately 3.3 feet thick at that location, and the soil below the spodic layer is a light or yellowish brown, fine to medium sand (Table 3). Similar observations were made during the November drilling event. The Hawthorne clay is considered a confining layer at the site and lies approximately 27 to 30 feet below the ground surface. Of note, in the previous report C22 No.1, a picture was included illustrating the soil profile at G10. It has been removed as an error in the soil profile description was discovered.

During the installation of the shallow drive points in the summer of 2010, the top elevations of the spodic layer was determined at several locations as the installation was done primarily with handheld methods. Efforts were made to determine the elevation and thickness of the spodic layer during the November drilling event; however, this proved to be quite difficult as it was near impossible for the drill operators to “feel” when the auger first hit the hard layer and second when it broke through it; hence the depth and thickness of the spodic layer at the new well locations was estimated at that time to be approximately 6 feet below the ground surface with a thickness of approximately 5.5 to 8.5 feet. After the November drilling event, handheld methods were used to better determine the actual elevation of the spodic layer at several additional sites. Table 4 summarizes the locations at which the top elevation of the spodic layer was determined by handheld methods. At all other locations, this elevation was estimated. Figure 4 illustrates a **Surfer** plot of the top elevation of the spodic layer at the site based on both actual and estimated elevations, while Figure 5 illustrates the same but using only elevations verified by handheld methods. Although variations are present, the general trend follows that of the ground surface and that of the groundwater.

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**Table 3**
**June 2010 Small Direct Push Rig (6620 Geoprobe™)**
**Soil Core Descriptions**

| Grid Location | Identifier | Surface Elevation (ft) | Depth bgs (ft) | Description |
|---|---|---|---|---|
| CD6.5 | PZ10-CD6-13 | 129.51 | 0-0.4’ | Grass/fill |
| | | | 0.4-0.9’ | Gray fine sand with yellow and white mottles |
| | | | 0.9-6.6’ | Uniform yellow fine grain sand |
| | | | 6.5’ | Saturation |
| | | | 6.6-6.7’ | Dark brown (10YR 3/3) fine sand |
| | | | 6.7-10.7’ | Light gray (5Y 7/2) fine sand |
| | | | 10.7-11.5’ | Dark brown (10YR 3/3) fine sand |
| | | | 11.5-12.3’ | Yellow (5Y 7/6) fine sand |
| | | | 12.3-13.45’ | Light gray (5Y 7/2) fine sand |
| | | | 13.45-16.1’ | Spodic horizon, dark brown (7.5YR 3/3) fine sand |
| | | | 16.1-17.4’ | Brown (7.5YR 4/4) fine sand |
| E9 | PZ11-E09-10 | 124.06 | 0-2.2’ | A Horizon top soil |
| | | | 2.2-2.7’ | Pale yellow (5Y 7/3) fine sand with mottles |
| | | | 2.7-5.8’ | Yellowish brown (10YR 5/4) fine sand |
| | | | 5.8-6.9’ | Very dark brown (7.5YR 2.5/3) fine sand |
| | | | 6.1’ | Saturation |
| | | | 6.9-10.3’ | Medium brown (10YR 5/3) fine sand |
| | | | 10.3-15’ | Spodic horizon, black (10YR 2/1) fine sand |
| F4 | PZ13-F04-8 | 124.42 | 0-4.2’ | A Horizon top soil |
| | | | 4.2-4.7’ | Pale yellow (5Y 8/4) fine sand with mottles |
| | | | 4.7-13.5’ | Spodic horizon, dark brown sand |
| | | | 6.3’ | Saturation |
| Westside of Mound Near A9 | | ~129 | 0-7.4’ | Mound sand with some mottles |
| | | | 7.4-8.4’ | Dark oxidized sand |
| | | | 8.4’ | Saturation |
| | | | 8.4-9.4’ | Saturated very pale brown fine sand |
| | | | 9.4-10’ | Spodic horizon, dark brown fine sand |
| | | | 10-12’ | Dark yellowish brown (10YR 4/6) fine sand |
| | | | 12-15’ | Dark brown fine sand |

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**Table 3 (cont.)**
**June 2010 Small Direct Push Rig (6620 Geoprobe™)**
**Soil Core Descriptions**

| Grid Location | Identifier | Surface Elevation (ft) | Depth bgs (ft) | Description |
|---|---|---|---|---|
| G10 | PZ12 Abandoned | 123.55 | 0-1.2’ | A Horizon top soil |
| | | | 1.2-2.8’ | White (10YR 8/2) fine sand |
| | | | 2.8-6.1’ | Spodic horizon, black fine sand |
| | | | 6.1-9’ | Brown (10YR 4/3) fine sand |
| | | | 9’ | Saturation |
| | | | 9-10.1’ | Gray (5Y 5/1) fine sand with black mottles |
| | | | 10.1-13.9’ | Black (5Y 2.5/1) fine sand |
| | | | 13.9-16.6’ | Light yellowish brown (10YR 6/4) uniform fine sand |
| | | | 16.6-19’ | Medium sand poorly sorted, well rounded (3mm diameter) with mottles |
| | | | 19-23’ | Pale brown (10YR 6/3) uniform fine sand |
| | | | 23-27.5’ | Very pale brown (10YR 7/3) very fine sand |
| | | | 27.5-27.9’ | Poorly sorted coarse sand |
| | | | 27.9-30.0’ | Greenish gray (Gley1 6/5GY) clay, Hawthorn confining layer |

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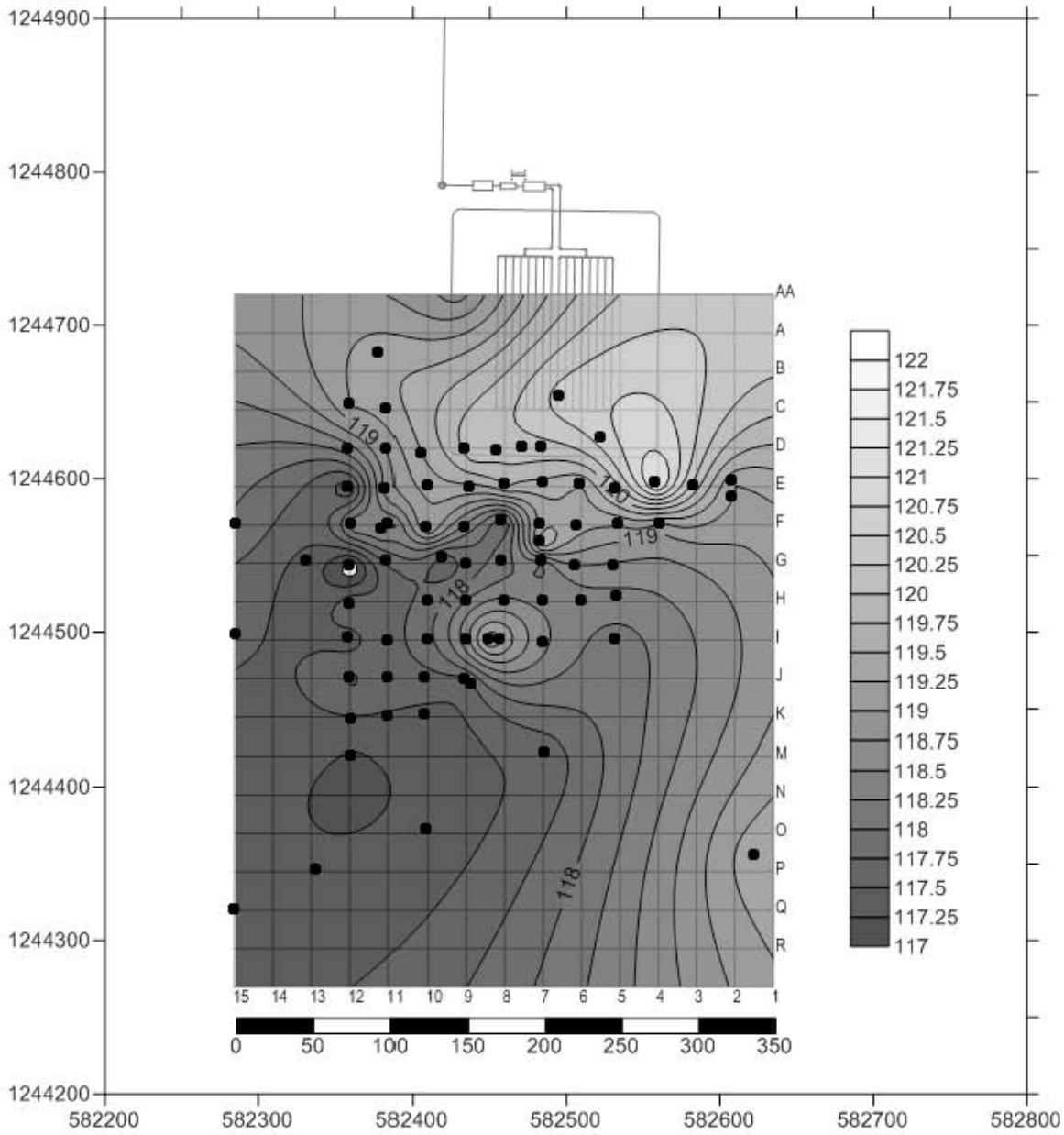


**Figure 4**

**Surfer plot illustrating the top elevation of the spodic layer based on both verified elevations and estimated elevations. The dots represent the locations used for the graph.**

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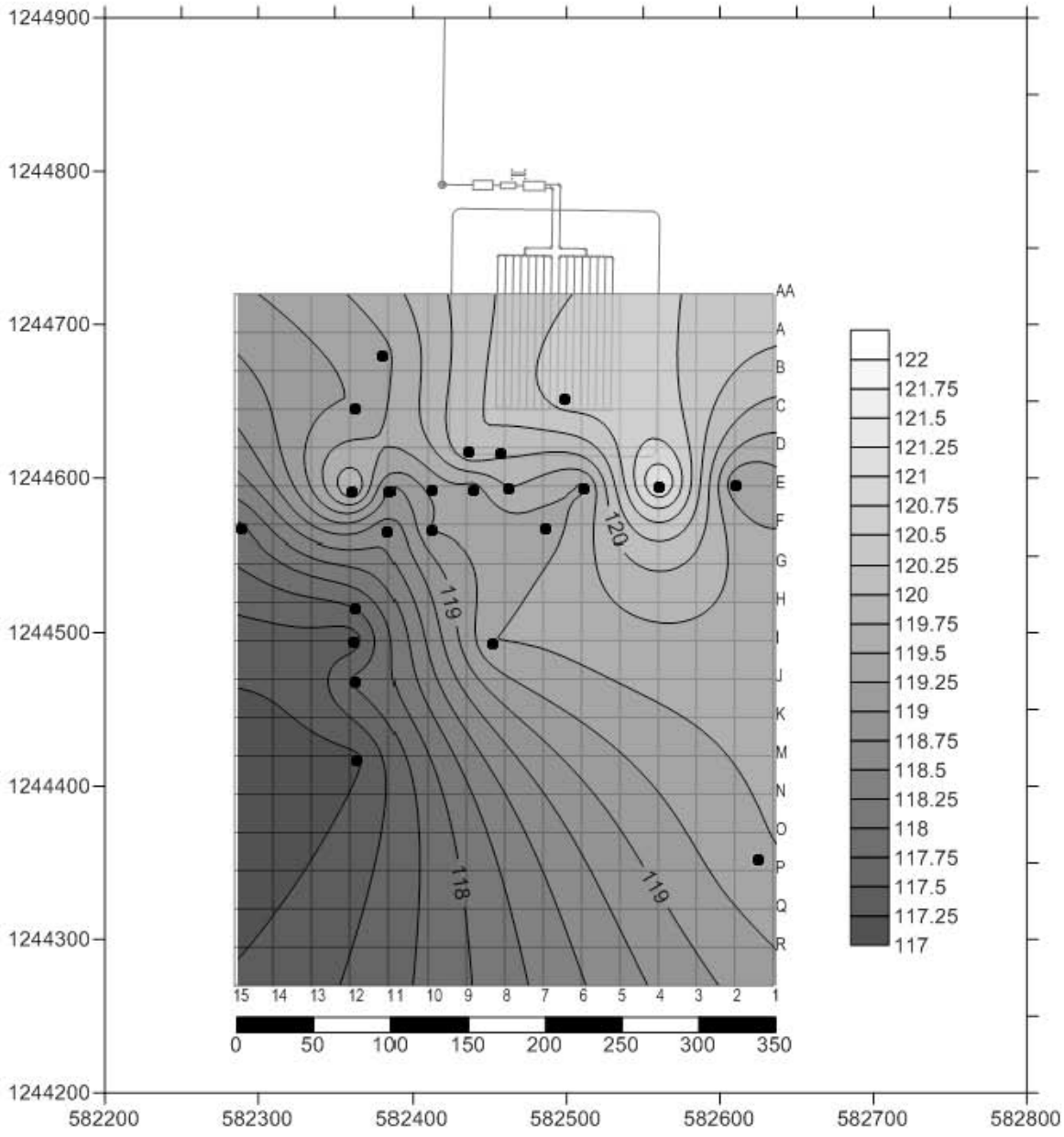


**Figure 5**

**Surfer plot illustrating the top elevation of the spodic layer as verified by hand methods. The dots represent the locations where the elevations were measured.**

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**Table 4**
**The Top Elevation of the Spodic Layer as Determined by Hand Methods**

| Location | Elevation | Location | Elevation |
|---|---|---|---|
| D8 | 120.06 | PZ01-BKG | 123.37 |
| D9 | 120.08 | PZ02-PQ1.75 | 119.46 |
| E2 | 119.26 | PZ03-H11 | 118.54 |
| E4 | 121.35 | PZ04-BKG | 120.62 |
| E6 | 119.46 | PZ05-BKG | 121.34 |
| E8 | 119.77 | PZ06-BKG | 125.50 |
| E10 | 119.34 | PZ09-I8 | 119.50 |
| F3 | 120.06 | PZ10-CD6 | 120.62 |
| F7 | 119.41 | PZ11-E9 | 119.40 |
| F10 | 119.27 | PZ15-A11 | 119.42 |
| F15 | 117.96 | PZ16-C12 | 119.26 |
| H12 | 117.77 | PZ21-E11 | 118.91 |
| I12 | 117.38 | PZ25-A6.5 | 120.13 |
| J12 | 117.80 | | |
| N12 | 117.20 | | |

## 4.2 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. Figures 6 through 9 illustrate the surficial groundwater contours as measured within the standpipe piezometers on four dates (December 9, 2010, February 21, 2011, April 1, 2011 and April 6, 2011). Table 5 shows the actual measured water levels. Based on the output illustrated in these plots the direction of flow is estimated at 220 degrees to true north, and the gradient is estimated to range from 0.0066 to 0.0094. Clearly variations in gradient are apparent in Figure 6 through 9; however it is not clear if those variations are due to an anomaly in measurement or an artifact of using **Surfer**. A summary of all recorded groundwater elevations taken at the standpipe piezometers within the grid is presented in Appendix D.

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**Table 5**
**Standpipe Piezometer Groundwater Level Measured**

| Identification | Location | Water Table Elevation (ft) | | | |
|---|---|---|---|---|---|
| | | Dec 9, 2010 | Feb 21, 2011 | April 1, 2011 | April 6, 2011 |
| PZ01-BKG-9 | PZ-1 | 122.97 | 123.66 | 124.62 | 124.73 |
| PZ02-PQ1.75-9 | PZ-2 | 118.52 | 119.62 | 120.37 | 119.90 |
| PZ03-H11-6 | PZ-3 | 119.21 | 120.01 | 121.24 | 120.79 |
| PZ04-BKG-9 | PZ-4 | 121.76 | 122.33 | 120.73 | 123.67 |
| PZ05-BKG-9 | PZ-5 | 121.53 | 122.27 | 123.32 | 123.17 |
| PZ06-BKG-12 | PZ-6 | 122.09 | 123.05 | 125.33 | |
| PZ07-D5-7 | PZ-7 | 120.22 | 120.98 | 122.63 | 122.17 |
| PZ08-FG7-6 | PZ-8 | 119.65 | 120.45 | 121.98 | 121.49 |
| PZ09-I8-5 | PZ-9 | 119.15 | 120.03 | 121.39 | 120.86 |
| PZ10-CD6-13 | PZ-10 | 120.37 | 121.10 | 122.92 | 122.36 |
| PZ11-E9-10 | PZ-11 | 119.57 | 120.44 | 121.91 | 121.48 |
| PZ12-G10 | abandoned | | | | |
| PZ13-F4-8 | PZ-13 | 120.16 | 120.95 | 122.45 | 122.06 |
| PZ14-G13-7 | PZ-14 | 118.72 | 119.44 | 120.28 | 120.08 |
| PZ15-A11-6 | PZ-15 | 119.77 | 120.40 | 121.96 | 121.56 |
| PZ16-C12-28 | PZ-16 | 119.37 | 120.03 | 121.36 | 121.04 |
| PZ17-I15-26 | PZ-17 | 118.26 | 119.06 | 120.10 | 119.78 |
| PZ18-R12-26 | PZ-18 | 118.22 | 119.44 | 119.99 | 119.55 |
| PZ19-G10-26 | PZ-19 | 119.18 | 119.97 | 121.35 | 120.88 |
| PZ20-G10-15 | PZ-20 | 119.17 | 119.98 | 121.37 | 120.89 |
| PZ21-E11-26 | PZ-21 | 119.22 | 119.96 | 121.27 | 120.89 |
| PZ22-E11-15 | PZ-22 | 119.21 | 119.94 | 121.28 | 120.88 |
| PZ23-D9-27 | PZ-23 | 119.64 | 120.37 | 121.90 | 121.46 |
| PZ24-BKG-26 | PZ-24 | 121.46 | 122.01 | 126.30 | 123.36 |
| PZ25-A6.5 | PZ-25 | | 121.28 | 123.08 | 122.62 |
| PZ26-EF2 | PZ-26 | | | | 123.89 |

Note: If blank – no data was collected

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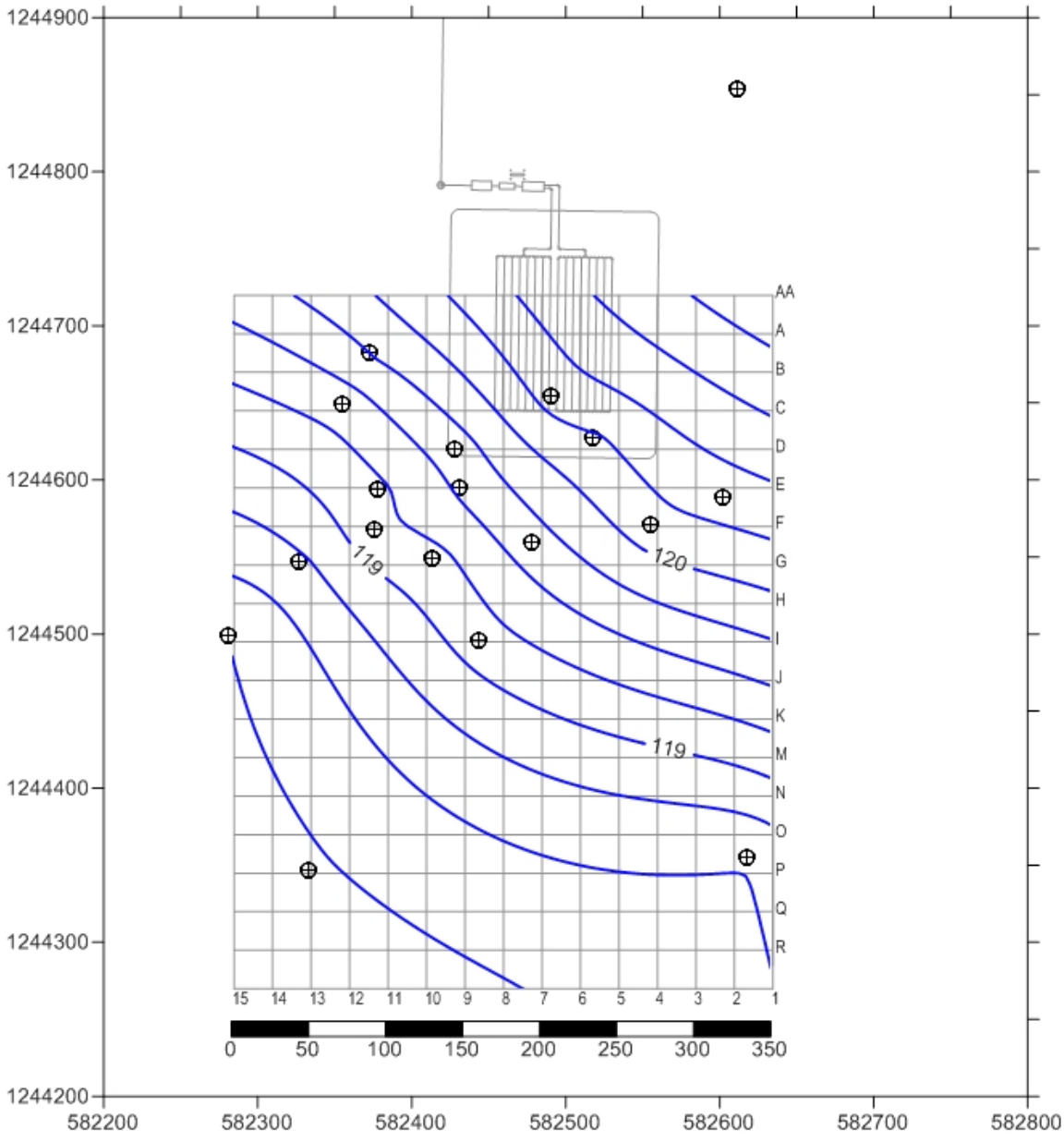


**Figure 6**
**Surficial Groundwater Contours on December 9, 2010**

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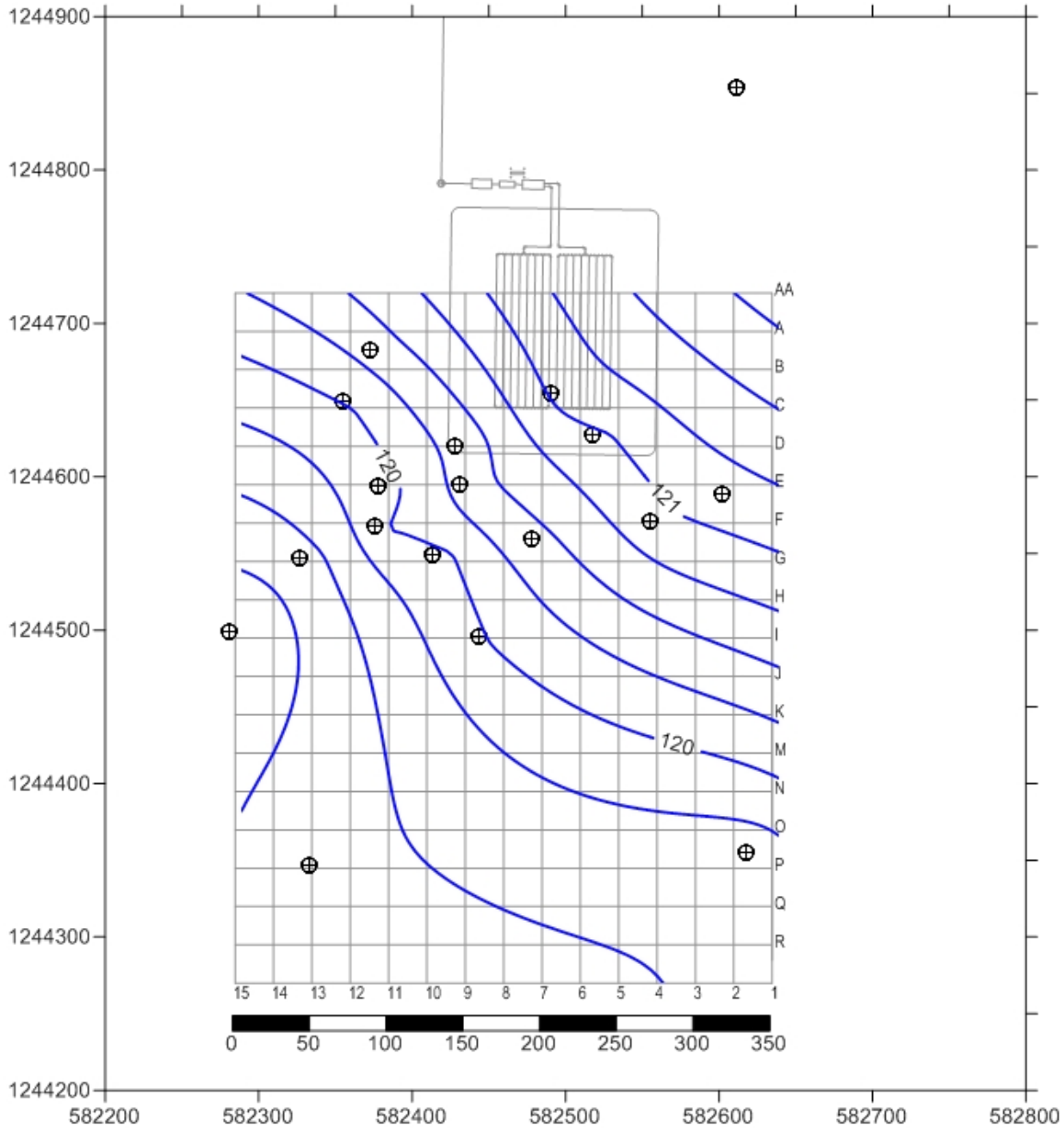


**Figure 7**
**Surficial Groundwater Contours on February 21, 2011**

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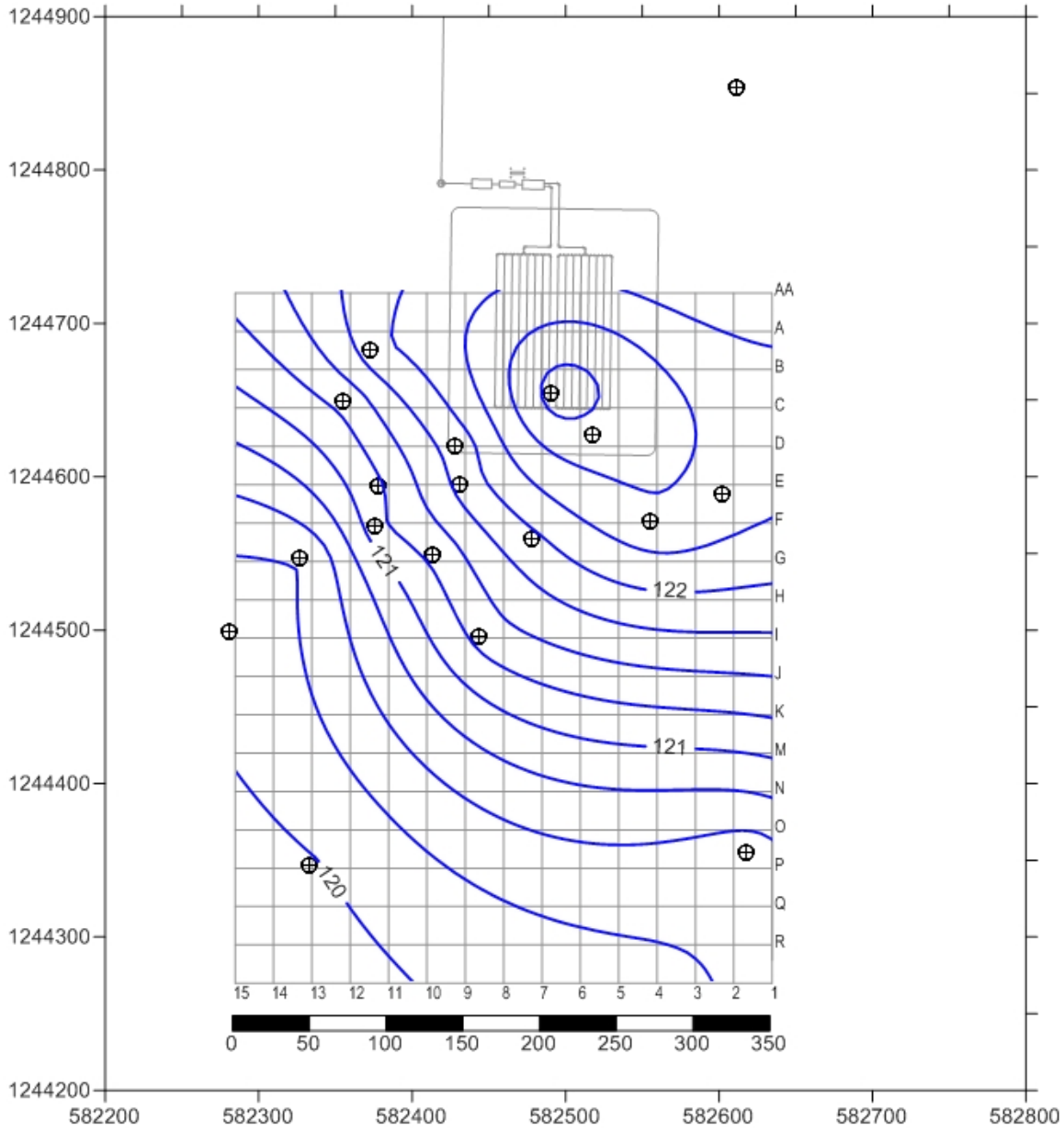


**Figure 8**
**Surficial Groundwater Contours on April 1, 2011**

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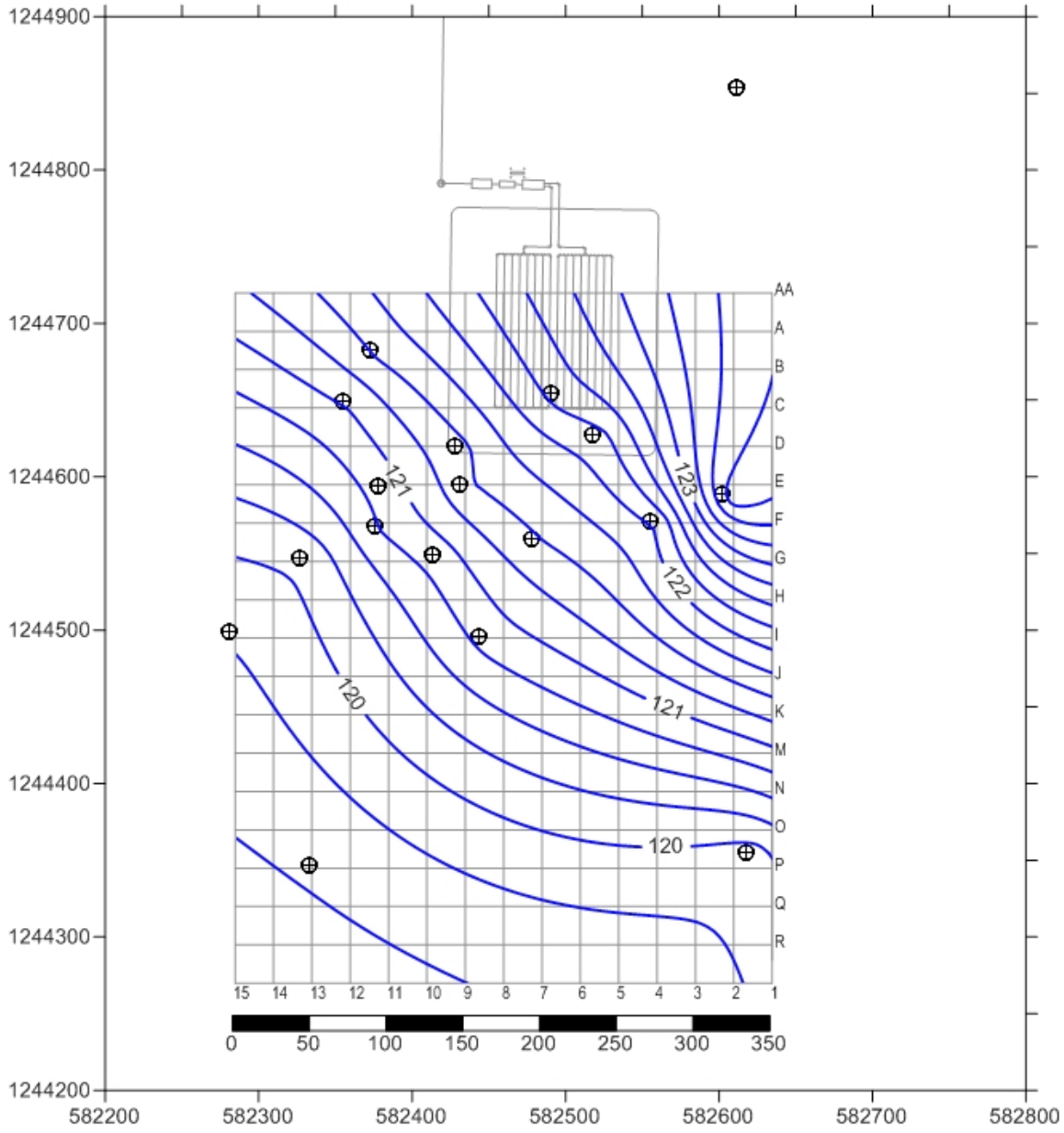


**Figure 9**
**Surficial Groundwater Contours on April 6, 2011**

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The linear velocity ($v$) of the groundwater can be estimated using Darcy's law as follows:

$$v = \frac{K * gradient}{n_e}$$

where $K$ is the hydraulic conductivity, and $n_e$ is the effective porosity. If one assumes that $K$ for fine sand is approximately 33 ft/day and $n_e$ for fine sand is 0.33, then the linear velocity would range from 0.66 to 0.94 ft/day. The results of the tracer test will elucidate this further.

## 4.3 Water Quality Analyses

### 4.3.1 Field Parameters

Field parameters (temperature, pH, dissolved oxygen (DO), and specific conductivity) were measured at all the sampling locations during the March 2011 sampling event. Clearly variations were expected as the chemical composition of the groundwater varies due to the discharge of STE. However, similar to the results from the December sampling event, these variations were not large. In fact the temperature was found to range from 19.4 to 28.9 but the inter-quartile range (IQR) was between 21.9 to 23.9, pH varied from 4.3 to 7.6 with an IQR from 5.0 to 5.6, DO varied from 0.2 to 10.9 with an IQR from 0.8 to 2.2, and finally the conductivity varied from 59 to 295 with an IQR from 182 to 351 (Table 6). We don't expect large variations in field parameters at any one monitoring event; however slight seasonal variations may occur. Temperature does play a role in both the magnitude of nitrification and denitrification; however, the potential seasonal variations at the site are not expected to be significant enough for measurable rate changes. Furthermore, although slight variation in pH may occur, the bacteria responsible for denitrification are not highly sensitive to pH fluctuations, and while near neutral pH may be optimal for denitrification; research has shown that low pH levels have little to no impact on the process. Although high levels of DO may inhibit denitrification, the concentrations of DO seen at the site are only slightly above the limiting level of 1 mg/L, and thus little effect is expected. Instead, further analysis of the field parameters may provide additional information regarding plume extent. The complete field parameter data set is included in Appendix E.

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**Table 6**
**Field Parameters**

| | Dec 9, 2010 | | March 29 - April 4, 2011 | |
|---|---|---|---|---|
| **Field Parameters** | **Range** | **IQR** | **Range** | **IQR** |
| Temperature (°C) | 20.7 - 27.6 | 21.8 - 22.7 | 19.4 - 28.9 | 21.9 - 23.9 |
| pH | 4.2 - 5.7 | 4.8 - 5.0 | 4.3 - 7.6 | 5.0 - 5.6 |
| DO (mg/L) | 0.4 - 3.3 | 0.8 - 1.4 | 0.2 - 10.9 | 0.8 - 2.2 |
| Specific conductance (µS) | 163 - 649 | 292 - 342 | 59 - 295 | 182 - 351 |

### 4.3.2 Correlations

Correlations between various field parameters and nitrogen concentration were conducted to determine if for example the NOX concentration could be estimated in the absence of actual field data. Such estimates can then provide insight into expected nitrogen removal or can be used to approximate a difficult to obtain parameter values. Based on the data collected to date, no strong correlations have been observed between different parameters with the exception of the relationship between specific conductance and the concentration of NOX. Figure 10 illustrates the correlation between specific conductance and the concentration of NOX based on the March data. Of note, the relationship is similar to that observed in December.

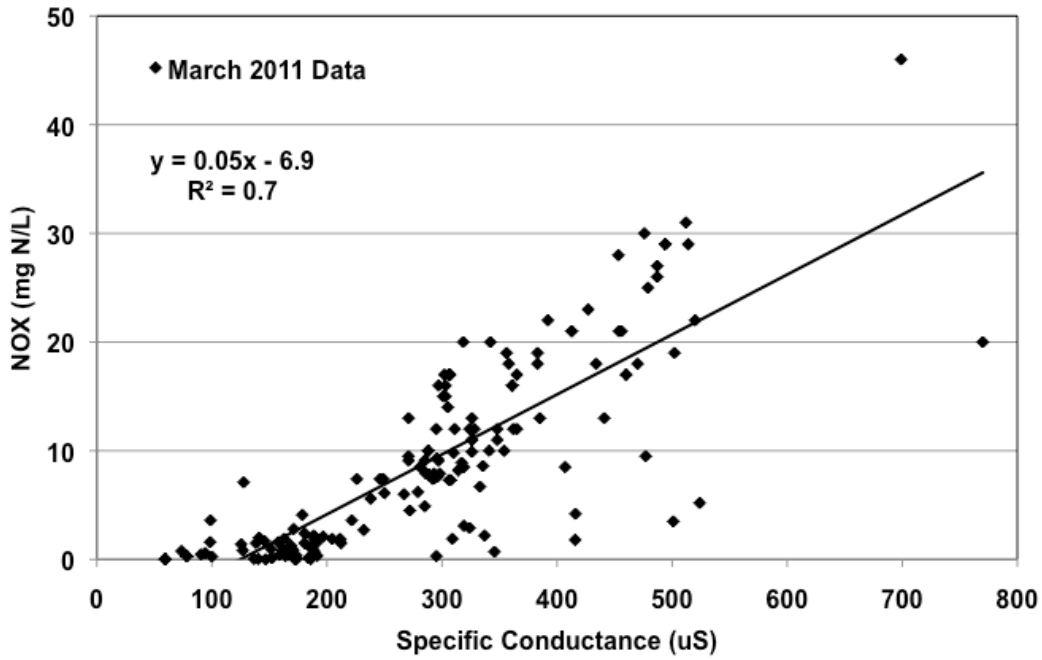


**Figure 10**
**Correlation Between the Specific Conductance (uS) and Concentrations of Nitrate/Nitrite (mg-N/L)**

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### 4.3.3 Analytical Parameters

In addition to measuring field parameters, all samples were analyzed for total alkalinity (as $CaCO_3$), total Kjeldahl nitrogen (TKN-N), ammonia nitrogen (NH3-N), and nitrate/nitrite nitrogen (NOX-N), and at some of the locations total organic carbon (TOC), dissolved organic carbon (DOC) and chemical oxygen demand (COD) were included. Initial analyses of these parameters suggest that low COD and low DOC concentrations correlate to higher levels of NOX. Additional analysis of the different nitrogen species and carbon content may elucidate nitrogen transformation within the plume. Although the March sampling event did give further insight into the existing nitrogen plume, it did not provide enough information to make any conclusive interpretations. Of note, elevated concentrations of NOX (12 mg-N/L in December and 9.1 mg-N/L in March) have been observed in PZ24-BKG-26, one of the background wells. We are still evaluating if this may lead to any potential interferences in plume delineation. The complete water quality analytical results for Sample Event No. 2 are listed in Table 1, Appendix E, and the statistical summary of the water quality is presented in Table 1, Appendix F. The laboratory report containing the raw analytical data is included in Appendix G.

### 4.3.4 Nitrate/Nitrite Concentrations with Depth

Although great care was taken to install the drive points at specific depths (e.g. 5, 7 and 9 feet below ground surface [bgs] in June of 2010, and 14, 21 and 27 feet bgs during the November drilling event), the reality is that the points are located at all different elevations from 92.85 feet to 120.82 feet. **Surfer** is an excellent tool for contour mapping; however, as it cannot project a 3-dimensional view of concentrations with depth it was deemed necessary to “lump” the concentrations of NOX from the different sampling locations into “slices” of similar depth and then graph allowing the different “slices” to be compared. With 121 drive points installed at different depths below the ground surface at 63 different locations outside of the mound, deciding on a logical way to separate the drive points into a few select “slices” that would represent a selection of elevation depths provided a challenge.

Samples were collected at 62 locations during the December sampling event. Based on the distribution of points with depth, four “slices” were chosen for the December data. The bottom three slices were separated into five-foot intervals, and the top group was divided into a ten-foot interval as that group comprises primarily drive points within the spodic layer. A **Surfer** schematic illustrating the “slices” of NOX concentration with depth from December 9, 2010 is presented in Figure 11. During the comprehensive sampling event in March 2011, samples were collected at all drive point locations. As a result of

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the additional data points, the data could be divided into five “slices” separated into five-foot intervals, as shown in Figure 12.

Similar to the results in December, the results from the March sampling event show that the NOX plume appears to be confined in a southwesterly direction from the center of the mound. The lowest concentrations are at the shallow depths, which coincide with the top of the spodic layer (or possibly above), although slightly elevated concentrations were present near the mound between D7 and D9 (Figure 12). The highest concentrations were found at 110-115 feet above sea level close to the mound from approximately D9 and north along the 9-transect, and at 105-110 feet above sea level further away from the mound near F11 (Figure 12). Similar results were observed during the December sampling event as well (Figure 11). Of note, one data point at AA9 was omitted when graphing as the extremely high concentration of NOX (46 mg-N/L) highly skewed the output in the **Surfer** plot.

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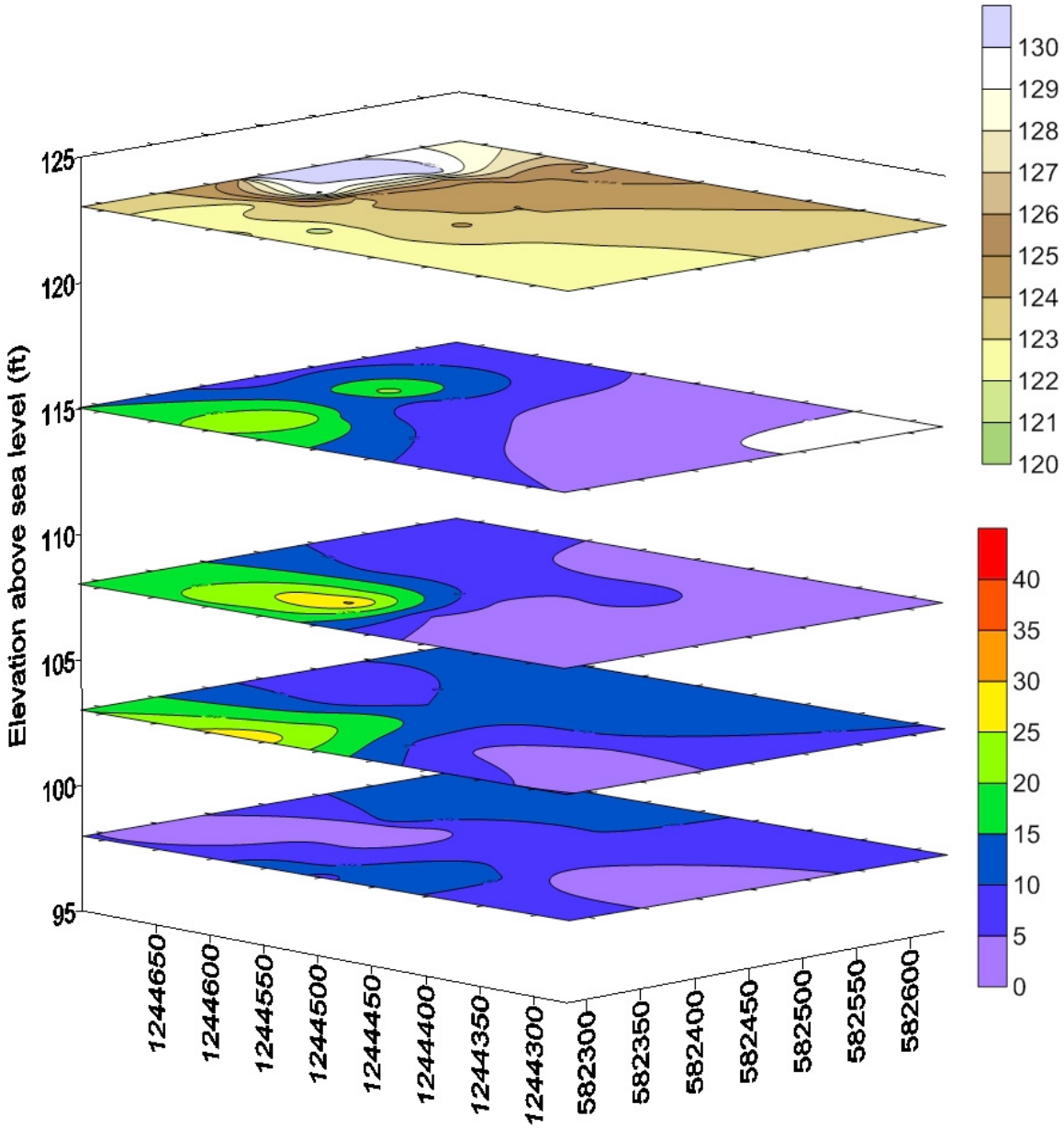


**Figure 11**

**A layered schematic (using Surfer) illustrating NOX concentrations in the subsurface at four different elevation intervals (based on the December 2010 sampling event). The top slice provides a contour map of the surface elevation. UTM coordinates are provided to correlate the schematic to Figure 1.**

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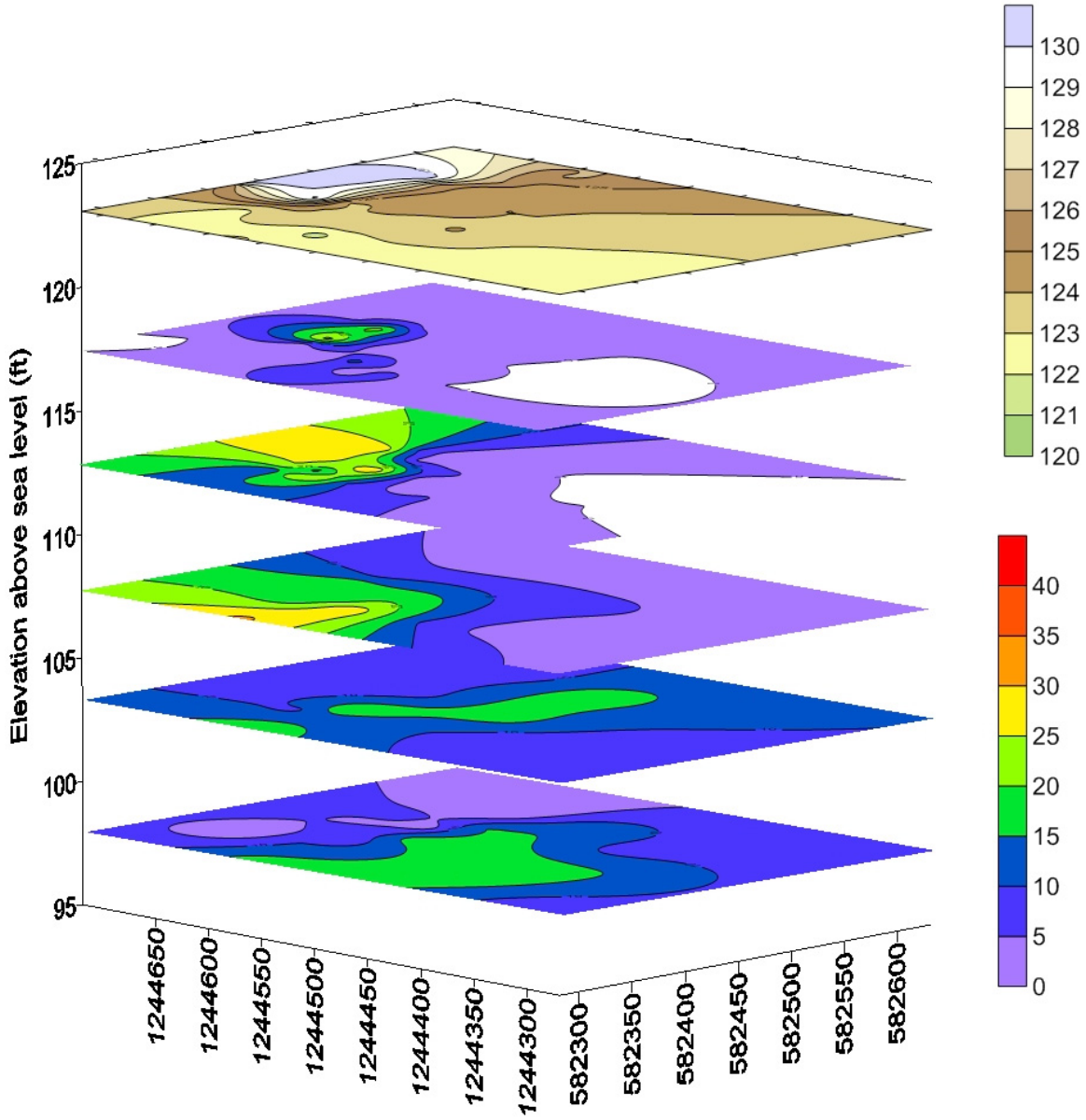


**Figure 12**

**A layered schematic (using Surfer) illustrating NOX concentrations in the subsurface at four different elevation intervals (based on the March 2011 sampling event). The top slice provides a contour map of the surface elevation. UTM coordinates are provided to correlate the schematic to Figure 1.**

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# 5.0 GCREC Data Summary Report No. 2: Summary and Recommendations

## 5.1 Summary

The results of the data collected to date has provided additional understanding of the extent of the spodic layer, has provided additional information to allow for estimations of groundwater flow, gradient and velocity, and provided additional insights into the general trend of the NOX plume. Results of Sample Event No. 2 indicate that:

- Although the groundwater levels fluctuates, the direction of flow remains constant at 220 degrees to true north.
- The groundwater gradient has been found to range from 0.0066 to 0.0094.
- Initial analysis suggests that the groundwater velocity range is from 0.66 to 0.94 ft/day.
- Additional verification of the elevation of the top of the spodic layer show that it follows the same trend as that of the groundwater.
- A good correlation has been established between specific conductance and concentrations of NOX ($R^2$=0.7).
- The nitrogen plume appears to be in a southwesterly direction with elevated concentrations in the spodic layer closer to the mound and higher elevations just below the spodic layer further away from the mound. The concentration is lowest just above the confining layer.
- Any potential interference from the elevated concentrations of NOX observed in PZ24 is still being evaluated.

## 5.2 Recommendations

The results of Sample Event No. 2 will be used to gain additional insights into the NOX plume and provide additional information needed for the development of the simple groundwater model in Task D. The project team will continuously evaluate all results including those that particularly result from implementation of the recommendations and make further adaptations as needed.

Following is a list with select recommendations:

- Additional analyses of field parameters will give a better understanding of if and how they may correlate to nitrogen reduction.
- Continuous groundwater level monitoring in combination with tracer tests, will provide information needed to determine the necessary parameters for model development.
- Comprehensive sampling at the site will provide additional information that is needed for plume identification and for nitrogen fate and transport determination.

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# Appendix A: GCREC Mound Wastewater Flow Data

**Table A.1**
**GCREC Mound Metered Wastewater Flow Data**

| Date Range | 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) |
|---|---|---|---|
| **Before A/C Condensate Diversion** | | | |
| 12/21/10 – 7/16/10 | 1,650 | 591 | 2,241 |
| **After A/C Condensate Diversion** | | | |
| 7/19/10 – 4/6/11 | 929 | 1,072 | 2,001 |

**Table A.2**
**Summary of Daily Wastewater Flows (PLC Recorded)**

| | Date Range | Average Recorded Flow (gpd) | Std. Dev. | MIN (gpd) | MAX (gpd) |
|---|---|---|---|---|---|
| **Before A/C Condensate Diversion** | | | | | |
| Pump 1 to Mound | 6/14/10 – 7/16/10 | 5,422 | 1,565 | 3,013 | 9,117 |
| Pump 2 to Mound | | - | - | - | - |
| Sum of Both Pumps | | 5,422 | 1,565 | 3,013 | 9,117 |
| **After A/C Condensate Diversion** | | | | | |
| Pump 1 to Mound | 7/16/10 – 4/6/11 | 927 | 491 | 146 | 3,216 |
| Pump 2 to Mound | | 1,076 | 516 | 0 | 3,090 |
| Sum of Both Pumps | | 2,003 | 924 | 584 | 5,730 |

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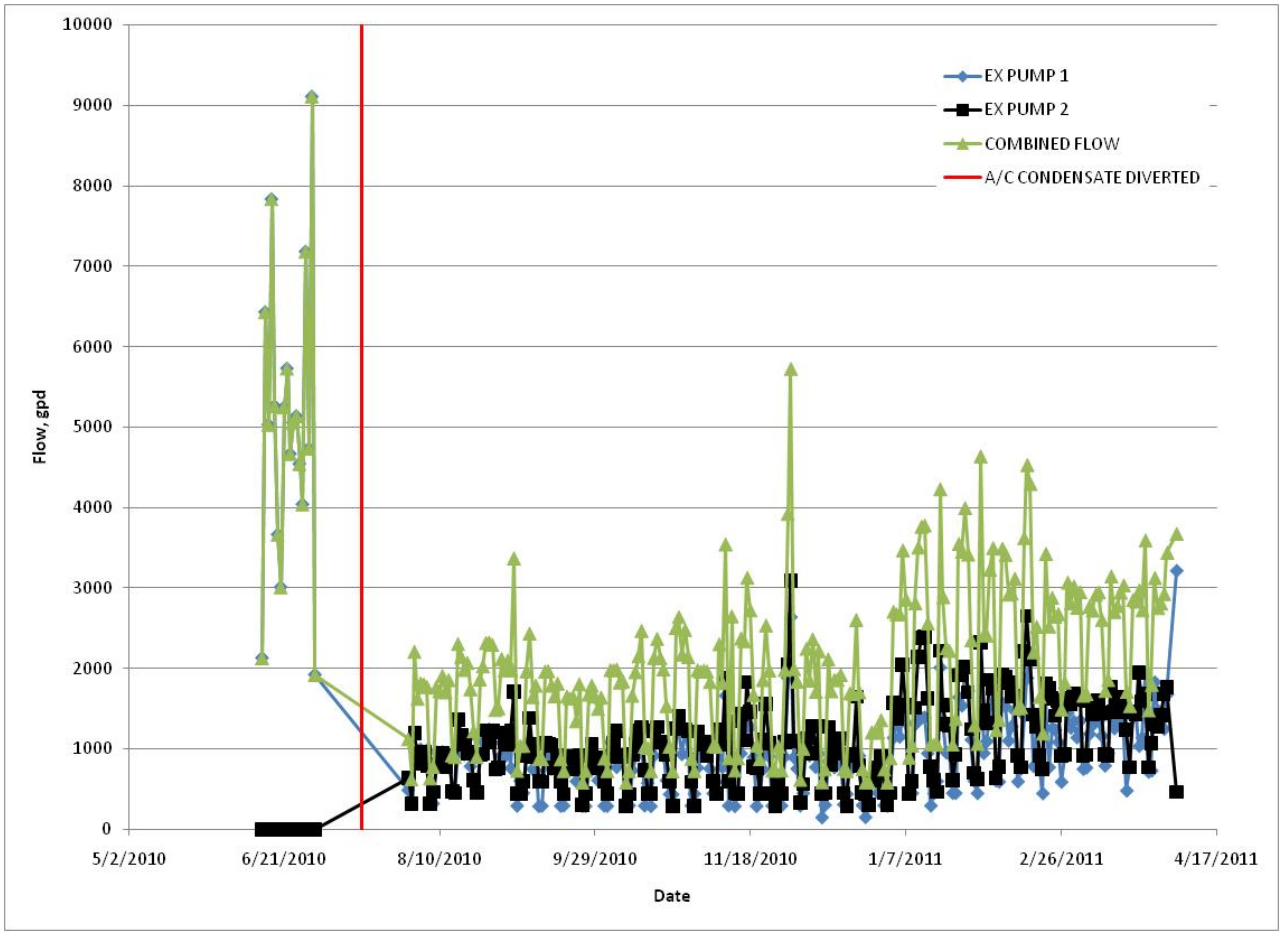


**Figure A.1**
**PLC Recorded Daily Wastewater Flows**
**(6/14/10 – 4/6/11)**

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# Appendix B: GCREC Weather Station Data

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## Table B.1
## Monthly Recorded Meteorological Data

| 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) | RelHum avg 2m (pct) | 2m Rain tot (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 |

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# Appendix C: Sample Identification

**Table C.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 |

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**Table C.1**
**GCREC Mound Sample Identification**

| | Grid Location | Sample Identification | Notes | Bottom Elevation (ft) |
|---|---|---|---|---|
| 29 | D10 | DP-D10-8 | SST Drive Point | 116.31 |
| 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 |

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**Table C.1**
**GCREC Mound Sample Identification**

| | Grid Location | Sample Identification | Notes | Bottom Elevation (ft) |
|---|---|---|---|---|
| 61 | FG7 | PZ08-FG7-6 | 1 1/4" Standpipe Piezometer, 4' screen | 118.25 |
| 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 |

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**Table C.1**
**GCREC Mound Sample Identification**

| | Grid Location | Sample Identification | Notes | Bottom Elevation (ft) |
|---|---|---|---|---|
| 93 | G12 | DP-G12-21 | SST Drive Point | 102.32 |
| 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 | H9 | 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 | I6 | DP-I06-14 | SST Drive Point | 110.24 |
| 106 | I6 | DP-I06-20 | SST Drive Point | 103.99 |
| 107 | I6 | DP-I06-26 | SST Drive Point | 97.94 |
| 108 | I7 | DP-I07-8 | SST Drive Point | 115.67 |
| 109 | I8 | DP-I08-5 | SST Drive Point | 118.56 |
| 110 | I8.5 | PZ09-I08-5 | 1 1/4" Standpipe Piezometer, 4' screen | 118.93 |
| 111 | I9 | DP-I09-11 | SST Drive Point | 112.96 |
| 112 | I10 | DP-I10-6 | SST Drive Point | 117.72 |
| 113 | I11 | DP-I11-10 | SST Drive Point | 113.50 |
| 114 | I12 | DP-I12-6 | SST Drive Point | 117.54 |
| 115 | I15 | 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 |

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**Table C.1**
**GCREC Mound Sample Identification**

| | Grid Location | Sample Identification | Notes | Bottom Elevation (ft) |
|---|---|---|---|---|
| 125 | J12 | DP-J12-20 | SST Drive Point | 102.61 |
| 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-O10-12 | SST Drive Point | 110.71 |
| 140 | O10 | DP-O10-18 | SST Drive Point | 104.56 |
| 141 | O10 | DP-O10-24 | 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 D: Groundwater Elevations

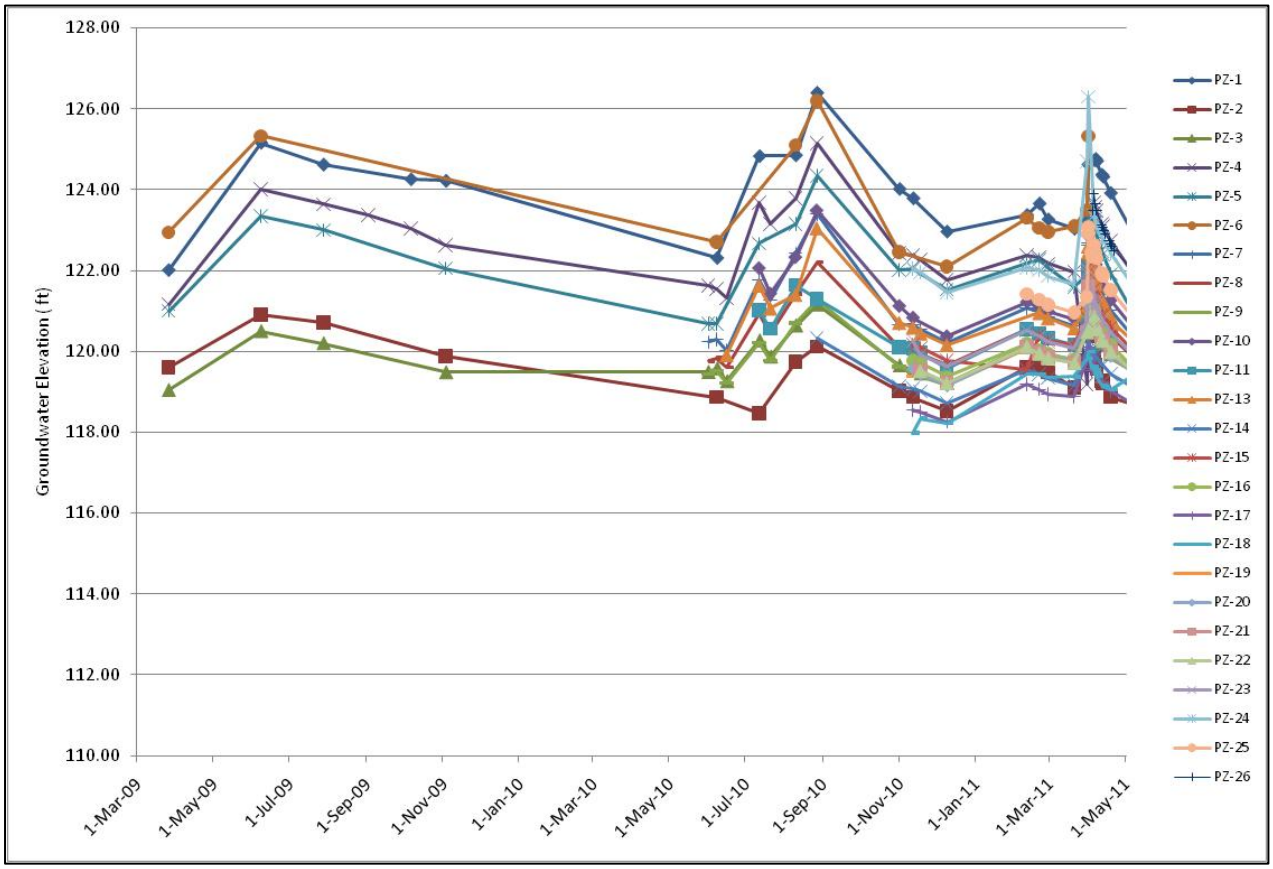


**Figure D.1**
**Groundwater Elevations**

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Table D.1
Groundwater Elevations

| ID | PZ-1 | PZ-2 | PZ-3 | PZ-4 | PZ-5 | PZ-6 | PZ-7 | PZ-8 | PZ-9 | PZ-10 | PZ-11 | PZ-13 | PZ-14 | PZ-15 | PZ-16 | PZ-17 | PZ-18 | PZ-19 | PZ-20 | PZ-21 | PZ-22 | PZ-23 | PZ-24 | PZ-25 | PZ-26 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | BKG, N | PG1.75 | H11 | BKG, N | BKG, E | BKG, NW | D5.5 | FG7 | I8.5 | CD6.5 | E9 | F4 | G13 | A11 | C12 | I15 | R12 | G9.75 | G9.75 | E11 | E11 | D9 | BKG, N | C-Mound | EF2 |
| 26-Mar-09 | 122.02 | 119.61 | 119.04 | 121.17 | 121.00 | 122.95 | | | | | | | | | | | | | | | | | | | |
| 8-Jun-09 | 125.16 | 120.92 | 120.50 | 124.01 | 123.34 | 125.33 | | | | | | | | | | | | | | | | | | | |
| 28-Jul-09 | 124.62 | 120.72 | 120.20 | 123.64 | 123.00 | | | | | | | | | | | | | | | | | | | | |
| 2-Sep-09 | | | | 123.37 | | | | | | | | | | | | | | | | | | | | | |
| 6-Oct-09 | 124.26 | | | 123.04 | | | | | | | | | | | | | | | | | | | | | |
| 3-Nov-09 | 124.22 | 119.88 | 119.48 | 122.63 | 122.06 | | | | | | | | | | | | | | | | | | | | |
| 1-Jun-10 | | | 119.49 | 121.63 | 120.69 | | 120.23 | 119.76 | 119.44 | | | | | | | | | | | | | | | | |
| 8-Jun-10 | 122.32 | 118.87 | 119.58 | 121.55 | 120.68 | 122.70 | 120.29 | 119.84 | 119.52 | | | | | | | | | | | | | | | | |
| 16-Jun-10 | | | 119.26 | 121.31 | | | 120.03 | 119.61 | 119.22 | | | 119.91 | | | | | | | | | | | | | |
| 12-Jul-10 | 124.83 | 118.47 | 120.27 | 123.68 | 122.67 | | 121.77 | 120.94 | 120.22 | 122.06 | 121.01 | 121.63 | | | | | | | | | | | | | |
| 21-Jul-10 | | | 119.87 | 123.16 | | | 121.28 | 120.44 | 119.77 | 121.43 | 120.56 | 121.06 | | | | | | | | | | | | | |
| 10-Aug-10 | 124.85 | 119.74 | 120.64 | 123.79 | 123.15 | 125.10 | 122.42 | 121.42 | 120.70 | 122.33 | 121.64 | 121.40 | | | | | | | | | | | | | |
| 27-Aug-10 | 126.39 | 120.12 | 121.16 | 125.14 | 124.35 | 126.19 | 123.39 | 122.21 | 121.28 | 123.49 | 121.29 | 123.05 | 120.32 | | | | | | | | | | | | |
| 1-Nov-10 | 124.02 | 119.03 | 119.65 | 122.43 | 122.01 | 122.46 | 120.67 | 120.10 | 119.62 | 121.12 | 120.10 | 120.71 | 119.13 | | | | | | | | | | | | |
| 12-Nov-10 | 123.79 | 118.87 | 119.54 | 122.37 | 122.05 | | 120.67 | 120.04 | 119.49 | 120.83 | 120.07 | 120.59 | 119.07 | 120.16 | 119.78 | 118.56 | 117.98 | 119.38 | 119.58 | | | 120.27 | 122.05 | | |
| 18-Nov-10 | | | 119.45 | 122.26 | | | 120.56 | 119.93 | 119.38 | | 119.96 | 120.45 | 119.01 | 120.09 | 119.71 | 118.49 | 118.34 | 119.45 | 119.45 | 119.53 | 119.51 | 119.91 | 121.96 | | |
| 9-Dec-10 | 122.97 | 118.52 | 119.21 | 121.76 | 121.53 | 122.09 | 120.22 | 119.65 | 119.15 | 120.37 | 119.57 | 120.16 | 118.72 | 119.77 | 119.37 | 118.26 | 118.22 | 119.18 | 119.17 | 119.22 | 119.21 | 119.64 | 121.46 | | |
| 11-Feb-11 | 123.38 | 119.60 | 120.13 | 122.38 | 122.18 | 123.30 | 121.06 | 120.54 | 120.08 | 121.22 | 120.55 | | 119.55 | 119.56 | 120.20 | 119.19 | 119.44 | 120.08 | 120.10 | 120.10 | 120.11 | 120.51 | 122.07 | 121.42 | |
| 21-Feb-11 | 123.66 | 119.62 | 120.01 | 122.33 | 122.27 | 123.05 | 120.98 | 120.45 | 120.03 | 121.10 | 120.44 | 120.95 | 119.44 | 120.40 | 120.03 | 119.06 | 119.44 | 119.97 | 119.98 | 119.96 | 119.94 | 120.37 | 122.01 | 121.28 | |
| 28-Feb-11 | 123.27 | 119.48 | 119.90 | 122.17 | 122.08 | 122.95 | 120.85 | 120.33 | 119.90 | 120.98 | 120.33 | 120.82 | 119.34 | 120.28 | 119.93 | 118.94 | 119.35 | 119.85 | 119.86 | 119.85 | 119.83 | 120.24 | 121.86 | 121.15 | |
| 21-Mar-11 | 123.04 | 119.11 | 119.80 | 121.97 | 121.60 | 123.10 | 120.64 | 120.14 | 119.75 | 120.79 | 120.15 | 120.58 | 119.17 | 120.16 | 119.81 | 118.88 | 119.37 | 119.73 | 119.76 | 119.71 | 119.71 | 120.07 | 121.65 | 120.97 | |
| 31-Mar-11 | 123.24 | 119.78 | 120.60 | 119.19 | 121.87 | 123.50 | 121.10 | 120.81 | 120.53 | 121.21 | 120.85 | 121.12 | 119.99 | 120.82 | 120.53 | 119.82 | 119.82 | 120.48 | 120.49 | 120.48 | 120.47 | 120.77 | 124.70 | 121.35 | |
| 1-Apr-11 | | | | | | | 122.67 | 122.17 | 121.68 | 122.86 | 122.13 | 122.60 | | 122.10 | 121.41 | | | 121.58 | 121.61 | 121.60 | 121.48 | 121.98 | | 122.92 | |
| 1-Apr-11 | 124.62 | 120.37 | 121.24 | 120.73 | 123.32 | 125.33 | 122.63 | 121.98 | 121.39 | 122.92 | 121.91 | 122.45 | 120.28 | 121.96 | 121.36 | 120.10 | 119.99 | 121.35 | 121.37 | 121.27 | 121.28 | 121.90 | 126.30 | 123.08 | |
| 4-Apr-11 | | 119.74 | 120.60 | | | | 121.96 | 121.25 | 120.64 | 122.17 | 121.25 | 121.82 | 119.93 | 121.36 | 120.91 | 119.57 | 119.57 | 120.66 | 120.67 | 120.69 | 120.68 | 121.25 | | 122.46 | |
| 4-Apr-11 | | 119.68 | 120.54 | | | | 121.90 | 121.18 | 120.56 | 122.14 | 121.20 | 121.75 | 119.90 | 121.33 | 120.81 | 119.51 | 119.63 | 120.59 | 120.57 | 120.63 | 120.63 | 121.20 | | 122.44 | |
| 5-Apr-11 | | | 120.50 | | | | 121.82 | 121.11 | 120.51 | 122.04 | 121.10 | 121.65 | 119.86 | 121.25 | 120.76 | | | 120.55 | 120.57 | 120.58 | 120.57 | 121.11 | | 122.34 | 123.49 |
| 6-Apr-11 | 124.73 | 119.90 | 120.79 | 123.67 | 123.17 | | 122.17 | 121.49 | 120.86 | 122.36 | 121.48 | 122.06 | 120.08 | 121.56 | 121.04 | 119.78 | 119.55 | 120.88 | 120.89 | 120.89 | 120.88 | 121.46 | 123.36 | 122.62 | 123.89 |
| 7-Apr-11 | 124.76 | 119.66 | 120.55 | 123.58 | 123.03 | | 121.94 | 121.21 | 120.57 | 122.15 | 121.22 | 121.80 | 119.92 | 121.35 | 120.86 | 119.54 | 119.45 | 120.62 | 120.63 | 120.66 | 120.65 | 121.21 | 123.26 | 122.43 | 123.65 |
| 8-Apr-11 | 124.71 | 119.56 | 120.45 | 123.49 | 122.90 | | 121.80 | 121.08 | 120.46 | 122.02 | 121.11 | 121.65 | 119.85 | 121.23 | 120.73 | 119.45 | 119.39 | 120.50 | 120.53 | 120.56 | 120.54 | 121.10 | 123.18 | 122.31 | 123.48 |
| 12-Apr-11 | 124.37 | 119.27 | 120.19 | 123.15 | 122.49 | | 121.46 | 120.77 | 120.17 | 121.67 | 120.81 | 121.28 | 119.69 | 120.92 | 120.47 | 119.24 | 119.15 | 120.25 | 120.27 | 120.31 | 120.31 | 120.81 | 122.85 | 121.93 | 123.11 |
| 13-Apr-11 | 124.32 | 119.22 | 120.18 | 123.10 | 122.41 | | 121.40 | 120.71 | 120.12 | 121.61 | 120.76 | 121.23 | 119.66 | 120.89 | 120.43 | 119.22 | 119.13 | 120.20 | 120.21 | 120.28 | 120.26 | 120.77 | 122.80 | 121.88 | 123.06 |
| 14-Apr-11 | | | | | | | 121.33 | | | | | 121.16 | | | | | | | | | | | | | 122.98 |
| 15-Apr-11 | | | | | | | | | | | | 121.09 | | | | | | | | | | | | | 122.90 |
| 18-Apr-11 | | | | | | | | | | | | 120.91 | | | | | | | | | | | | | 122.73 |
| 19-Apr-11 | 123.92 | 118.87 | 119.93 | 122.73 | 121.92 | | 121.03 | 120.37 | 119.82 | 121.27 | 120.44 | 120.84 | 119.44 | 120.60 | 120.16 | 119.01 | 119.05 | 119.91 | 119.90 | 119.99 | 119.98 | 120.46 | 122.44 | 121.52 | 122.65 |
| 20-Apr-11 | | | | | | | | | | | | 120.77 | | | | | | | | | | | | | 122.61 |
| 22-Apr-11 | | | | | | | | | | | | 120.68 | | | | | | | | | | | | | 122.49 |



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# Appendix E: Water Quality Analytical Results

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# Table E.1
# Water Quality Analytical Results
# (March 29 – April 4, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg-N/L) | NH3-N (mg-N/L) | Nox-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4$ | B | Ca | Fe | Mg | Mn | K | Na |
| **STE Sample** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STE-EX Pump Tank | 04-Apr-11 11:40 | G | 26.4 | 6.8 | 270 | 0.30 | 830 | 18 | 0.03 | 83 | | 41.03 | 41 | 8.00 | 33 | 0.03 | 33.03 | 5.9 | 200 | | | 4.6 | 47 | 0.03 | 0.01 | 3.2 | 21 | 0.15 | 58 | 7 | 18 | 0.081 | 15 | 43 |
| STE-EX Pump Tank-D | 04-Apr-11 11:50 | G | 26.4 | 6.8 | 290 | 0.30 | 830 | 18 | 0.04 | 87 | | 43.03 | 43 | 7.00 | 36 | 0.03 | 36.03 | 5.1 | 200 | | | 4.4 | 48 | 0.03 | 0.01 | 3.2 | 22 | 0.15 | 53 | 1.2 | 16 | 0.070 | 14 | 39 |
| **Drivepoints** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DP-AA9-14 | 30-Mar-11 08:55 | G | 23.0 | 5.0 | 4.9 | 0.99 | 699 | | | | | 48.60 | 2.6 | 2.58 | 0.021 | 46 | 46.02 | | | | | | | | | | | | | | | | | | |
| DP-AA9-22 | 30-Mar-11 09:10 | G | 23.8 | 5.3 | 6.9 | 0.77 | 286 | | | | | 9.10 | 1.2 | 1.16 | 0.041 | 7.9 | 7.94 | | | | | | | | | | | | | | | | | | |
| DP-AA9-27 | 30-Mar-11 09:30 | G | 23.9 | 5.2 | 3.0 | 0.82 | 288 | | | | | 11.10 | 1.1 | 1.06 | 0.044 | 10 | 10.04 | | | | | | | | | | | | | | | | | | |
| DP-AA9-27-D | 30-Mar-11 09:35 | G | 23.9 | 5.2 | 4.0 | 0.82 | 288 | | | | | 10.46 | 0.46 | 0.46 | 0.005 | 10 | 10.01 | | | | | | | | | | | | | | | | | | |
| DP-C11-8 | 30-Mar-11 08:30 | G | 21.8 | 5.9 | 35 | 3.50 | 319 | | | | | 4.60 | 1.5 | 1.41 | 0.09 | 3.1 | 3.19 | | | | | | | | | | | | | | | | | | |
| DP-D07-5 | 30-Mar-11 11:20 | G | 24.1 | 6.0 | 14 | 4.86 | 326 | | | | | 13.00 | 2.0 | 2.00 | 0.005 | 11 | 11.01 | | | | | | | | | | | | | | | | | | |
| DP-D07-5-D | 30-Mar-11 11:15 | G | 24.1 | 6.0 | 11 | 4.86 | 326 | | | | | 12.60 | 1.6 | 1.60 | 0.005 | 11 | 11.01 | | | | | | | | | | | | | | | | | | |
| DP-D07-7 | 30-Mar-11 11:45 | G | 23.3 | 4.7 | 2.0 | 0.77 | 365 | | | | 20 | 13.60 | 1.6 | 1.59 | 0.011 | 12 | 12.01 | 0.015 | | 1.7 | 1.4 | 0.12 | 23 | 12 | 0.01 | 0.010 | 53 | 0.096 | 27 | 0.054 | 5.4 | 0.008 | 8.0 | 20 |
| DP-D07-9 | 30-Mar-11 12:05 | G | 24 | 4.5 | 2.0 | 4.50 | 392 | | | | | 23.80 | 1.8 | 1.79 | 0.007 | 22 | 22.01 | | | | | | | | | | | | | | | | | | |
| DP-D7.5-14 | 30-Mar-11 11:10 | G | 23.8 | 5.0 | 4.0 | 0.67 | 514 | | | | | 32.20 | 3.2 | 3.19 | 0.009 | 29 | 29.01 | | | | | | | | | | | | | | | | | | |
| DP-D7.5-20 | 30-Mar-11 11:40 | G | 25 | 5.3 | 5.9 | 1.26 | 296 | | | | 10 | 8.90 | 1.3 | 1.30 | 0.005 | 7.6 | 7.61 | 0.16 | | 1.8 | 1.3 | 0.041 | 10 | 7.6 | 0.01 | 0.16 | 67 | 0.050 | 28 | 0.022 | 6.5 | 0.21 | 16 | 6.7 |
| DP-D7.5-26 | 30-Mar-11 12:10 | G | 25 | 5.3 | 4.0 | 1.47 | 292 | | | | | 8.70 | 1.3 | 1.30 | 0.005 | 7.4 | 7.41 | | | | | | | | | | | | | | | | | | |
| DP-D08-9 | 30-Mar-11 10:25 | G | 24.6 | 5.6 | 20 | 1.36 | 502 | | | | 16 | 21.00 | 2.0 | 1.88 | 0.12 | 19 | 19.12 | 0.16 | | | 3.5 | 0.056 | 42 | 19 | 0.01 | 0.15 | 52 | 0.094 | 33 | 11 | 10 | 0.33 | 8.0 | 35 |
| DP-D09-6 | 30-Mar-11 09:50 | G | 22.6 | 4.5 | 2.0 | 4.50 | 456 | | | | | 21.84 | 0.84 | 0.83 | 0.008 | 21 | 21.01 | | | | | | | | | | | | | | | | | | |
| DP-D09-8 | 30-Mar-11 10:05 | G | 22.6 | 4.6 | 2.0 | 1.01 | 487 | | | | | 29.80 | 2.8 | 2.80 | 0.005 | 27 | 27.01 | | | | | | | | | | | | | | | | | | |
| DP-D09-15 | 30-Mar-11 10:20 | G | 23.3 | 5.4 | 15 | 1.16 | 470 | | | | | 20.00 | 2.0 | 2.00 | 0.005 | 18 | 18.01 | | | | | | | | | | | | | | | | | | |
| DP-D09-21 | 30-Mar-11 10:35 | G | 24.2 | 5.3 | 4.9 | 0.80 | 298 | | | | | 8.30 | 0.4 | 0.40 | 0.005 | 7.9 | 7.91 | | | | | | | | | | | | | | | | | | |
| DP-D09-27 | 30-Mar-11 10:55 | G | 24.5 | 6.0 | 11 | 0.76 | 309 | | | | | 2.15 | 0.25 | 0.20 | 0.048 | 1.9 | 1.95 | | | | | | | | | | | | | | | | | | |
| DP-D10-8 | 30-Mar-11 09:40 | G | 23.8 | 5.7 | 23 | 1.45 | 337 | | | | | 4.10 | 1.9 | 1.88 | 0.025 | 2.2 | 2.23 | | | | | | | | | | | | | | | | | | |
| DP-D11-11 | 30-Mar-11 08:00 | G | 21.7 | 5.3 | 9.9 | 1.39 | 479 | | | | | 26.80 | 1.8 | 1.72 | 0.080 | 25 | 25.08 | | | | | | | | | | | | | | | | | | |
| DP-D12-11 | 29-Mar-11 13:45 | G | 22.3 | 4.8 | 6.9 | 0.65 | 477 | | | | | 12.30 | 2.8 | 2.06 | 0.74 | 9.5 | 10.24 | | | | | | | | | | | | | | | | | | |
| DP-E02-6 | 29-Mar-11 08:35 | G | 21.3 | 5.5 | 4.9 | 2.41 | 98.5 | | | | | 2.02 | 0.42 | 0.40 | 0.022 | 1.6 | 1.62 | | | | | | | | | | | | | | | | | | |
| DP-E02-8 | 29-Mar-11 08:45 | G | 21.3 | 5.1 | 5.0 | 0.46 | 158.9 | | | | | 0.64 | 0.22 | 0.21 | 0.006 | 0.42 | 0.43 | | | | | | | | | | | | | | | | | | |
| DP-E03-10 | 29-Mar-11 09:15 | G | 21.3 | 5.3 | 6.9 | 2.21 | 211.3 | | | | | 2.61 | 0.81 | 0.74 | 0.075 | 1.8 | 1.88 | | | | | | | | | | | | | | | | | | |
| DP-E03-10-D | 29-Mar-11 09:20 | G | 21.3 | 5.3 | 7.9 | 2.21 | 211.3 | | | | | 2.60 | 0.7 | 0.67 | 0.029 | 1.9 | 1.93 | | | | | | | | | | | | | | | | | | |
| DP-E04-6 | 29-Mar-11 09:50 | G | 22.3 | 4.7 | 2.0 | 3.49 | 90.6 | | | | 39 | 1.13 | 0.67 | 0.65 | 0.018 | 0.46 | 0.48 | 2.5 | | | 3.2 | 0.076 | 2.7 | 0.46 | 0.01 | 0.010 | 21 | 0.050 | 7.5 | 0.33 | 1.8 | 0.049 | 0.94 | 2.3 |
| DP-E04-8 | 29-Mar-11 10:15 | G | 22 | 4.9 | 4.9 | 1.43 | 171.1 | | | | | 3.80 | 1.0 | 0.98 | 0.024 | 2.8 | 2.82 | | | | | | | | | | | | | | | | | | |
| DP-E05-6 | 29-Mar-11 10:40 | G | 24.8 | 6.0 | 33 | 2.96 | 171.8 | | | | | 3.16 | 3.1 | 0.50 | 2.6 | 0.06 | 2.66 | | | | | | | | | | | | | | | | | | |
| DP-E06-6 | 29-Mar-11 11:00 | G | 22.8 | 4.4 | 2.0 | 1.89 | 162.8 | | | | | 3.20 | 1.3 | 1.29 | 0.013 | 1.9 | 1.91 | | | | | | | | | | | | | | | | | | |
| DP-E06-8 | 29-Mar-11 11:55 | G | 22.7 | 4.5 | 2.0 | 10.90 | 180.6 | | | | | 3.22 | 0.82 | 0.81 | 0.007 | 2.4 | 2.41 | | | | | | | | | | | | | | | | | | |
| DP-E07-10 | 29-Mar-11 11:25 | G | 22.5 | 4.9 | 5.9 | 1.19 | 289 | | | | | 10.10 | 2.3 | 2.25 | 0.052 | 7.8 | 7.85 | | | | | | | | | | | | | | | | | | |
| DP-E08-6 | 29-Mar-11 12:00 | G | 22.4 | 5.0 | 3.0 | 1.83 | 326 | | | | | 12.00 | 2.1 | 2.09 | 0.014 | 9.9 | 9.91 | | | | | | | | | | | | | | | | | | |
| DP-E08-8 | 29-Mar-11 12:30 | G | 22.6 | 5.0 | 3.0 | 1.52 | 348 | | | | | 12.60 | 1.6 | 1.60 | 0.005 | 11 | 11.01 | | | | | | | | | | | | | | | | | | |
| DP-E10-6 | 29-Mar-11 12:40 | G | 23 | 4.6 | 3.0 | 0.60 | 407 | | | | | 9.70 | 1.2 | 1.20 | 0.005 | 8.5 | 8.51 | | | | | | | | | | | | | | | | | | |
| DP-E11-12 | 29-Mar-11 13:00 | G | 23 | 5.1 | 8.9 | 0.99 | 441 | | | | | 14.60 | 1.6 | 1.58 | 0.018 | 13 | 13.02 | | | | | | | | | | | | | | | | | | |
| DP-E12-10 | 29-Mar-11 13:30 | G | 23.9 | 5.1 | 8.9 | 0.35 | 520 | | | | 24 | 23.20 | 1.2 | 1.04 | 0.16 | 22 | 22.16 | 0.026 | | 1.2 | 0.88 | 0.010 | 41 | 22 | 0.01 | 0.010 | 47 | 0.075 | 39 | 0.089 | 9.9 | 0.21 | 11 | 33 |
| DP-E12-15 | 30-Mar-11 07:35 | G | 21.9 | 5.0 | 8.9 | 0.60 | 460 | | | | 14 | 19.50 | 2.5 | 2.50 | 0.005 | 17 | 17.01 | 0.012 | | | 0.92 | 0.029 | 36 | 17 | 0.01 | 0.18 | 54 | 0.1 | 35 | 0.032 | 7.1 | 0.045 | 12 | 33 |
| DP-E12-15-D | 30-Mar-11 07:55 | G | 21.9 | 5.0 | 8.9 | 0.60 | 460 | | | | 10 | 18.30 | 1.3 | 1.30 | 0.005 | 17 | 17.01 | 0.12 | | | 0.50 | 0.035 | 38 | 17 | 0.01 | 0.088 | 54 | 0.1 | 35 | 0.063 | 7.5 | 0.047 | 11 | 33 |
| DP-E12-22 | 30-Mar-11 08:20 | G | 22.5 | 5.3 | 5.9 | 0.59 | 297 | | | | 10 | 12.00 | 2.9 | 2.61 | 0.29 | 9.1 | 9.39 | 0.035 | | 1.2 | 0.83 | 0.017 | 12 | 9.1 | 0.01 | 0.24 | 56 | 0.1 | 29 | 0.037 | 6.1 | 0.16 | 10 | 8.4 |
| DP-E12-28 | 30-Mar-11 08:45 | G | 22.8 | 5.3 | 4.0 | 0.57 | 310 | | | | 10 | 11.70 | 1.9 | 1.89 | 0.013 | 9.8 | 9.81 | 0.069 | | | 0.50 | 0.019 | 15 | 9.8 | 0.01 | 0.065 | 59 | 0.050 | 27 | 0.023 | 9.5 | 0.11 | 15 | 5.3 |
| DP-F03-8 | 29-Mar-11 10:00 | G | 21.7 | 6.2 | 18 | 1.22 | 145.6 | | | | | 3.30 | 1.6 | 1.21 | 0.39 | 1.7 | 2.09 | | | | | | | | | | | | | | | | | | |
| DP-F04-17 | 29-Mar-11 10:25 | G | 22 | 7.3 | 90 | 0.57 | 415.7 | | | | | 2.15 | 0.35 | 0.32 | 0.028 | 1.8 | 1.83 | | | | | | | | | | | | | | | | | | |
| DP-F04-22 | 29-Mar-11 10:45 | G | 22.8 | 6.0 | 9.9 | 0.72 | 314.1 | | | | | 10.90 | 2.7 | 2.68 | 0.017 | 8.2 | 8.22 | | | | | | | | | | | | | | | | | | |
| DP-F04-32 | 29-Mar-11 11:00 | G | 23.1 | 6.9 | 69 | 1.04 | 345.6 | | | | | 0.96 | 0.25 | 0.21 | 0.042 | 0.71 | 0.75 | | | | | | | | | | | | | | | | | | |
| DP-F05-5 | 30-Mar-11 13:25 | G | 27.7 | 5.8 | 6.9 | 7.36 | 173.3 | | | | | 2.41 | 2.4 | 2.27 | 0.13 | 0.01 | 0.14 | | | | | | | | | | | | | | | | | | |
| DP-F05-31 | 29-Mar-11 11:15 | G | 24.1 | 7.3 | 69 | 1.70 | 187.1 | | | | 18 | 2.02 | 0.62 | 0.55 | 0.07 | 1.4 | 1.47 | 0.29 | | | 1.7 | 0.58 | 10 | 1.3 | 0.11 | 0.010 | 23 | 0.050 | 31 | 1.5 | 6.4 | 0.063 | 2.9 | 11 |
| DP-F06-10 | 29-Mar-11 11:40 | G | 21.8 | 5.2 | 4.0 | 0.30 | 190.6 | | | | | 1.83 | 0.33 | 0.27 | 0.056 | 1.5 | 1.56 | | | | | | | | | | | | | | | | | | |
| DP-F07-6 | 29-Mar-11 12:00 | dry | dry | | | | | | | | | 0.00 | | 0.00 | | | 0.00 | | | | | | | | | | | | | | | | | | |
| DP-F08-14 | 29-Mar-11 12:15 | G | 22.5 | 7.6 | 140 | 1.28 | 501 | | | | | 4.70 | 1.2 | 1.11 | 0.090 | 3.5 | 3.59 | | | | | | | | | | | | | | | | | | |
| DP-F08-20 | 29-Mar-11 12:30 | G | 23.1 | 6.0 | 9.9 | 0.41 | 335.6 | | | | 10 | 10.70 | 2.1 | 2.07 | 0.03 | 8.6 | 8.63 | 0.33 | | | 0.80 | 0.032 | 11 | 8.6 | 0.01 | 0.010 | 65 | 0.050 | 32 | 0.067 | 7.3 | 0.22 | 14 | 6.4 |
| DP-F08-28 | 29-Mar-11 12:45 | G | 23.4 | 6.3 | 18 | 0.37 | 323.9 | | | | | 4.00 | 1.1 | 1.09 | 0.012 | 2.9 | 2.91 | | | | | | | | | | | | | | | | | | |
| DP-F09-5 | 29-Mar-11 13:15 | G | 24.8 | 6.6 | 22 | 1.15 | 191.1 | | | | 24 | 3.40 | 1.5 | 1.27 | 0.23 | 1.9 | 2.13 | 0.27 | | | 7.7 | 0.1 | 10 | 1.9 | 0.01 | 0.026 | 26 | 0.050 | 14 | 5.8 | 3.5 | 0.37 | 4.7 | 9.1 |
| DP-F09-5-D | 29-Mar-11 13:30 | G | 24.8 | 6.6 | 22 | 1.15 | 141.1 | | | | 32 | 3.30 | 1.3 | 1.08 | 0.22 | 2 | 2.22 | 0.33 | | | 7.7 | 0.11 | 10 | 2.0 | 0.01 | 0.026 | 27 | 0.050 | 14 | 5.7 | 3.5 | 0.35 | 4.7 | 11 |
| DP-F10-11 | 30-Mar-11 07:45 | G | 21.3 | 4.7 | 2.0 | 0.80 | 475.9 | | | | | 32.30 | 2.3 | 1.20 | 1.1 | 30 | 31.10 | | | | | | | | | | | | | | | | | | |



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Table E.1 (con't)
Water Quality Analytical Results
(March 29 – April 4, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg- | NH3-N (mg-N/L) | Nox-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-F11-11 | 30-Mar-11 08:00 | G | 21.4 | 5.3 | 8.9 | 0.90 | 412.7 | | | | | 22.50 | 1.5 | 1.06 | 0.44 | 21 | 21.44 | | | | | | | | | | | | | | | | | | |
| DP-F11-11-D | 30-Mar-11 08:05 | G | 21.4 | 5.3 | 9.9 | 0.90 | 412.7 | | | | | 22.90 | 1.9 | 1.47 | 0.43 | 21 | 21.43 | | | | | | | | | | | | | | | | | | |
| DP-F11-15 | 30-Mar-11 08:20 | G | 21.8 | 5.1 | 7.9 | 0.28 | 453.3 | | | | | 29.50 | 1.5 | 1.36 | 0.14 | 28 | 28.14 | | | | | | | | | | | | | | | | | | |
| DP-F11-18 | 30-Mar-11 08:40 | G | 22.2 | 5.4 | 7.9 | 1.18 | 433.9 | | | | | 20.00 | 2 | 1.93 | 0.067 | 18 | 18.07 | | | | | | | | | | | | | | | | | | |
| DP-F11-21 | 30-Mar-11 09:00 | G | 22.5 | 5.2 | 5.9 | 0.43 | 318.4 | | | | | 21.10 | 1.1 | 1.10 | 0.005 | 20 | 20.01 | | | | | | | | | | | | | | | | | | |
| DP-F11-24 | 30-Mar-11 09:30 | G | 22.8 | 5.1 | 4.0 | 0.30 | 301.1 | | | | | 16.10 | 1.1 | 1.09 | 0.008 | 15 | 15.01 | | | | | | | | | | | | | | | | | | |
| DP-F11-27 | 30-Mar-11 09:50 | G | 23.2 | 5.3 | 4.9 | 0.39 | 307.5 | | | | | 8.60 | 1.3 | 1.29 | 0.008 | 7.3 | 7.31 | | | | | | | | | | | | | | | | | | |
| DP-F12-10 | 31-Mar-11 08:50 | G | 21.5 | 5.0 | 2.0 | 0.90 | 427 | | | | | 24.50 | 1.5 | 1.34 | 0.16 | 23 | 23.16 | | | | | | | | | | | | | | | | | | |
| DP-F15-14 | 31-Mar-11 09:22 | G | 21.7 | 5.2 | 11 | 0.53 | 512 | | | | | 31.74 | 0.74 | 0.62 | 0.12 | 31 | 31.12 | | | | | | | | | | | | | | | | | | |
| DP-F15-20 | 31-Mar-11 09:37 | G | 22.3 | 5.4 | 12 | 0.78 | 383 | | | | | 20.40 | 1.4 | 1.40 | 0.005 | 19 | 19.01 | | | | | | | | | | | | | | | | | | |
| DP-F15-20-D | 31-Mar-11 09:40 | G | 22.3 | 5.4 | 9.9 | 0.78 | 383 | | | | | 19.70 | 1.7 | 1.69 | 0.012 | 18 | 18.01 | | | | | | | | | | | | | | | | | | |
| DP-F15-26 | 31-Mar-11 10:00 | G | 22.5 | 5.2 | 4.0 | 0.78 | 306 | | | | | 18.50 | 1.5 | 1.43 | 0.074 | 17 | 17.07 | | | | | | | | | | | | | | | | | | |
| DP-G05-6 | 30-Mar-11 13:40 | G | 26.2 | 6.1 | 22 | 2.49 | 151.9 | | | | 32 | 2.04 | 1.9 | 0.50 | 1.4 | 0.14 | 1.54 | 0.43 | | | 8.7 | 0.075 | 4.1 | 0.14 | 0.01 | 0.18 | 30 | 0.050 | 11 | 8.2 | 3.3 | 0.4 | 2.8 | 2.6 |
| DP-G06-7 | 30-Mar-11 14:45 | G | 28.9 | 6.2 | 34 | 2.36 | 184 | | | | | 0.68 | 0.55 | 0.28 | 0.27 | 0.13 | 0.40 | | | | | | | | | | | | | | | | | | |
| DP-G07-13 | 30-Mar-11 15:05 | G | 25.2 | 5.8 | 14 | 2.19 | 232 | | | | | 3.40 | 0.7 | 0.37 | 0.33 | 2.7 | 3.03 | | | | | | | | | | | | | | | | | | |
| DP-G07-15 | 30-Mar-11 15:30 | G | 23.4 | 5.2 | 4.0 | 1.20 | 272 | | | | | 4.95 | 0.45 | 0.45 | 0.005 | 4.5 | 4.51 | | | | | | | | | | | | | | | | | | |
| DP-G07-17 | 30-Mar-11 15:50 | G | 23.7 | 5.3 | 4.9 | 1.52 | 317 | | | | | 10.00 | 1.1 | 1.10 | 0.005 | 8.9 | 8.91 | | | | | | | | | | | | | | | | | | |
| DP-G07-21 | 31-Mar-11 07:55 | G | 22.2 | 5.6 | 4.9 | 0.57 | 326 | | | | | 15.60 | 2.6 | 2.53 | 0.071 | 13 | 13.07 | | | | | | | | | | | | | | | | | | |
| DP-G07-24 | 31-Mar-11 08:15 | G | 22.3 | 5.7 | 4.9 | 0.94 | 271 | | | | | 15.50 | 2.5 | 2.50 | 0.005 | 13 | 13.01 | | | | | | | | | | | | | | | | | | |
| DP-G07-27 | 31-Mar-11 08:35 | G | 22.3 | 5.2 | 4.0 | 0.95 | 303 | | | | | 17.80 | 2.8 | 2.80 | 0.005 | 15 | 15.01 | | | | | | | | | | | | | | | | | | |
| DP-G08-5 | 30-Mar-11 15:15 | G | 26.1 | 5.6 | 4.9 | 7.64 | 157.8 | | | | | 2.52 | 0.92 | 0.92 | 0.005 | 1.6 | 1.61 | | | | | | | | | | | | | | | | | | |
| DP-G09-11 | 30-Mar-11 15:45 | G | 24 | 5.4 | 7.9 | 2.08 | 285 | | | | 41 | 10.20 | 1.1 | 1.09 | 0.01 | 9.1 | 9.11 | 0.11 | | | 1.3 | 0.036 | 13 | 9.1 | 0.01 | 0.010 | 51 | 0.050 | 27 | 1.1 | 5.6 | 0.26 | 7 | 12 |
| DP-G11-8 | 31-Mar-11 08:05 | G | 21.2 | 5.1 | 3.0 | 1.38 | 295 | | | | | 14.20 | 2.2 | 2.19 | 0.015 | 12 | 12.02 | | | | | | | | | | | | | | | | | | |
| DP-G12-9 | 31-Mar-11 08:30 | G | 21.4 | 4.7 | 3.0 | 2.62 | 341 | | | | | 11.70 | 1.7 | 1.66 | 0.036 | 10 | 10.04 | | | | | | | | | | | | | | | | | | |
| DP-G12-15 | 31-Mar-11 08:45 | G | 21.8 | 5.5 | 6.9 | 0.96 | 487 | | | | | 28.70 | 2.7 | 2.42 | 0.28 | 26 | 26.28 | | | | | | | | | | | | | | | | | | |
| DP-G12-18 | 31-Mar-11 08:55 | G | 22.2 | 5.2 | 6.9 | 1.40 | 494 | | | | | 30.70 | 1.7 | 1.70 | 0.005 | 29 | 29.01 | | | | | | | | | | | | | | | | | | |
| DP-G12-18-D | 31-Mar-11 09:00 | G | 22.2 | 5.2 | 7.9 | 1.40 | 494 | | | | | 31.00 | 2.0 | 1.99 | 0.013 | 29 | 29.01 | | | | | | | | | | | | | | | | | | |
| DP-G12-21 | 31-Mar-11 09:15 | G | 22.7 | 5.4 | 8.9 | 0.50 | 385 | | | | | 17.00 | 4.0 | 3.90 | 0.099 | 13 | 13.10 | | | | | | | | | | | | | | | | | | |
| DP-G12-24 | 31-Mar-11 09:30 | G | 22.7 | 5.4 | 3.9 | 0.82 | 324 | | | | | 12.98 | 0.98 | 0.98 | 0.005 | 12 | 12.01 | | | | | | | | | | | | | | | | | | |
| DP-G12-27 | 31-Mar-11 09:50 | G | 22.9 | 5.4 | 4.9 | 0.43 | 311 | | | | | 13.20 | 1.2 | 1.08 | 0.12 | 12 | 12.12 | | | | | | | | | | | | | | | | | | |
| DP-H05-7 | 04-Apr-11 10:40 | G | 25.6 | 6.3 | 15 | 6.73 | 136.7 | | | | | 1.75 | 1.7 | 0.10 | 1.6 | 0.05 | 1.65 | | | | | | | | | | | | | | | | | | |
| DP-H06-7 | 01-Apr-11 07:55 | G | 19.8 | 6.0 | 18 | 4.04 | 152.4 | | | | | 1.35 | 1.2 | 0.55 | 0.65 | 0.15 | 0.80 | | | | | | | | | | | | | | | | | | |
| DP-H07-8 | 01-Apr-11 07:30 | G | 20.2 | 5.1 | 2.0 | 1.57 | 151.3 | | | | | 1.69 | 0.71 | 0.66 | 0.051 | 0.98 | 1.03 | | | | | | | | | | | | | | | | | | |
| DP-H08-10 | 31-Mar-11 11:00 | G | 22.7 | 6.2 | 24 | 2.97 | 189 | | | | | 2.95 | 2.2 | 1.32 | 0.88 | 0.75 | 1.63 | | | | | | | | | | | | | | | | | | |
| DP-H09-12 | 31-Mar-11 10:25 | G | 21.9 | 5.7 | 6.9 | 3.40 | 249 | | | | | 8.60 | 1.2 | 1.19 | 0.010 | 7.4 | 7.41 | | | | | | | | | | | | | | | | | | |
| DP-H10-11 | 31-Mar-11 10:10 | G | 22.2 | 6.2 | 25 | 5.83 | 204.5 | | | | | 2.11 | 0.21 | 0.12 | 0.089 | 1.9 | 1.99 | | | | | | | | | | | | | | | | | | |
| DP-H12-5 | 31-Mar-11 09:02 | G | 21.9 | 5.6 | 7.9 | 0.94 | 188.5 | | | | | 2.81 | 0.81 | 0.76 | 0.047 | 2.0 | 2.05 | | | | | | | | | | | | | | | | | | |
| DP-H12-5-D | 31-Mar-11 09:05 | G | 21.9 | 5.6 | 7.9 | 0.94 | 188.5 | | | | | 3.13 | 0.93 | 0.91 | 0.016 | 2.2 | 2.22 | | | | | | | | | | | | | | | | | | |
| DP-I06-14 | 01-Apr-11 07:58 | G | 20.9 | 5.3 | 5.9 | 1.44 | 212.3 | | | | | 2.07 | 0.57 | 0.57 | 0.005 | 1.5 | 1.51 | | | | | | | | | | | | | | | | | | |
| DP-I06-20 | 01-Apr-11 08:15 | G | 21.4 | 5.0 | 3.9 | 1.03 | 358 | | | | | 19.10 | 1.1 | 1.10 | 0.005 | 18 | 18.01 | | | | | | | | | | | | | | | | | | |
| DP-I06-26 | 01-Apr-11 08:30 | G | 21.6 | 4.9 | 3.0 | 1.13 | 305 | | | | | 16.20 | 2.2 | 2.20 | 0.005 | 14 | 14.01 | | | | | | | | | | | | | | | | | | |
| DP-I07-8 | 01-Apr-11 07:25 | G | 19.4 | 5.8 | 17 | 2.23 | 170.7 | | | | | 1.28 | 0.42 | 0.38 | 0.041 | 0.86 | 0.90 | | | | | | | | | | | | | | | | | | |
| DP-I08-5 | 31-Mar-11 11:05 | G | 23 | 6.5 | 15 | 4.69 | 191.5 | | | | | 2.44 | 2.1 | 0.90 | 1.2 | 0.34 | 1.54 | | | | | | | | | | | | | | | | | | |
| DP-I09-11 | 31-Mar-11 10:35 | G | 21.5 | 5.1 | 3.0 | 0.77 | 180.6 | | | | | 2.22 | 0.72 | 0.72 | 0.005 | 1.5 | 1.51 | | | | | | | | | | | | | | | | | | |
| DP-I10-6 | 01-Apr-11 08:55 | G | 20.2 | 6.2 | 27 | 5.10 | 173.4 | | | | | 1.75 | 1.4 | 0.74 | 0.66 | 0.35 | 1.01 | | | | | | | | | | | | | | | | | | |
| DP-I11-10 | 01-Apr-11 09:20 | G | 21.4 | 5.7 | 17 | 0.90 | 166.8 | | | | | 1.03 | 0.64 | 0.38 | 0.26 | 0.39 | 0.65 | | | | | | | | | | | | | | | | | | |
| DP-I12-6 | 01-Apr-11 09:40 | G | 21.9 | 5.6 | 11 | 1.87 | 127.6 | | | | | 7.77 | 0.67 | 0.67 | 0.005 | 7.1 | 7.11 | | | | | | | | | | | | | | | | | | |
| DP-J08-6 | 01-Apr-11 08:25 | G | 19.7 | 6.0 | 15 | 2.70 | 140.3 | | | | | 3.75 | 3.7 | 0.70 | 3.0 | 0.05 | 3.05 | | | | | | | | | | | | | | | | | | |
| DP-J09-12 | 01-Apr-11 08:50 | G | 21.1 | 4.8 | 2.0 | 0.81 | 167 | | | | | 1.55 | 0.45 | 0.45 | 0.005 | 1.1 | 1.11 | | | | | | | | | | | | | | | | | | |
| DP-J09-14 | 01-Apr-11 09:10 | G | 21.4 | 4.8 | 3.0 | 0.73 | 226 | | | | | 8.19 | 0.79 | 0.79 | 0.005 | 7.4 | 7.41 | | | | | | | | | | | | | | | | | | |
| DP-J09-20 | 01-Apr-11 09:30 | G | 22.1 | 4.4 | 4.0 | 0.66 | 365 | | | | | 18.20 | 1.2 | 1.20 | 0.005 | 17 | 17.01 | | | | 0.91 | | | | | | | | | | | | | | |
| DP-J09-26 | 01-Apr-11 09:50 | G | 22.5 | 5.0 | 4.0 | 0.73 | 297 | | | | | 17.70 | 1.7 | 1.70 | 0.005 | 16 | 16.01 | | | | | | | | | | | | | | | | | | |
| DP-J10-6 | 01-Apr-11 11:05 | G | 24 | 5.9 | 14 | 3.48 | 186.6 | | | | | 3.40 | 2.4 | 0.00 | 2.4 | 1 | 3.40 | | | | | | | | | | | | | | | | | | |
| DP-J11-12 | 01-Apr-11 11:40 | G | 23.7 | 4.4 | 2.0 | 1.02 | 196.7 | | | | 14 | 2.65 | 0.55 | 0.55 | 0.005 | 2.1 | 2.11 | 0.010 | | | 1.1 | 0.16 | 6.3 | 2.1 | 0.01 | 0.010 | 65 | 0.050 | 16 | 0.039 | 4.2 | 0.15 | 3.8 | 2.9 |
| DP-J12-13 | 01-Apr-11 11:50 | G | 22.9 | 4.9 | 4.0 | 1.54 | 238 | | | | | 6.21 | 0.61 | 0.61 | 0.005 | 5.6 | 5.61 | | | | | | | | | | | | | | | | | | |
| DP-J12-15 | 01-Apr-11 12:00 | G | 23.3 | 5.1 | 5.9 | 1.13 | 281 | | | | | 8.96 | 0.46 | 0.46 | 0.005 | 8.5 | 8.51 | | | | | | | | | | | | | | | | | | |
| DP-J12-20 | 01-Apr-11 12:50 | G | 23.4 | 5.6 | 5.9 | 1.20 | 354 | | | | 18 | 11.50 | 1.5 | 1.50 | 0.005 | 10 | 10.01 | 0.11 | | | 1.3 | 0.011 | 14 | 10 | 0.01 | 0.010 | 88 | 0.050 | 33 | 0.020 | 9.6 | 0.059 | 21 | 4.3 |
| DP-J12-27 | 01-Apr-11 13:11 | G | 23.6 | 5.1 | 4.0 | 0.92 | 303 | | | | | 17.00 | 1 | 1.00 | 0.005 | 16 | 16.01 | | | | | | | | | | | | | | | | | | |
| DP-K10-7 | 01-Apr-11 11:25 | G | 24.2 | 6.0 | 6.9 | 3.79 | 163.8 | | | | | 2.33 | 2 | 0.40 | 1.6 | 0.33 | 1.93 | | | | | | | | | | | | | | | | | | |



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Table E.1 (con't)
Water Quality Analytical Results
(March 29 – April 4, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg- | NH3-N (mg-N/L) | Nox-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-K11-13 | 01-Apr-11 10:30 | G | 22.1 | 4.9 | 4.0 | 1.84 | 168.3 | | | | | 1.89 | 0.59 | 0.59 | 0.005 | 1.3 | 1.31 | | | | | | | | | | | | | | | | | | |
| DP-K12-5 | 01-Apr-11 10:05 | G | 22.3 | 5.6 | 6.9 | 1.40 | 59.3 | | | | 55 | 0.81 | 0.77 | 0.68 | 0.092 | 0.04 | 0.13 | 0.34 | | | 7.3 | 0.083 | 1.9 | 0.04 | 0.01 | 0.010 | 11 | 0.050 | 5.5 | 2.2 | 0.86 | 0.21 | 0.4 | 1.9 |
| DP-K12-5-D | 01-Apr-11 10:10 | G | 22.3 | 5.6 | 6.9 | 1.40 | 59.3 | | | | 43 | 1.73 | 1.7 | 1.63 | 0.071 | 0.03 | 0.10 | 0.32 | | | 7 | 0.058 | 1.6 | 0.03 | 0.01 | 0.010 | 9.2 | 0.050 | 5.4 | 2.5 | 0.92 | 0.2 | 0.44 | 1.9 |
| DP-M07-15 | 01-Apr-11 14:10 | G | 23 | 5.2 | 5.9 | 0.71 | 267 | | | | | 6.61 | 0.61 | 0.61 | 0.005 | 6 | 6.01 | | | | | | | | | | | | | | | | | | |
| DP-M07-21 | 01-Apr-11 14:15 | G | 24 | 4.9 | 2.0 | 0.88 | 362 | | | | | 13.50 | 1.5 | 1.50 | 0.005 | 12 | 12.01 | | | | | | | | | | | | | | | | | | |
| DP-M07-27 | 01-Apr-11 14:20 | G | 23.8 | 5.2 | 5.9 | 1.08 | 293 | | | | | 10.10 | 2.2 | 2.20 | 0.005 | 7.9 | 7.91 | | | | | | | | | | | | | | | | | | |
| DP-M12-10 | 01-Apr-11 12:10 | G | 24 | 5.7 | 8.9 | 1.83 | 161.6 | | | | | 1.49 | 0.6 | 0.52 | 0.083 | 0.89 | 0.97 | | | | | | | | | | | | | | | | | | |
| DP-N12-14 | 01-Apr-11 12:40 | G | 22.9 | 4.8 | 3.0 | 0.91 | 178.6 | | | | | 5.08 | 0.98 | 0.98 | 0.005 | 4.1 | 4.11 | | | | | | | | | | | | | | | | | | |
| DP-N12-18 | 01-Apr-11 13:00 | G | 23.2 | 5.1 | 4.0 | 1.11 | 250 | | | | | 7.20 | 1.1 | 1.10 | 0.005 | 6.1 | 6.11 | | | | | | | | | | | | | | | | | | |
| DP-N12-21 | 01-Apr-11 13:20 | G | 23.3 | 5.2 | 5.9 | 1.04 | 279 | | | | | 6.74 | 0.54 | 0.54 | 0.005 | 6.2 | 6.21 | | | | | | | | | | | | | | | | | | |
| DP-N12-24 | 01-Apr-11 13:40 | G | 24.1 | 5.2 | 4.9 | 0.78 | 348 | | | | | 13.30 | 1.3 | 1.30 | 0.005 | 12 | 12.01 | | | | | | | | | | | | | | | | | | |
| DP-N12-27 | 01-Apr-11 13:55 | G | 23.9 | 5.1 | 4.9 | 0.68 | 342 | | | | | 21.80 | 1.8 | 1.80 | 0.005 | 20 | 20.01 | | | | | | | | | | | | | | | | | | |
| DP-O10-12 | 01-Apr-11 13:30 | G | 22.9 | 4.3 | 2.0 | 1.13 | 185.9 | | | | | 0.22 | 0.18 | 0.18 | 0.005 | 0.04 | 0.05 | | | | | | | | | | | | | | | | | | |
| DP-O10-18 | 01-Apr-11 13:50 | G | 23.5 | 5.3 | 5.9 | 1.04 | 294 | | | | | 9.60 | 2.1 | 2.10 | 0.005 | 7.5 | 7.51 | | | | | | | | | | | | | | | | | | |
| DP-O10-24 | 01-Apr-11 14:00 | G | 24.2 | 5.1 | 3.0 | 0.95 | 361 | | | | | 20.40 | 4.4 | 4.40 | 0.005 | 16 | 16.01 | | | | | | | | | | | | | | | | | | |
| DP-O10-24-D | 01-Apr-11 14:02 | G | 24.2 | 5.1 | 4.0 | 0.95 | 361 | | | | | 17.50 | 1.5 | 1.42 | 0.082 | 16 | 16.08 | | | | | | | | | | | | | | | | | | |
| DP-Q15-15 | 04-Apr-11 09:15 | G | 22.7 | 4.8 | 3.0 | 0.61 | 285 | | | | | 5.29 | 0.39 | 0.39 | 0.005 | 4.9 | 4.91 | | | | | | | | | | | | | | | | | | |
| DP-Q15-21 | 04-Apr-11 09:40 | G | 23.5 | 5.2 | 5.9 | 0.73 | 319 | | | | | 8.91 | 0.41 | 0.41 | 0.005 | 8.5 | 8.51 | | | | | | | | | | | | | | | | | | |
| DP-Q15-26 | 04-Apr-11 10:10 | G | 23.2 | 5.2 | 5.9 | 1.33 | 333 | | | | | 7.59 | 0.89 | 0.85 | 0.037 | 6.7 | 6.74 | | | | | | | | | | | | | | | | | | |
| **Standpipe Piezometers** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PZ01-BKG-9 | 31-Mar-11 09:30 | G | 22.8 | 4.6 | 2.0 | 6.78 | 146.8 | | | | | 0.37 | 0.36 | 0.25 | 0.11 | 0.01 | 0.12 | | | | | | | | | | | | | | | | | | |
| PZ02-P02-9 | 30-Mar-11 15:35 | G | 24.4 | 4.7 | 2.0 | 4.63 | 73.6 | | | | | 1.73 | 0.96 | 0.96 | 0.005 | 0.77 | 0.78 | | | | | | | | | | | | | | | | | | |
| PZ03-H11-6 | 30-Mar-11 12:14 | G | 25.9 | 4.8 | 2.0 | 3.68 | 138.4 | | | | | 3.80 | 2.3 | 2.29 | 0.006 | 1.5 | 1.51 | | | | | | | | | | | | | | | | | | |
| PZ04-BKG-9 | 31-Mar-11 08:44 | G | 21.7 | 5.4 | 6.9 | 3.84 | 78.2 | | | | 28 | 0.65 | 0.35 | 0.31 | 0.038 | 0.3 | 0.34 | 0.021 | | | 2.6 | 0.091 | 1.7 | 0.3 | 0.01 | 0.010 | 12 | 0.050 | 5.6 | 0.066 | 1.6 | 0.069 | 0.94 | 1.8 |
| PZ04-BKG-9-D | 31-Mar-11 08:44 | G | 21.7 | 5.4 | 7.9 | 3.84 | 78.2 | | | | 16 | 0.60 | 0.30 | 0.30 | 0.005 | 0.3 | 0.31 | 0.021 | | | 2.6 | 0.11 | 1.8 | 0.3 | 0.01 | 0.010 | 12 | 0.050 | 6.2 | 0.020 | 1.8 | 0.077 | 0.95 | 1.8 |
| PZ05-BKG-9 | 31-Mar-11 10:14 | G | 21.8 | 5.1 | 6.9 | 4.38 | 98.8 | | | | | 4.80 | 1.2 | 1.17 | 0.034 | 3.6 | 3.63 | | | | | | | | | | | | | | | | | | |
| PZ06-BKG-12 | 31-Mar-11 10:03 | G | 23.1 | 4.7 | 3.0 | 5.41 | 59.4 | | | | | 0.26 | 0.25 | 0.21 | 0.041 | 0.01 | 0.05 | | | | | | | | | | | | | | | | | | |
| PZ07-D05-7 | 30-Mar-11 13:47 | G | 25.3 | 4.7 | 3.0 | 0.39 | 221.6 | | | | | 5.20 | 1.6 | 1.60 | 0.005 | 3.6 | 3.61 | | | | | | | | | | | | | | | | | | |
| PZ08-FG7-6 | 30-Mar-11 10:06 | G | 23.6 | 4.8 | 2.0 | 3.33 | 126.9 | | | | | 2.13 | 1.3 | 1.30 | 0.005 | 0.83 | 0.84 | | | | | | | | | | | | | | | | | | |
| PZ09-I08-5 | 30-Mar-11 14:38 | G | 21.9 | 5.2 | 2.0 | 6.03 | 94.2 | | | | | 1.99 | 1.4 | 1.40 | 0.005 | 0.59 | 0.60 | | | | | | | | | | | | | | | | | | |
| PZ10-CD6-13 | 30-Mar-11 14:00 | G | 26 | 6 | 26 | 2.85 | 524 | | | | | 7.70 | 2.5 | 2.45 | 0.050 | 5.2 | 5.25 | | | | | | | | | | | | | | | | | | |
| PZ11-E09-10 | 30-Mar-11 12:55 | G | 25.8 | 5.6 | 12 | 2.33 | 453.8 | | | | | 23.10 | 2.1 | 1.61 | 0.49 | 21 | 21.49 | | | | | | | | | | | | | | | | | | |
| PZ13-F04-8 | 29-Mar-11 09:25 | G | 21.4 | 5.6 | 7.9 | 2.48 | 125.5 | | | | | 2.15 | 0.75 | 0.71 | 0.037 | 1.4 | 1.44 | | | | | | | | | | | | | | | | | | |
| PZ14-G13-7 | 30-Mar-11 15:05 | G | 24.5 | 5.8 | 15 | 1.04 | 246.1 | | | | | 7.59 | 0.19 | 0.19 | 0.005 | 7.4 | 7.41 | | | | | | | | | | | | | | | | | | |
| PZ15-A11-6 | 30-Mar-11 11:22 | G | 24.8 | 5.2 | 4.9 | 2.52 | 100 | | | | | 0.88 | 0.61 | 0.57 | 0.041 | 0.27 | 0.31 | | | | | | | | | | | | | | | | | | |
| PZ16-C12-28 | 30-Mar-11 11:48 | G | 25.4 | 5.7 | 9.9 | 0.66 | 295.1 | | | | | 2.21 | 1.9 | 1.88 | 0.016 | 0.31 | 0.33 | | | | | | | | | | | | | | | | | | |
| PZ17-I15-26 | 31-Mar-11 10:35 | G | 23.1 | 4.8 | 3.0 | 2.46 | 307.1 | | | | | 17.18 | 0.18 | 0.17 | 0.006 | 17 | 17.01 | | | | | | | | | | | | | | | | | | |
| PZ18-R12-26 | 31-Mar-11 11:03 | G | 23.4 | 5.0 | 8.9 | 0.89 | 328.1 | | | | | 15.40 | 3.4 | 3.38 | 0.022 | 12 | 12.02 | | | | | | | | | | | | | | | | | | |
| PZ19-G10-26 | 30-Mar-11 09:45 | G | 23.1 | 5.1 | 4.0 | 1.07 | 302.1 | | | | | 17.90 | 0.9 | 0.89 | 0.014 | 17 | 17.01 | | | | | | | | | | | | | | | | | | |
| PZ20-G10-15 | 30-Mar-11 09:01 | G | 22.2 | 5.6 | 15.0 | 1.97 | 356.1 | | | | | 22.70 | 3.7 | 3.70 | 0.005 | 19 | 19.01 | | | | | | | | | | | | | | | | | | |
| PZ21-E11-26 | 30-Mar-11 11:04 | G | 23.6 | 5.2 | 4.0 | 0.36 | 295.6 | | | | | 9.85 | 0.55 | 0.54 | 0.012 | 9.3 | 9.31 | | | | | | | | | | | | | | | | | | |
| PZ22-E11-15 | 30-Mar-11 10:30 | G | 24.4 | 5.3 | 8.9 | 1.36 | 416 | | | | | 5.60 | 1.4 | 1.39 | 0.007 | 4.2 | 4.21 | | | | | | | | | | | | | | | | | | |
| PZ23-D09-27 | 30-Mar-11 13:06 | G | 24.4 | 5.4 | 5.9 | 0.18 | 306.2 | | | | | 8.50 | 1.2 | 1.20 | 0.005 | 7.3 | 7.31 | | | | | | | | | | | | | | | | | | |
| PZ24-BKG-26 | 31-Mar-11 08:14 | G | 23.1 | 5.0 | 4.0 | 0.50 | 270.9 | | | | 12 | 11.00 | 1.9 | 1.84 | 0.057 | 9.1 | 9.16 | 1.2 | | 3.6 | 0.79 | 0.013 | 15 | 9.1 | 0.01 | 0.010 | 43 | 0.050 | 21 | 0.11 | 9.7 | 0.17 | 8.9 | 7.7 |
| PZ24-BKG-26-D | 31-Mar-11 08:19 | G | 23.1 | 5.0 | 4.9 | 0.50 | 270.9 | | | | 18 | 11.40 | 1.9 | 1.89 | 0.008 | 9.5 | 9.51 | 0.43 | | 2.9 | 2.7 | 0.027 | 16 | 9.5 | 0.01 | 0.010 | 45 | 0.050 | 20 | 0.042 | 10 | 0.18 | 9.1 | 8 |
| PZ25-A6.5-10 | 31-Mar-11 11:25 | G | 22 | 6.0 | 48 | 5.65 | 770 | | | | | 22.30 | 2.3 | 2.28 | 0.022 | 20 | 20.02 | | | | | | | | | | | | | | | | | | |
| **Blanks** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment Rinsate | 04-Apr-11 10:50 | G | 27.5 | 6.0 | 2.0 | 7.90 | 1.38 | | | | | 0.08 | 0.05 | 0.02 | 0.026 | 0.03 | 0.06 | | | | | | | | | | | | | | | | | | |
| Field Blank DI | 04-Apr-11 09:00 | G | 21.5 | 6.1 | 2.0 | 8.55 | 1.19 | | | | | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | | | | | | | | | | | | | | | | | |
| Field Blank Tap | 04-Apr-11 10:30 | G | 23.6 | 7.7 | 140 | 8.13 | 432 | | | | | 0.10 | 0.05 | 0.05 | 0.005 | 0.05 | 0.06 | | | | | | | | | | | | | | | | | | |

Notes
DO - Dissolved oxygen
G - Grab sample
Gray - Shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.
Yellow shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
Dark Orange shaded data points indicate too many colonies were present for accurate counting.



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# Appendix F: Summary of Water Quality Data

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# Table F.1
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | ORP (mV) | Specific Conductance (µS) | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| **STE Sample** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STE-EX Pump Tank | n | 5 | 5 | 6 | 3 | 1 | 4 | 3 | 5 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 5 | 4 | 5 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 26.0 | | 235.5 | 0.18 | | 789.0 | 410.3 | 33.2 | 138.7 | 271.0 | 40.7 | 40.6 | 8.74 | 27.6 | 0.06 | 32.0 | 4.1 | 256052.0 | | | 4.6 | 47.0 | 0.03 | 0.01 | 3.2 | 21.0 | 0.15 | 58.0 | 7.0 | 18.0 | 0.081 | 15.0 | 43.0 | 0.03 |
| | STD. DEV. | 3.9 | | 95.0 | 0.11 | | 354.0 | 166.9 | 27.1 | 107.6 | 273.3 | 13.7 | 13.7 | 8.67 | 12.1 | 0.10 | 6.6 | 2.4 | 425495.9 | | | | | | | | | | | | | | | | |
| | MIN | 19.9 | 6.5 | 150.0 | 0.10 | -310.0 | 494.0 | 260.0 | 14.0 | 82.7 | 120.0 | 24.2 | 24.2 | -1.00 | 5.8 | 0.01 | 21.5 | 1.3 | 60.0 | | | 4.6 | 47.0 | 0.03 | 0.01 | 3.2 | 21 | 0.15 | 58 | 7.0 | 18.0 | 0.081 | 15.0 | 43.0 | 0.03 |
| | MAX | 30.4 | 7.3 | 410.0 | 0.30 | -310.0 | 1273.0 | 590.0 | 80.0 | 300.0 | 680.0 | 56.0 | 56.0 | 21.00 | 39.0 | 0.26 | 39.3 | 6.4 | 1000000.0 | | | 4.6 | 47.0 | 0.03 | 0.01 | 3.2 | 21 | 0.15 | 58 | 7.0 | 18.0 | 0.081 | 15.0 | 43.0 | 0.03 |
| **Drivepoints** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DP-AA9-14 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.3 | | 8.0 | 0.94 | | 490.5 | | | | | 27.7 | 1.8 | 1.75 | 0.014 | 26.0 | 26.0 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.1 | | 4.3 | 0.07 | | 294.9 | | | | | 29.5 | 1.2 | 1.17 | 0.011 | 28.4 | 28.4 | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.5 | 5.0 | 4.9 | 0.89 | | 281.9 | | | | | 6.8 | 0.9 | 0.92 | 0.006 | 5.9 | 5.9 | | | | | | | | | | | | | | | | | | | |
| | MAX | 23.0 | 5.1 | 11.0 | 0.99 | | 699.0 | | | | | 48.6 | 2.6 | 2.58 | 0.021 | 46.0 | 46.0 | | | | | | | | | | | | | | | | | | | |
| DP-AA9-22 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.6 | | 4.5 | 0.92 | | 302.4 | | | | | 10.0 | 1.0 | 0.98 | 0.027 | 9.0 | 9.0 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.4 | | 3.5 | 0.21 | | 23.1 | | | | | 1.2 | 0.3 | 0.25 | 0.020 | 1.5 | 1.5 | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.3 | 4.9 | 2.0 | 0.77 | | 286.0 | | | | | 9.1 | 0.8 | 0.81 | 0.013 | 7.9 | 7.9 | | | | | | | | | | | | | | | | | | | |
| | MAX | 23.8 | 5.3 | 6.9 | 1.06 | | 318.7 | | | | | 10.8 | 1.2 | 1.16 | 0.041 | 10.0 | 10.0 | | | | | | | | | | | | | | | | | | | |
| DP-AA9-27 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.3 | | 2.5 | 0.83 | | 290.6 | | | | | 9.5 | 1.1 | 1.01 | 0.036 | 8.5 | 8.5 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.8 | | 0.7 | 0.01 | | 3.7 | | | | | 2.3 | 0.1 | 0.06 | 0.011 | 2.2 | 2.2 | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.7 | 4.8 | 2.0 | 0.82 | | 288.0 | | | | | 7.9 | 1.0 | 0.97 | 0.028 | 6.9 | 6.9 | | | | | | | | | | | | | | | | | | | |
| | MAX | 23.9 | 5.2 | 3.0 | 0.84 | | 293.2 | | | | | 11.1 | 1.1 | 1.06 | 0.044 | 10.0 | 10.0 | | | | | | | | | | | | | | | | | | | |
| DP-C11-8 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.8 | | 35.0 | 3.50 | | 319.0 | | | | | 4.6 | 1.5 | 1.41 | 0.09 | 3.1 | 3.2 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.8 | 5.9 | 35.0 | 3.50 | | 319.0 | | | | | 4.6 | 1.5 | 1.41 | 0.09 | 3.1 | 3.2 | | | | | | | | | | | | | | | | | | | |
| | MAX | 21.8 | 5.9 | 35.0 | 3.50 | | 319.0 | | | | | 4.6 | 1.5 | 1.41 | 0.09 | 3.1 | 3.2 | | | | | | | | | | | | | | | | | | | |
| DP-D07-5 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.1 | | 14 | 4.86 | | 326 | | | | | 13 | 2 | 2.00 | 0.005 | 11.0 | 11.01 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.1 | 6.0 | 14 | 4.86 | | 326 | | | | | 13 | 2 | 2.00 | 0.005 | 11.0 | 11.01 | | | | | | | | | | | | | | | | | | | |
| | MAX | 24.1 | 6.0 | 14 | 4.86 | | 326 | | | | | 13.0 | 2.0 | 2.00 | 0.005 | 11.0 | 11.01 | | | | | | | | | | | | | | | | | | | |
| DP-D07-7 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.3 | | 2.0 | 0.77 | | 365.0 | | | | 20 | 13.6 | 1.6 | 1.59 | 0.011 | 12.0 | 12.0 | 0.015 | | 1.7 | 1.4 | 0.1 | 23.0 | 12.0 | 0.010 | 0.010 | 53 | 0.096 | 27 | 0.054 | 5.4 | 0.0084 | 8.0 | 20.0 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.3 | 4.7 | 2.0 | 0.77 | | 365.0 | | | | 20 | 13.6 | 1.6 | 1.59 | 0.011 | 12.0 | 12.0 | 0.015 | | 1.7 | 1.4 | 0.1 | 23.0 | 12.0 | 0.010 | 0.010 | 53 | 0.096 | 27 | 0.054 | 5.4 | 0.0084 | 8.0 | 20.0 | |
| | MAX | 23.3 | 4.7 | 2.0 | 0.77 | | 365.0 | | | | 20 | 13.6 | 1.6 | 1.59 | 0.011 | 12.0 | 12.0 | 0.015 | | 1.7 | 1.4 | 0.1 | 23.0 | 12.0 | 0.010 | 0.010 | 53 | 0.096 | 27 | 0.054 | 5.4 | 0.0084 | 8.0 | 20.0 | |
| DP-D07-9 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.0 | | 2.0 | 4.50 | | 392.0 | | | | | 23.8 | 1.8 | 1.8 | 0.007 | 22.0 | 22.0 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.0 | 4.5 | 2.0 | 4.50 | | 392.0 | | | | | 23.8 | 1.8 | 1.8 | 0.007 | 22.0 | 22.0 | | | | | | | | | | | | | | | | | | | |
| | MAX | 24.0 | 4.5 | 2.0 | 4.50 | | 392.0 | | | | | 23.8 | 1.8 | 1.8 | 0.007 | 22.0 | 22.0 | | | | | | | | | | | | | | | | | | | |
| DP-D7.5-14 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.5 | | 3.0 | 0.89 | | 473.0 | | | | | 27.4 | 1.9 | 1.88 | 0.065 | 25.5 | 25.6 | | | 2.9 | 1.2 | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.8 | | 1.4 | 0.30 | | 58.0 | | | | | 6.7 | 1.8 | 1.9 | 0.078 | 4.9 | 4.9 | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.2 | 5.0 | 2.0 | 0.67 | | 432.0 | | | | | 22.7 | 0.7 | 0.56 | 0.009 | 22.0 | 22.1 | | | 2.9 | 1.2 | | | | | | | | | | | | | | | |
| | MAX | 23.8 | 7.0 | 4.0 | 1.1 | | 514.0 | | | | | 32.2 | 3.2 | 3.19 | 0.120 | 29.0 | 29.0 | | | 2.9 | 1.2 | | | | | | | | | | | | | | | |
| DP-D7.5-20 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.6 | | 4.0 | 1.91 | | 277.0 | | | | 10.0 | 8.6 | 1.1 | 1.04 | 0.014 | 7.5 | 7.5 | 0.2 | | 1.8 | 1.3 | 0.0 | 10.0 | 7.6 | 0.01 | 0.2 | 67 | 0.1 | 28 | 0.022 | 6.5 | 0.21 | 16.0 | 6.7 | |
| | STD. DEV. | 2.0 | | 2.8 | 0.91 | | 26.9 | | | | | 0.5 | 0.4 | 0.37 | 0.012 | 0.1 | 0.1 | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 5.3 | 2.0 | 1.26 | | 258.0 | | | | 10 | 8.2 | 0.8 | 0.78 | 0.005 | 7.4 | 7.4 | 0.2 | | 1.8 | 1.3 | 0.0 | 10.0 | 7.6 | 0.01 | 0.16 | 67 | 0.050 | 28 | 0.022 | 6.5 | 0.21 | 16.0 | 6.7 | |
| | MAX | 25.0 | 7.0 | 5.9 | 2.55 | | 296.0 | | | | 10 | 8.9 | 1.3 | 1.30 | 0.022 | 7.6 | 7.6 | 0.2 | | 1.8 | 1.3 | 0.0 | 10.0 | 7.6 | 0.01 | 0.16 | 67 | 0.050 | 28 | 0.022 | 6.5 | 0.21 | 16.0 | 6.7 | |
| DP-D7.5-26 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.2 | | 3.0 | 1.74 | | 293.5 | | | | | 10.8 | 1.1 | 1.1 | 0.022 | 9.7 | 9.7 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 2.6 | | 1.4 | 0.38 | | 2.1 | | | | | 3.0 | 0.2 | 0.2 | 0.023 | 3.3 | 3.3 | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.3 | 5.3 | 2.0 | 1.47 | | 292.0 | | | | | 8.7 | 1.0 | 0.95 | 0.005 | 7.4 | 7.4 | | | | | | | | | | | | | | | | | | | |
| | MAX | 25.0 | 7.0 | 4.0 | 2.01 | | 295.0 | | | | | 13.0 | 1.3 | 1.30 | 0.038 | 12.0 | 12.0 | | | | | | | | | | | | | | | | | | | |
| DP-D08-9 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.6 | | 20.0 | 1.36 | | 502.0 | | | | 16 | 21.0 | 2.0 | 1.9 | 0.1 | 19.0 | 19.1 | 0.2 | | | 3.5 | 0.1 | 42.0 | 19.0 | 0.0 | 0.2 | 52.0 | 0.094 | 33 | 11.0 | 10 | 0.33 | 8.0 | 35.0 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.6 | 5.6 | 20.0 | 1.36 | | 502.0 | | | | 16 | 21.0 | 2.0 | 1.9 | 0.1 | 19.0 | 19.1 | 0.2 | | | 3.5 | 0.1 | 42.0 | 19.0 | 0.01 | 0.15 | 52.0 | 0.094 | 33 | 11.0 | 10 | 0.33 | 8.0 | 35.0 | |
| | MAX | 24.6 | 5.6 | 20.0 | 1.36 | | 502.0 | | | | 16 | 21.0 | 2.0 | 1.9 | 0.1 | 19.0 | 19.1 | 0.2 | | | 3.5 | 0.1 | 42.0 | 19.0 | 0.01 | 0.15 | 52.0 | 0.094 | 33 | 11.0 | 10 | 0.33 | 8.0 | 35.0 | |
| DP-D09-6 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 19.8 | | 2.0 | 5.05 | | 409.5 | | | | | 16.84 | 0.84 | 0.82 | 0.018 | 16.0 | 16.0 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 4.0 | | 0.0 | 0.77 | | 65.8 | | | | | 7.07 | 0.00 | 0.01 | 0.014 | 7.1 | 7.1 | | | | | | | | | | | | | | | | | | | |
| | MIN | 17.0 | 4.5 | 2.0 | 4.50 | | 363.0 | | | | | 11.84 | 0.84 | 0.81 | 0.038 | 11.0 | 11.0 | | | | | | | | | | | | | | | | | | | |
| | MAX | 22.6 | 4.8 | 2.0 | 5.59 | | 456.0 | | | | | 21.84 | 0.84 | 0.83 | 0.028 | 21.0 | 21.0 | | | | | | | | | | | | | | | | | | | |
| DP-D09-8 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 20.5 | | 2.0 | 2.27 | | 433.5 | | | | | 21.4 | 1.9 | 1.84 | 0.014 | 19.5 | 19.5 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 3.0 | | 0.0 | 1.77 | | 75.7 | | | | | 11.9 | 1.3 | 1.3 | 0.012 | 10.6 | 10.6 | | | | | | | | | | | | | | | | | | | |
| | MIN | 18.4 | 4.6 | 2.0 | 1.01 | | 380.0 | | | | | 12.9 | 0.9 | 0.89 | 0.005 | 12.0 | 12.0 | | | | | | | | | | | | | | | | | | | |
| | MAX | 22.6 | 4.7 | 2.0 | 3.52 | | 487.0 | | | | | 29.8 | 2.8 | 2.80 | 0.022 | 27.0 | 27.0 | | | | | | | | | | | | | | | | | | | |
| DP-D09-15 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.2 | | 8.5 | 2.18 | | 451.5 | | | | | 16.7 | 1.2 | 1.17 | 0.046 | 15.5 | 15.5 | | | 5.3 | 2.5 | | | | | | | | | | | | | | | |
| | STD. DEV. | 3.0 | | 9.2 | 1.44 | | 26.2 | | | | | 4.6 | 1.1 | 1.17 | 0.057 | 3.5 | 3.5 | | | | | | | | | | | | | | | | | | | |
| | MIN | 19.1 | 5.3 | 2.0 | 1.16 | | 433.0 | | | | | 13.4 | 0.4 | 0.34 | 0.005 | 13.0 | 13.1 | | | 5.3 | 2.5 | | | | | | | | | | | | | | | |
| | MAX | 23.3 | 5.4 | 15 | 3.20 | | 470.0 | | | | | 20.0 | 2.0 | 2.00 | 0.086 | 18.0 | 18.0 | | | 5.3 | 2.5 | | | | | | | | | | | | | | | |
| DP-D09-21 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.0 | | 3.5 | 1.08 | | 299.0 | | | | | 8.0 | 0.3 | 0.3 | 0.029 | 7.7 | 7.7 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.8 | | 2.1 | 0.39 | | 1.4 | | | | | 0.4 | 0.1 | 0.1 | 0.034 | 0.4 | 0.3 | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.7 | 5.3 | 2.0 | 0.80 | | 298.0 | | | | | 7.7 | 0.3 | 0.2 | 0.005 | 7.4 | 7.5 | | | | | | | | | | | | | | | | | | | |
| | MAX | 24.2 | 5.8 | 4.9 | 1.35 | | 300.0 | | | | | 8.3 | 0.4 | 0.4 | 0.053 | 7.9 | 7.9 | | | | | | | | | | | | | | | | | | | |
| DP-D09-27 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.4 | | 7.0 | 1.51 | | 289.5 | | | | | 1.8 | 0.7 | 0.65 | 0.029 | 1.1 | 1.1 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 3.0 | | 5.7 | 1.06 | | 27.6 | | | | | 0.5 | 0.6 | 0.6 | 0.027 | 1.1 | 1.1 | | | | | | | | | | | | | | | | | | | |
| | MIN | 20.2 | 6.0 | 3.0 | 0.76 | | 270.0 | | | | | 1.4 | 0.3 | 0.20 | 0.010 | 0.3 | 0.3 | | | | | | | | | | | | | | | | | | | |
| | MAX | 24.5 | 6.0 | 11.0 | 2.26 | | 309.0 | | | | | 2.2 | 1.1 | 1.09 | 0.048 | 1.9 | 1.9 | | | | | | | | | | | | | | | | | | | |



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Table F.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | ORP (mV) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-D10-8 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.8 | | 23 | 1.45 | | 337.0 | | | | | 4.1 | 1.9 | 1.9 | 0.025 | 2.2 | 2.2 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.8 | 5.7 | 23 | 1.45 | | 337.0 | | | | | 4.1 | 1.9 | 1.9 | 0.025 | 2.2 | 2.2 | | | | | | | | | | | | | | | | | |
| | MAX | 23.8 | 5.7 | 23 | 1.45 | | 337.0 | | | | | 4.1 | 1.9 | 1.9 | 0.025 | 2.2 | 2.2 | | | | | | | | | | | | | | | | | |
| DP-D11-11 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.7 | | 9.9 | 1.39 | | 479.0 | | | | | 26.8 | 1.8 | 1.7 | 0.080 | 25.0 | 25.1 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.7 | 5.3 | 9.9 | 1.39 | | 479.0 | | | | | 26.8 | 1.8 | 1.7 | 0.080 | 25.0 | 25.1 | | | | | | | | | | | | | | | | | |
| | MAX | 21.7 | 5.3 | 9.9 | 1.39 | | 479.0 | | | | | 26.8 | 1.8 | 1.7 | 0.080 | 25.0 | 25.1 | | | | | | | | | | | | | | | | | |
| DP-D12-11 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.3 | | 6.9 | 0.65 | | 477 | | | | | 12.3 | 2.8 | 2.06 | 0.74 | 9.5 | 10.24 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.3 | 4.8 | 6.9 | 0.65 | | 477 | | | | | 12.3 | 2.8 | 2.06 | 0.74 | 9.5 | 10.24 | | | | | | | | | | | | | | | | | |
| | MAX | 22.3 | 4.8 | 6.9 | 0.65 | | 477 | | | | | 12.3 | 2.8 | 2.06 | 0.74 | 9.5 | 10.24 | | | | | | | | | | | | | | | | | |
| DP-E02-6 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.3 | | 4.9 | 2.41 | | 98.5 | | | | | 2.02 | 0.42 | 0.398 | 0.022 | 1.6 | 1.622 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.3 | 5.5 | 4.9 | 2.41 | | 98.5 | | | | | 2.02 | 0.42 | 0.398 | 0.022 | 1.6 | 1.622 | | | | | | | | | | | | | | | | | |
| | MAX | 21.3 | 5.5 | 4.9 | 2.41 | | 98.5 | | | | | 2.02 | 0.42 | 0.398 | 0.022 | 1.6 | 1.622 | | | | | | | | | | | | | | | | | |
| DP-E02-8 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.3 | | 5.0 | 0.46 | | 158.9 | | | | | 0.64 | 0.22 | 0.214 | 0.006 | 0.42 | 0.426 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.3 | 5.1 | 5.0 | 0.46 | | 158.9 | | | | | 0.64 | 0.22 | 0.214 | 0.006 | 0.42 | 0.426 | | | | | | | | | | | | | | | | | |
| | MAX | 21.3 | 5.1 | 5.0 | 0.46 | | 158.9 | | | | | 0.64 | 0.22 | 0.214 | 0.006 | 0.42 | 0.426 | | | | | | | | | | | | | | | | | |
| DP-E03-10 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.3 | | 6.9 | 2.21 | | 211.3 | | | | | 2.61 | 0.81 | 0.74 | 0.075 | 1.8 | 1.88 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.3 | 5.3 | 6.9 | 2.21 | | 211.3 | | | | | 2.61 | 0.81 | 0.74 | 0.075 | 1.8 | 1.88 | | | | | | | | | | | | | | | | | |
| | MAX | 21.3 | 5.3 | 6.9 | 2.21 | | 211.3 | | | | | 2.61 | 0.81 | 0.74 | 0.075 | 1.8 | 1.88 | | | | | | | | | | | | | | | | | |
| DP-E04-6 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 22.3 | | 2.0 | 3.49 | | 90.6 | | | | 39 | 1.13 | 0.67 | 0.652 | 0.018 | 0.46 | 0.478 | 2.5 | | | 3.2 | 0.076 | 2.7 | 0.46 | 0.01 | 0.01 | 21 | 0.05 | 7.5 | 0.33 | 1.8 | 0.049 | 0.94 | 2.3 |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.3 | 4.7 | 2.0 | 3.49 | | 90.6 | | | | | 1.13 | 0.67 | 0.652 | 0.018 | 0.46 | 0.478 | 2.5 | | | 3.2 | 0.076 | 2.7 | 0.46 | 0.01 | 0.01 | 21 | 0.05 | 7.5 | 0.33 | 1.8 | 0.049 | 0.94 | 2.3 |
| | MAX | 22.3 | 4.7 | 2.0 | 3.49 | | 90.6 | | | | 39 | 1.13 | 0.67 | 0.652 | 0.018 | 0.46 | 0.478 | 2.5 | | | 3.2 | 0.076 | 2.7 | 0.46 | 0.01 | 0.01 | 21 | 0.05 | 7.5 | 0.33 | 1.8 | 0.049 | 0.94 | 2.3 |
| DP-E04-8 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.0 | | 4.9 | 1.43 | | 171.1 | | | | | 3.8 | 1 | 0.976 | 0.024 | 2.8 | 2.824 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.0 | 4.9 | 4.9 | 1.43 | | 171.1 | | | | | 3.8 | 1.0 | 0.976 | 0.024 | 2.8 | 2.824 | | | | | | | | | | | | | | | | | |
| | MAX | 22.0 | 4.9 | 4.9 | 1.43 | | 171.1 | | | | | 3.8 | 1.0 | 0.976 | 0.024 | 2.8 | 2.824 | | | | | | | | | | | | | | | | | |
| DP-E05-6 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.8 | | 33 | 2.96 | | 171.8 | | | | | 3.16 | 3.1 | 0.5 | 2.6 | 0.06 | 2.66 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.8 | 6.0 | 33 | 2.96 | | 171.8 | | | | | 3.16 | 3.1 | 0.5 | 2.6 | 0.06 | 2.66 | | | | | | | | | | | | | | | | | |
| | MAX | 24.8 | 6.0 | 33 | 2.96 | | 171.8 | | | | | 3.16 | 3.1 | 0.5 | 2.6 | 0.06 | 2.66 | | | | | | | | | | | | | | | | | |
| DP-E06-6 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.8 | | 2.0 | 1.89 | | 162.8 | | | | | 3.2 | 1.3 | 1.287 | 0.013 | 1.9 | 1.913 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.8 | 4.4 | 2.0 | 1.89 | | 162.8 | | | | | 3.2 | 1.3 | 1.287 | 0.013 | 1.9 | 1.913 | | | | | | | | | | | | | | | | | |
| | MAX | 22.8 | 4.4 | 2.0 | 1.89 | | 162.8 | | | | | 3.2 | 1.3 | 1.287 | 0.013 | 1.9 | 1.913 | | | | | | | | | | | | | | | | | |
| DP-E06-8 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.7 | | 2.0 | 10.9 | | 180.6 | | | | | 3.22 | 0.82 | 0.813 | 0.007 | 2.4 | 2.407 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.7 | 4.5 | 2.0 | 10.9 | | 180.6 | | | | | 3.22 | 0.82 | 0.813 | 0.007 | 2.4 | 2.407 | | | | | | | | | | | | | | | | | |
| | MAX | 22.7 | 4.5 | 2.0 | 10.9 | | 180.6 | | | | | 3.22 | 0.82 | 0.813 | 0.007 | 2.4 | 2.407 | | | | | | | | | | | | | | | | | |
| DP-E07-10 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.5 | | 5.9 | 1.19 | | 289 | | | | | 10.1 | 2.3 | 2.248 | 0.052 | 7.8 | 7.852 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.5 | 4.9 | 5.9 | 1.19 | | 289 | | | | | 10.1 | 2.3 | 2.248 | 0.052 | 7.8 | 7.852 | | | | | | | | | | | | | | | | | |
| | MAX | 22.5 | 4.9 | 5.9 | 1.19 | | 289 | | | | | 10.1 | 2.3 | 2.248 | 0.052 | 7.8 | 7.852 | | | | | | | | | | | | | | | | | |
| DP-E08-6 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.4 | | 3.0 | 1.83 | | 326.0 | | | | | 12 | 2.1 | 2.086 | 0.014 | 9.9 | 9.914 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.4 | 5.0 | 3.0 | 1.83 | | 326.0 | | | | | 12 | 2.1 | 2.086 | 0.014 | 9.9 | 9.914 | | | | | | | | | | | | | | | | | |
| | MAX | 22.4 | 5.0 | 3.0 | 1.83 | | 326.0 | | | | | 12 | 2.1 | 2.086 | 0.014 | 9.9 | 9.914 | | | | | | | | | | | | | | | | | |
| DP-E08-8 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.6 | | 3.0 | 1.52 | | 348.0 | | | | | 12.6 | 1.6 | 1.595 | 0.005 | 11 | 11.005 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.6 | 5.0 | 3.0 | 1.52 | | 348.0 | | | | | 12.6 | 1.6 | 1.595 | 0.005 | 11 | 11.005 | | | | | | | | | | | | | | | | | |
| | MAX | 22.6 | 5.0 | 3.0 | 1.52 | | 348.0 | | | | | 12.6 | 1.6 | 1.595 | 0.005 | 11 | 11.005 | | | | | | | | | | | | | | | | | |



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# Table F.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | ORP (mV) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-E10-6 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.0 | | 3.0 | 0.60 | | 407.0 | | | | | 9.7 | 1.2 | 1.195 | 0.005 | 8.5 | 8.505 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.0 | 4.6 | 3.0 | 0.60 | | 407.0 | | | | | 9.7 | 1.2 | 1.195 | 0.005 | 8.5 | 8.505 | | | | | | | | | | | | | | | | | |
| | MAX | 23.0 | 4.6 | 3.0 | 0.60 | | 407.0 | | | | | 9.7 | 1.2 | 1.195 | 0.005 | 8.5 | 8.505 | | | | | | | | | | | | | | | | | |
| DP-E11-12 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.0 | | 8.9 | 0.99 | | 441 | | | | | 14.6 | 1.6 | 1.582 | 0.018 | 13 | 13.018 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.0 | 5.1 | 8.9 | 0.99 | | 441.0 | | | | | 14.6 | 1.6 | 1.582 | 0.018 | 13 | 13.018 | | | | | | | | | | | | | | | | | |
| | MAX | 23.0 | 5.1 | 8.9 | 0.99 | | 441.0 | | | | | 14.6 | 1.6 | 1.582 | 0.018 | 13 | 13.018 | | | | | | | | | | | | | | | | | |
| DP-E12-10 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 21.55 | | 5.45 | 2.515 | | 505.5 | | | | 24 | 25.25 | 1.75 | 1.555 | 0.195 | 23.5 | 23.695 | 0.026 | | 1.2 | 0.88 | 0.01 | 41 | 22 | 0.01 | 0.01 | 47 | 0.075 | 39 | 0.089 | 9.9 | 0.21 | 11 | 33 |
| | STD. DEV. | 3.32 | | 4.88 | 3.06 | | 20.51 | | | | | 2.90 | 0.78 | 0.73 | 0.05 | 2.12 | 2.17 | | | | | | | | | | | | | | | | | |
| | MIN | 19.2 | 5.1 | 2.0 | 0.35 | | 491.0 | | | | 24 | 23.2 | 1.2 | 1.04 | 0.16 | 22 | 22.16 | 0.026 | | 1.2 | 0.88 | 0.01 | 41 | 22 | 0.01 | 0.01 | 47 | 0.075 | 39 | 0.089 | 9.9 | 0.21 | 11 | 33 |
| | MAX | 23.9 | 5.48 | 8.9 | 4.68 | | 520.0 | | | | 24 | 27.3 | 2.3 | 2.07 | 0.23 | 25 | 25.23 | 0.026 | | 1.2 | 0.88 | 0.01 | 41 | 22 | 0.01 | 0.01 | 47 | 0.075 | 39 | 0.089 | 9.9 | 0.21 | 11 | 33 |
| DP-E12-15 | n | 2 | 2 | 2 | 2 | | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 22.05 | | 5.45 | 1.5 | | 505 | | | | 14 | 23.19 | 1.69 | 1.56 | 0.13 | 21.5 | 21.63 | 0.012 | | | 0.92 | 0.029 | 36 | 17 | 0.01 | 0.18 | 54 | 0.100 | 35 | 0.032 | 7.1 | 0.045 | 12 | 33 |
| | STD. DEV. | 0.21 | | 4.88 | 1.32 | | 63.64 | | | | | 5.22 | 1.15 | 1.32 | 0.17 | 6.36 | 6.54 | | | | | | | | | | | | | | | | | |
| | MIN | 21.9 | 4.88 | 2.0 | 0.6 | | 460.0 | | | | 14 | 19.5 | 0.88 | 0.63 | 0.005 | 17 | 17.005 | 0.012 | | | 0.92 | 0.029 | 36 | 17 | 0.01 | 0.18 | 54 | 0.100 | 35 | 0.032 | 7.1 | 0.045 | 12 | 33 |
| | MAX | 22.2 | 5 | 8.9 | 2.47 | | 550.0 | | | | 14 | 26.88 | 2.5 | 2.495 | 0.25 | 26 | 26.25 | 0.012 | | | 0.92 | 0.029 | 36 | 17 | 0.01 | 0.18 | 54 | 0.100 | 35 | 0.032 | 7.1 | 0.045 | 12 | 33 |
| DP-E12-22 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 21.45 | | 3.95 | 1.27 | | 380.5 | | | | 10 | 15.5 | 1.95 | 1.78 | 0.17 | 13.55 | 13.72 | 0.035 | | 1.75 | 1.17 | 0.017 | 12 | 9.1 | 0.01 | 0.24 | 56 | 0.1 | 29 | 0.037 | 6.1 | 0.16 | 10 | 8.4 |
| | STD. DEV. | 1.48 | | 2.76 | 0.96 | | 118.09 | | | | | 4.95 | 1.34 | 1.17 | 0.17 | 6.29 | 6.12 | | | 0.78 | 0.47 | | | | | | | | | | | | | |
| | MIN | 20.4 | 5.0 | 2.0 | 0.59 | | 297.0 | | | | 10 | 12 | 1 | 0.951 | 0.049 | 9.1 | 9.39 | 0.035 | | 1.2 | 0.83 | 0.017 | 12 | 9.1 | 0.01 | 0.24 | 56 | 0.1 | 29 | 0.037 | 6.1 | 0.16 | 10 | 8.4 |
| | MAX | 22.5 | 5.3 | 5.9 | 1.95 | | 464.0 | | | | 10 | 19 | 2.9 | 2.61 | 0.29 | 18 | 18.05 | 0.035 | | 2.3 | 1.5 | 0.017 | 12 | 9.1 | 0.01 | 0.24 | 56 | 0.1 | 29 | 0.037 | 6.1 | 0.16 | 10 | 8.4 |
| DP-E12-28 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 22.4 | | 3.0 | 1.29 | | 303.5 | | | | 10 | 11.0 | 2.1 | 2.06 | 0.041 | 8.9 | 8.9 | 0.069 | | | 0.5 | 0.019 | 15 | 9.8 | 0.01 | 0.065 | 59 | 0.05 | 27 | 0.023 | 9.5 | 0.11 | 15 | 5.3 |
| | STD. DEV. | 0.6 | | 1.4 | 1.02 | | 9.2 | | | | | 1.1 | 0.3 | 0.2 | 0.040 | 1.3 | 1.3 | | | | | | | | | | | | | | | | | |
| | MIN | 21.9 | 5.2 | 2.0 | 0.57 | | 297.0 | | | | 10 | 10.2 | 1.9 | 1.89 | 0.013 | 7.9 | 8.0 | 0.069 | | | 0.5 | 0.019 | 15 | 9.8 | 0.01 | 0.065 | 59 | 0.05 | 27 | 0.023 | 9.5 | 0.11 | 15 | 5.3 |
| | MAX | 22.8 | 5.3 | 4.0 | 2.01 | | 310.0 | | | | 10 | 11.7 | 2.3 | 2.23 | 0.069 | 9.8 | 9.8 | 0.069 | | | 0.5 | 0.019 | 15 | 9.8 | 0.01 | 0.065 | 59 | 0.05 | 27 | 0.023 | 9.5 | 0.11 | 15 | 5.3 |
| DP-F03-8 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.7 | | 18 | 1.22 | | 145.6 | | | | | 3.3 | 1.6 | 1.21 | 0.39 | 1.7 | 2.09 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.7 | 6.2 | 18 | 1.22 | | 145.6 | | | | | 3.3 | 1.6 | 1.21 | 0.39 | 1.7 | 2.09 | | | | | | | | | | | | | | | | | |
| | MAX | 21.7 | 6.2 | 18 | 1.22 | | 145.6 | | | | | 3.3 | 1.6 | 1.21 | 0.39 | 1.7 | 2.09 | | | | | | | | | | | | | | | | | |
| DP-F04-17 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.0 | | 90 | 0.57 | | 415.7 | | | | | 2.15 | 0.35 | 0.322 | 0.028 | 1.8 | 1.828 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.0 | 7.3 | 90 | 0.57 | | 415.7 | | | | | 2.15 | 0.35 | 0.322 | 0.028 | 1.8 | 1.828 | | | | | | | | | | | | | | | | | |
| | MAX | 22.0 | 7.3 | 90 | 0.57 | | 415.7 | | | | 0 | 2.15 | 0.35 | 0.322 | 0.028 | 1.8 | 1.828 | | | | | | | | | | | | | | | | | |
| DP-F04-22 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.8 | | 9.9 | 0.72 | | 314.1 | | | | | 10.9 | 2.7 | 2.683 | 0.017 | 8.2 | 8.217 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.8 | 6.0 | 9.9 | 0.72 | | 314.1 | | | | | 10.9 | 2.7 | 2.683 | 0.017 | 8.2 | 8.217 | | | | | | | | | | | | | | | | | |
| | MAX | 22.8 | 6.0 | 9.9 | 0.72 | | 314.1 | | | | | 10.9 | 2.7 | 2.683 | 0.017 | 8.2 | 8.217 | | | | | | | | | | | | | | | | | |
| DP-F04-32 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.1 | | 69 | 1.04 | | 345.6 | | | | | 0.96 | 0.25 | 0.208 | 0.042 | 0.71 | 0.752 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.1 | 6.9 | 69 | 1.04 | | 345.6 | | | | | 0.96 | 0.25 | 0.208 | 0.042 | 0.71 | 0.752 | | | | | | | | | | | | | | | | | |
| | MAX | 23.1 | 6.9 | 69 | 1.04 | | 345.6 | | | | | 0.96 | 0.25 | 0.208 | 0.042 | 0.71 | 0.752 | | | | | | | | | | | | | | | | | |
| DP-F05-5 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 27.7 | | 6.9 | 7.36 | | 173.3 | | | | | 2.41 | 2.4 | 2.27 | 0.13 | 0.01 | 0.14 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 27.7 | 5.8 | 6.9 | 7.36 | | 173.3 | | | | | 2.41 | 2.4 | 2.27 | 0.13 | 0.01 | 0.14 | | | | | | | | | | | | | | | | | |
| | MAX | 27.7 | 5.8 | 6.9 | 7.36 | | 173.3 | | | | | 2.41 | 2.4 | 2.27 | 0.13 | 0.01 | 0.14 | | | | | | | | | | | | | | | | | |
| DP-F05-31 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 23.0 | | 35.5 | 1.86 | | 242.1 | | | | 18 | 6.11 | 1.46 | 1.39 | 0.07 | 4.65 | 4.72 | 0.29 | | | 1.7 | 0.58 | 10 | 1.3 | 0.11 | 0.01 | 23 | 0.05 | 31 | 1.5 | 6.4 | 0.063 | 2.9 | 11 |
| | STD. DEV. | 1.6 | | 47.4 | 0.22 | | 77.7 | | | | | 5.78 | 1.19 | 1.19 | 0.00 | 4.60 | 4.60 | | | | | | | | | | | | | | | | | |
| | MIN | 21.9 | 5.2 | 2.0 | 1.70 | | 187.1 | | | | 18 | 2.02 | 0.62 | 0.55 | 0.069 | 1.40 | 1.47 | 0.29 | | | 1.7 | 0.58 | 10 | 1.3 | 0.11 | 0.01 | 23 | 0.05 | 31 | 1.5 | 6.4 | 0.063 | 2.9 | 11 |
| | MAX | 24.1 | 7.3 | 69 | 2.01 | | 297.0 | | | | 18 | 10.2 | 2.3 | 2.231 | 0.07 | 7.90 | 7.97 | 0.29 | | | 1.7 | 0.58 | 10 | 1.3 | 0.11 | 0.01 | 23 | 0.05 | 31 | 1.5 | 6.4 | 0.063 | 2.9 | 11 |
| DP-F06-10 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.8 | | 4.0 | 0.30 | | 190.6 | | | | | 1.83 | 0.33 | 0.274 | 0.056 | 1.5 | 1.556 | 0 | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.8 | 5.2 | 4.0 | 0.30 | | 190.6 | | | | | 1.83 | 0.33 | 0.274 | 0.056 | 1.5 | 1.556 | 0 | | | | | | | | | | | | | | | | |
| | MAX | 21.8 | 5.2 | 4.0 | 0.30 | | 190.6 | | | | | 1.83 | 0.33 | 0.274 | 0.056 | 1.5 | 1.556 | 0 | | | | | | | | | | | | | | | | |
| DP-F08-14 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.5 | | 225.0 | 3.69 | | 956.5 | | | | | 7.1 | 1.1 | 0.91 | 0.140 | 6.0 | 6.1 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.1 | | 120.2 | 3.40 | | 644.2 | | | | | 3.3 | 0.2 | 0.3 | 0.071 | 3.5 | 3.6 | | | | | | | | | | | | | | | | | |
| | MIN | 22.4 | 7.0 | 140 | 1.28 | | 501.0 | | | | | 4.7 | 0.9 | 0.71 | 0.090 | 3.5 | 3.6 | | | | | | | | | | | | | | | | | |
| | MAX | 22.5 | 7.6 | 310 | 6.1 | | 1412.0 | | | | | 9.4 | 1.2 | 1.11 | 0.190 | 8.5 | 8.7 | | | | | | | | | | | | | | | | | |
| DP-F08-20 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 23.2 | | 6.5 | 1.09 | | 351.8 | | | | 10 | 10.8 | 1.5 | 1.45 | 0.033 | 9.3 | 9.3 | 0.33 | | 3.0 | 1.60 | 0.032 | 11 | 8.6 | 0.01 | 0.01 | 65 | 0.05 | 32 | 0.067 | 7.3 | 0.22 | 14 | 6.4 |
| | STD. DEV. | 0.1 | | 4.9 | 0.96 | | 22.9 | | | | | 0.1 | 0.9 | 0.87 | 0.004 | 1.0 | 1.0 | | | | 1.13 | | | | | | | | | | | | | |
| | MIN | 23.1 | 6.0 | 3.0 | 0.41 | | 335.6 | | | | 10 | 10.7 | 0.9 | 0.83 | 0.030 | 8.6 | 8.6 | 0.33 | | 3.0 | 0.80 | 0.032 | 11 | 8.6 | 0.01 | 0.01 | 65 | 0.05 | 32 | 0.067 | 7.3 | 0.22 | 14 | 6.4 |
| | MAX | 23.2 | 6.3 | 9.9 | 1.77 | | 368.0 | | | | 10 | 10.9 | 2.1 | 2.07 | 0.036 | 10.0 | 10.0 | 0.33 | | 3.0 | 2.40 | 0.032 | 11 | 8.6 | 0.01 | 0.01 | 65 | 0.05 | 32 | 0.067 | 7.3 | 0.22 | 14 | 6.4 |



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# Table F.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | ORP (mV) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-F08-28 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.3 | | 26.5 | 1.05 | | 328.0 | | | | | 3.97 | 0.9 | 0.8 | 0.081 | 3.1 | 3.2 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.2 | | 12.0 | 0.96 | | 5.7 | | | | | 0.05 | 0.3 | 0.4 | 0.098 | 0.3 | 0.4 | | | | | | | | | | | | | | | | | | |
| | MIN | 23.1 | 6.1 | 18 | 0.37 | | 323.9 | | | | | 3.93 | 0.6 | 0.5 | 0.012 | 2.9 | 2.9 | | | | | | | | | | | | | | | | | | |
| | MAX | 23.4 | 6.3 | 35 | 1.73 | | 332.0 | | | | | 4.00 | 1.1 | 1.1 | 0.150 | 3.3 | 3.5 | | | | | | | | | | | | | | | | | | |
| DP-F09-05 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 24.8 | | 22 | 1.15 | | 191.1 | | | | 24 | 3.4 | 1.5 | 1.27 | 0.23 | 1.9 | 2.13 | 0.27 | | | 7.7 | 0.1 | 10 | 1.9 | 0.01 | 0.026 | 26 | 0.05 | 14 | 5.8 | 3.5 | 0.37 | 4.7 | 9.1 |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.8 | 6.6 | 22 | 1.15 | | 191.1 | | | | 24 | 3.4 | 1.5 | 1.27 | 0.23 | 1.9 | 2.13 | 0.27 | | | 7.7 | 0.1 | 10 | 1.9 | 0.01 | 0.026 | 26 | 0.05 | 14 | 5.8 | 3.5 | 0.37 | 4.7 | 9.1 |
| | MAX | 24.8 | 6.6 | 22 | 1.15 | | 191.1 | | | | 24 | 3.4 | 1.5 | 1.27 | 0.23 | 1.9 | 2.13 | 0.27 | | | 7.7 | 0.1 | 10 | 1.9 | 0.01 | 0.026 | 26 | 0.05 | 14 | 5.8 | 3.5 | 0.37 | 4.7 | 9.1 |
| DP-F10-11 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.3 | | 2.0 | 0.80 | | 475.9 | | | | | 32.3 | 2.3 | 1.2 | 1.1 | 30 | 31.1 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.3 | 4.7 | 2.0 | 0.80 | | 475.9 | | | | | 32.3 | 2.3 | 1.2 | 1.1 | 30 | 31.1 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.3 | 4.7 | 2.0 | 0.80 | | 475.9 | | | | | 32.3 | 2.3 | 1.2 | 1.1 | 30 | 31.1 | | | | | | | | | | | | | | | | | | |
| DP-F11-11 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 20.5 | | 5.5 | 3.08 | | 389 | | | | | 18.6 | 1.6 | 0.6 | 0.97 | 17.0 | 18.0 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.3 | | 4.9 | 3.08 | | 33.0 | | | | | 5.5 | 0.1 | 0.6 | 0.75 | 5.7 | 4.9 | | | | | | | | | | | | | | | | | | |
| | MIN | 19.5 | 5.3 | 2.0 | 0.90 | | 366.0 | | | | | 14.7 | 1.5 | 0.2 | 0.44 | 13.0 | 14.5 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.4 | 5.4 | 8.9 | 5.26 | | 412.7 | | | | | 22.5 | 1.7 | 1.1 | 1.50 | 21.0 | 21.4 | | | | | | | | | | | | | | | | | | |
| DP-F11-15 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.3 | | 5.0 | 1.96 | | 500.2 | | | | | 29.8 | 1.3 | 1.0 | 0.26 | 28.5 | 28.8 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.7 | | 4.2 | 2.38 | | 66.3 | | | | | 0.4 | 0.3 | 0.5 | 0.17 | 0.7 | 0.9 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.8 | 5.0 | 2.0 | 0.28 | | 453.3 | | | | | 29.5 | 1.1 | 0.7 | 0.14 | 28.0 | 28.1 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.8 | 5.1 | 7.9 | 3.64 | | 547.0 | | | | | 30.1 | 1.5 | 1.4 | 0.38 | 29.0 | 29.4 | | | | | | | | | | | | | | | | | | |
| DP-F11-18 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.7 | | 5.0 | 1.83 | | 465.5 | | | | | 21.3 | 1.3 | 1.2 | 0.046 | 20.0 | 20.0 | | | 4.1 | 1.3 | | | | | | | | | | | | | | |
| | STD. DEV. | 0.6 | | 4.2 | 0.92 | | 44.6 | | | | | 1.8 | 1.0 | 1.0 | 0.030 | 2.8 | 2.8 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 5.0 | 2.0 | 1.18 | | 433.9 | | | | | 20.0 | 0.6 | 0.5 | 0.024 | 18.0 | 18.1 | | | 4.1 | 1.3 | | | | | | | | | | | | | | |
| | MAX | 23.1 | 5.4 | 7.9 | 2.48 | | 497.0 | | | | | 22.6 | 2.0 | 1.9 | 0.067 | 22.0 | 22.0 | | | 4.1 | 1.3 | | | | | | | | | | | | | | |
| DP-F11-21 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.6 | | 4.0 | 1.27 | | 388.2 | | | | | 20.4 | 0.9 | 0.9 | 0.012 | 19.5 | 19.5 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.1 | | 2.8 | 1.18 | | 98.7 | | | | | 1.0 | 0.3 | 0.3 | 0.009 | 0.7 | 0.7 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.5 | 5.0 | 2.0 | 0.43 | | 318.4 | | | | | 19.6 | 0.6 | 0.6 | 0.005 | 19.0 | 19.0 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.7 | 5.2 | 5.9 | 2.10 | | 458.0 | | | | | 21.1 | 1.1 | 1.1 | 0.018 | 20.0 | 20.0 | | | | | | | | | | | | | | | | | | |
| DP-F11-24 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.9 | | 3.0 | 0.73 | | 388.1 | | | | | 19.8 | 0.8 | 0.8 | 0.015 | 19.0 | 19.0 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.1 | | 1.4 | 0.60 | | 123.0 | | | | | 5.2 | 0.4 | 0.5 | 0.010 | 5.7 | 5.7 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.8 | 5.0 | 2.0 | 0.30 | | 301.1 | | | | | 16.1 | 0.5 | 0.4 | 0.008 | 15.0 | 15.0 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.9 | 5.1 | 4.0 | 1.15 | | 475.0 | | | | | 23.5 | 1.1 | 1.1 | 0.022 | 23.0 | 23.0 | | | | | | | | | | | | | | | | | | |
| DP-F11-27 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.3 | | 3.5 | 0.61 | | 302.3 | | | | | 6.6 | 1.1 | 1.0 | 0.017 | 5.5 | 5.5 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.1 | | 2.1 | 0.30 | | 7.4 | | | | | 2.9 | 0.3 | 0.3 | 0.013 | 2.5 | 2.5 | | | | | | | | | | | | | | | | | | |
| | MIN | 23.2 | 5.2 | 2.0 | 0.39 | | 297.0 | | | | | 4.5 | 0.8 | 0.8 | 0.008 | 3.7 | 3.7 | | | | | | | | | | | | | | | | | | |
| | MAX | 23.3 | 5.3 | 4.9 | 0.82 | | 307.5 | | | | | 8.6 | 1.3 | 1.3 | 0.026 | 7.3 | 7.3 | | | | | | | | | | | | | | | | | | |
| DP-F12-10 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.5 | | 2.0 | 0.90 | | 427 | | | | | 24.5 | 1.5 | 1.34 | 0.16 | 23 | 23.16 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.5 | 5.0 | 2.0 | 0.90 | | 427 | | | | | 24.5 | 1.5 | 1.34 | 0.16 | 23 | 23.16 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.5 | 5.0 | 2.0 | 0.90 | | 427 | | | | | 24.5 | 1.5 | 1.34 | 0.16 | 23 | 23.16 | | | | | | | | | | | | | | | | | | |
| DP-F15-14 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.6 | | 16.5 | 0.82 | | 460.3 | | | | | 24.5 | 0.5 | 0.3 | 0.16 | 24.0 | 24.2 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.1 | | 7.8 | 0.41 | | 73.1 | | | | | 10.2 | 0.3 | 0.4 | 0.05 | 9.9 | 9.8 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.5 | 5.1 | 11 | 0.53 | | 408.6 | | | | | 17.3 | 0.3 | 0.1 | 0.12 | 17.0 | 17.2 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.7 | 5.2 | 22 | 1.11 | | 512.0 | | | | | 31.7 | 0.7 | 0.6 | 0.19 | 31.0 | 31.1 | | | | | | | | | | | | | | | | | | |
| DP-F15-20 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.2 | | 11.5 | 0.70 | | 516.0 | | | | | 24.9 | 0.9 | 0.8 | 0.012 | 24.0 | 24.0 | | | 1.1 | 1.2 | | | | | | | | | | | | | | |
| | STD. DEV. | 0.1 | | 0.7 | 0.11 | | 188.1 | | | | | 6.3 | 0.8 | 0.8 | 0.010 | 7.1 | 7.1 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.1 | 4.9 | 11.0 | 0.62 | | 383.0 | | | | | 20.4 | 0.3 | 0.3 | 0.005 | 19.0 | 19.0 | | | 1.1 | 1.2 | | | | | | | | | | | | | | |
| | MAX | 22.3 | 5.4 | 12 | 0.78 | | 649.0 | | | | | 29.3 | 1.4 | 1.4 | 0.019 | 29.0 | 29.0 | | | 1.1 | 1.2 | | | | | | | | | | | | | | |
| DP-F15-26 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.2 | | 3.0 | 0.65 | | 298.4 | | | | | 15.0 | 1.0 | 1.0 | 0.045 | 14.0 | 14.0 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.5 | | 1.4 | 0.18 | | 10.7 | | | | | 4.9 | 0.7 | 0.6 | 0.041 | 4.2 | 4.3 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.8 | 4.9 | 2.0 | 0.52 | | 290.8 | | | | | 11.5 | 0.5 | 0.5 | 0.016 | 11.0 | 11.0 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.5 | 5.2 | 4.0 | 0.78 | | 306.0 | | | | | 18.5 | 1.5 | 1.4 | 0.074 | 17.0 | 17.1 | | | | | | | | | | | | | | | | | | |
| DP-G05-6 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 26.2 | | 22 | 2.49 | | 151.9 | | | | 32 | 2.04 | 1.9 | 0.5 | 1.4 | 0.14 | 1.54 | 0.43 | | | 8.7 | 0.075 | 4.1 | 0.14 | 0.01 | 0.18 | 30 | 0.05 | 11 | 8.2 | 3.3 | 0.4 | 2.8 | 2.6 |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 26.2 | 6.1 | 22 | 2.49 | | 151.9 | | | | 32 | 2.04 | 1.9 | 0.5 | 1.4 | 0.14 | 1.54 | 0.43 | | | 8.7 | 0.075 | 4.1 | 0.14 | 0.01 | 0.18 | 30 | 0.05 | 11 | 8.2 | 3.3 | 0.4 | 2.8 | 2.6 |
| | MAX | 26.2 | 6.1 | 22 | 2.49 | | 151.9 | | | | 32 | 2.04 | 1.9 | 0.5 | 1.4 | 0.14 | 1.54 | 0.43 | | | 8.7 | 0.075 | 4.1 | 0.14 | 0.01 | 0.18 | 30 | 0.05 | 11 | 8.2 | 3.3 | 0.4 | 2.8 | 2.6 |
| DP-G06-7 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 28.9 | | 34 | 2.36 | | 184 | | | | | 0.68 | 0.55 | 0.28 | 0.27 | 0.13 | 0.4 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 28.9 | 6.2 | 34 | 2.36 | | 184 | | | | | 0.68 | 0.55 | 0.28 | 0.27 | 0.13 | 0.4 | | | | | | | | | | | | | | | | | | |
| | MAX | 28.9 | 6.2 | 34 | 2.36 | | 184 | | | | | 0.68 | 0.55 | 0.28 | 0.27 | 0.13 | 0.4 | | | | | | | | | | | | | | | | | | |



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# Table F.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | ORP (mV) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-G07-13 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.2 | | 14 | 2.19 | | 232 | | | | | 3.40 | 0.70 | 0.37 | 0.33 | 2.7 | 3.03 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.2 | 5.8 | 14 | 2.19 | | 232 | | | | | 3.40 | 0.70 | 0.37 | 0.33 | 2.7 | 3.03 | | | | | | | | | | | | | | | | | |
| | MAX | 25.2 | 5.8 | 14 | 2.19 | | 232 | | | | | 3.40 | 0.70 | 0.37 | 0.33 | 2.7 | 3.03 | | | | | | | | | | | | | | | | | |
| DP-G07-15 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.4 | | 5.1 | 2.27 | | 271.5 | | | | | 4.87 | 0.47 | 0.45 | 0.022 | 4.40 | 4.42 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.4 | | 1.5 | 1.51 | | 0.7 | | | | | 0.11 | 0.03 | 0.00 | 0.024 | 0.14 | 0.12 | | | | | | | | | | | | | | | | | |
| | MIN | 21.4 | 5.2 | 4.0 | 1.20 | | 271.0 | | | | | 4.79 | 0.45 | 0.45 | 0.005 | 4.30 | 4.34 | | | | | | | | | | | | | | | | | |
| | MAX | 23.4 | 5.5 | 6.1 | 3.33 | | 272.0 | | | | | 4.95 | 0.49 | 0.45 | 0.039 | 4.50 | 4.51 | | | | | | | | | | | | | | | | | |
| DP-G07-17 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.8 | | 5.0 | 1.86 | | 314.5 | | | | | 8.51 | 0.71 | 0.70 | 0.005 | 7.80 | 7.81 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.3 | | 0.1 | 0.47 | | 3.5 | | | | | 2.11 | 0.56 | 0.56 | 0.000 | 1.56 | 1.56 | | | | | | | | | | | | | | | | | |
| | MIN | 21.9 | 5.3 | 4.9 | 1.52 | | 312.0 | | | | | 7.01 | 0.31 | 0.31 | 0.005 | 6.70 | 6.71 | | | | | | | | | | | | | | | | | |
| | MAX | 23.7 | 5.4 | 5.1 | 2.19 | | 317.0 | | | | | 10.00 | 1.10 | 1.10 | 0.005 | 8.90 | 8.91 | | | | | | | | | | | | | | | | | |
| DP-G07-21 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.6 | | 5.5 | 1.12 | | 334.5 | | | | | 14.06 | 1.56 | 1.52 | 0.038 | 12.50 | 12.54 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.5 | | 0.8 | 0.77 | | 12.0 | | | | | 2.18 | 1.48 | 1.43 | 0.047 | 0.71 | 0.75 | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 5.4 | 4.9 | 0.57 | | 326.0 | | | | | 12.51 | 0.51 | 0.51 | 0.005 | 12.00 | 12.01 | | | | | | | | | | | | | | | | | |
| | MAX | 22.9 | 5.6 | 6.1 | 1.66 | | 343.0 | | | | | 15.60 | 2.60 | 2.53 | 0.071 | 13.0 | 13.1 | | | | | | | | | | | | | | | | | |
| DP-G07-24 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.6 | | 6.0 | 1.04 | | 285.5 | | | | | 15.00 | 1.50 | 1.50 | 0.005 | 13.50 | 13.51 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.4 | | 1.6 | 0.13 | | 20.5 | | | | | 0.71 | 1.41 | 1.41 | 0.000 | 0.71 | 0.71 | | | | | | | | | | | | | | | | | |
| | MIN | 22.3 | 5.3 | 4.9 | 0.94 | | 271.0 | | | | | 14.50 | 0.50 | 0.50 | 0.005 | 13.00 | 13.01 | | | | | | | | | | | | | | | | | |
| | MAX | 22.9 | 5.7 | 7.1 | 1.13 | | 300.0 | | | | | 15.50 | 2.50 | 2.50 | 0.005 | 14.00 | 14.01 | | | | | | | | | | | | | | | | | |
| DP-G07-27 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.4 | | 4.6 | 1.16 | | 298 | | | | | 13.12 | 1.77 | 1.77 | 0.005 | 11.35 | 11.36 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.1 | | 0.8 | 0.30 | | 7.1 | | | | | 6.62 | 1.46 | 1.46 | 0.0 | 5.16 | 5.16 | | | | | | | | | | | | | | | | | |
| | MIN | 22.3 | 5.2 | 4.0 | 0.95 | | 293 | | | | | 8.44 | 0.74 | 0.74 | 0.005 | 7.70 | 7.71 | | | | | | | | | | | | | | | | | |
| | MAX | 22.5 | 5.2 | 5.1 | 1.37 | | 303 | | | | | 17.80 | 2.80 | 2.80 | 0.005 | 15.00 | 15.01 | | | | | | | | | | | | | | | | | |
| DP-G08-05 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 26.1 | | 4.9 | 7.64 | | 157.8 | | | | | 2.52 | 0.92 | 0.92 | 0.005 | 1.60 | 1.61 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 26.1 | 5.6 | 4.9 | 7.64 | | 157.8 | | | | | 2.52 | 0.92 | 0.92 | 0.005 | 1.60 | 1.61 | | | | | | | | | | | | | | | | | |
| | MAX | 26.1 | 5.6 | 4.9 | 7.64 | | 157.8 | | | | | 2.52 | 0.92 | 0.92 | 0.005 | 1.60 | 1.61 | | | | | | | | | | | | | | | | | |
| DP-G09-11 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 24.0 | | 7.9 | 2.08 | | 285.0 | | | | 41 | 10.2 | 1.10 | 1.09 | 0.010 | 9.10 | 9.11 | 0.1 | | | 1.3 | 0.036 | 13.0 | 9.1 | 0.0 | 0.0 | 51 | 0.05 | 27 | 1.1 | 5.6 | 0.3 | 7.0 | 12 |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.0 | 5.4 | 7.9 | 2.08 | | 285.0 | | | | 41 | 10.2 | 1.10 | 1.09 | 0.010 | 9.10 | 9.11 | 0.1 | | | 1.3 | 0.036 | 13.0 | 9.1 | 0.01 | 0.010 | 51 | 0.05 | 27 | 1.1 | 5.6 | 0.3 | 7.0 | 12 |
| | MAX | 24.0 | 5.4 | 7.9 | 2.08 | | 285.0 | | | | 41 | 10.2 | 1.10 | 1.09 | 0.010 | 9.10 | 9.11 | 0.1 | | | 1.3 | 0.036 | 13.0 | 9.1 | 0.01 | 0.010 | 51 | 0.05 | 27 | 1.1 | 5.6 | 0.3 | 7.0 | 12 |
| DP-G11-8 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.2 | | 3.0 | 1.38 | | 295.0 | | | | | 14.20 | 2.20 | 2.19 | 0.015 | 12.00 | 12.02 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.2 | 5.1 | 3.0 | 1.38 | | 295.0 | | | | | 14.20 | 2.20 | 2.19 | 0.015 | 12.00 | 12.02 | | | | | | | | | | | | | | | | | |
| | MAX | 21.2 | 5.1 | 3.0 | 1.38 | | 295.0 | | | | | 14.20 | 2.20 | 2.19 | 0.015 | 12.00 | 12.02 | | | | | | | | | | | | | | | | | |
| DP-G12-9 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.4 | | 3.0 | 2.62 | | 341.0 | | | | | 11.70 | 1.70 | 1.66 | 0.036 | 10.00 | 10.04 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.4 | 4.7 | 3.0 | 2.62 | | 341.0 | | | | | 11.70 | 1.70 | 1.66 | 0.036 | 10.00 | 10.04 | | | | | | | | | | | | | | | | | |
| | MAX | 21.4 | 4.7 | 3.0 | 2.62 | | 341.0 | | | | | 11.70 | 1.70 | 1.66 | 0.036 | 10.00 | 10.04 | | | | | | | | | | | | | | | | | |
| DP-G12-15 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.1 | | 6.0 | 0.93 | | 497.5 | | | | | 26.85 | 1.85 | 1.60 | 0.25 | 25.00 | 25.25 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.4 | | 1.3 | 0.05 | | 14.8 | | | | | 2.62 | 1.20 | 1.16 | 0.04 | 1.41 | 1.46 | | | | | | | | | | | | | | | | | |
| | MIN | 21.8 | 4.7 | 5.1 | 0.89 | | 487.0 | | | | | 25.00 | 1.00 | 0.78 | 0.22 | 24.00 | 24.22 | | | | | | | | | | | | | | | | | |
| | MAX | 22.3 | 5.5 | 6.9 | 0.96 | | 508.0 | | | | | 28.70 | 2.70 | 2.42 | 0.28 | 26.00 | 26.28 | | | | | | | | | | | | | | | | | |
| DP-G12-18 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.2 | | 6.9 | 1.40 | | 494.0 | | | | | 30.70 | 1.70 | 1.70 | 0.005 | 29.00 | 29.01 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 5.2 | 6.9 | 1.40 | | 494.0 | | | | | 30.70 | 1.70 | 1.70 | 0.005 | 29.00 | 29.01 | | | | | | | | | | | | | | | | | |
| | MAX | 22.2 | 5.2 | 6.9 | 1.40 | | 494.0 | | | | | 30.70 | 1.70 | 1.70 | 0.005 | 29.00 | 29.01 | | | | | | | | | | | | | | | | | |
| DP-G12-21 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.7 | | 6.5 | 0.75 | | 510.5 | | | | | 24.03 | 2.03 | 1.98 | 0.052 | 22.00 | 22.05 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.0 | | 3.4 | 0.35 | | 177.5 | | | | | 9.94 | 2.79 | 2.72 | 0.066 | 12.73 | 12.66 | | | | | | | | | | | | | | | | | |
| | MIN | 22.7 | 4.9 | 4.1 | 0.50 | | 385.0 | | | | | 17.00 | 0.06 | 0.06 | 0.005 | 13.00 | 13.10 | | | | | | | | | | | | | | | | | |
| | MAX | 22.7 | 5.4 | 8.9 | 0.99 | | 636.0 | | | | | 31.06 | 4.00 | 3.90 | 0.099 | 31.00 | 31.01 | | | | | | | | | | | | | | | | | |
| DP-G12-24 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.7 | | 3.9 | 0.82 | | 324.0 | | | | | 12.98 | 0.98 | 0.98 | 0.005 | 12.00 | 12.01 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.7 | 5.4 | 3.9 | 0.82 | | 324.0 | | | | | 12.98 | 0.98 | 0.98 | 0.005 | 12.00 | 12.01 | | | | | | | | | | | | | | | | | |
| | MAX | 22.7 | 5.4 | 3.9 | 0.82 | | 324.0 | | | | | 12.98 | 0.98 | 0.98 | 0.005 | 12.00 | 12.01 | | | | | | | | | | | | | | | | | |
| DP-G12-27 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.0 | | 5.5 | 0.44 | | 410.0 | | | | | 16.44 | 0.94 | 0.77 | 0.17 | 15.50 | 15.67 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.1 | | 0.8 | 0.01 | | 140.0 | | | | | 4.58 | 0.37 | 0.44 | 0.07 | 4.95 | 5.02 | | | | | | | | | | | | | | | | | |
| | MIN | 22.9 | 4.7 | 4.9 | 0.43 | | 311.0 | | | | | 13.20 | 0.68 | 0.46 | 0.12 | 12.00 | 12.12 | | | | | | | | | | | | | | | | | |
| | MAX | 23.1 | 5.4 | 6.1 | 0.45 | | 509.0 | | | | | 19.68 | 1.20 | 1.08 | 0.22 | 19.00 | 19.22 | | | | | | | | | | | | | | | | | |



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Table F.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | ORP (mV) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-H05-7 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.6 | | 15 | 6.73 | | 136.7 | | | | | 1.75 | 1.70 | 0.10 | 1.60 | 0.05 | 1.65 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.6 | 6.3 | 15 | 6.73 | | 136.7 | | | | | 1.75 | 1.70 | 0.10 | 1.60 | 0.05 | 1.65 | | | | | | | | | | | | | | | | | |
| | MAX | 25.6 | 6.3 | 15 | 6.73 | | 136.7 | | | | | 1.75 | 1.70 | 0.10 | 1.60 | 0.05 | 1.65 | | | | | | | | | | | | | | | | | |
| DP-H06-7 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 19.8 | | 18 | 4.04 | | 152.4 | | | | | 1.35 | 1.20 | 0.55 | 0.65 | 0.15 | 0.80 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 19.8 | 6.0 | 18 | 4.04 | | 152.4 | | | | | 1.35 | 1.20 | 0.55 | 0.65 | 0.15 | 0.80 | | | | | | | | | | | | | | | | | |
| | MAX | 19.8 | 6.0 | 18 | 4.04 | | 152.4 | | | | | 1.35 | 1.20 | 0.55 | 0.65 | 0.15 | 0.80 | | | | | | | | | | | | | | | | | |
| DP-H07-8 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 20.2 | | 2.0 | 1.57 | | 151.3 | | | | | 1.69 | 0.71 | 0.66 | 0.051 | 0.98 | 1.03 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 20.2 | 5.1 | 2.0 | 1.57 | | 151.3 | | | | | 1.69 | 0.71 | 0.66 | 0.051 | 0.98 | 1.03 | | | | | | | | | | | | | | | | | |
| | MAX | 20.2 | 5.1 | 2.0 | 1.57 | | 151.3 | | | | | 1.69 | 0.71 | 0.66 | 0.051 | 0.98 | 1.03 | | | | | | | | | | | | | | | | | |
| DP-H08-10 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.7 | | 24 | 2.97 | | 189.0 | | | | | 2.95 | 2.20 | 1.32 | 0.88 | 0.75 | 1.63 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.7 | 6.2 | 24 | 2.97 | | 189.0 | | | | | 2.95 | 2.20 | 1.32 | 0.88 | 0.75 | 1.63 | | | | | | | | | | | | | | | | | |
| | MAX | 22.7 | 6.2 | 24 | 2.97 | | 189.0 | | | | | 2.95 | 2.20 | 1.32 | 0.88 | 0.75 | 1.63 | | | | | | | | | | | | | | | | | |
| DP-H09-12 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.9 | | 6.9 | 3.40 | | 249.0 | | | | | 8.60 | 1.20 | 1.19 | 0.010 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.9 | 5.7 | 6.9 | 3.40 | | 249.0 | | | | | 8.60 | 1.20 | 1.19 | 0.010 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | |
| | MAX | 21.9 | 5.7 | 6.9 | 3.40 | | 249.0 | | | | | 8.60 | 1.20 | 1.19 | 0.010 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | |
| DP-H10-11 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.2 | | 25 | 5.83 | | 204.5 | | | | | 2.11 | 0.21 | 0.12 | 0.089 | 1.90 | 1.99 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 6.2 | 25 | 5.83 | | 204.5 | | | | | 2.11 | 0.21 | 0.12 | 0.089 | 1.90 | 1.99 | | | | | | | | | | | | | | | | | |
| | MAX | 22.2 | 6.2 | 25 | 5.83 | | 204.5 | | | | | 2.11 | 0.21 | 0.12 | 0.089 | 1.90 | 1.99 | | | | | | | | | | | | | | | | | |
| DP-H12-5 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.9 | | 7.9 | 0.94 | | 188.5 | | | | | 2.81 | 0.81 | 0.76 | 0.047 | 2.00 | 2.05 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.9 | 5.6 | 7.9 | 0.94 | | 188.5 | | | | | 2.81 | 0.81 | 0.76 | 0.047 | 2.00 | 2.05 | | | | | | | | | | | | | | | | | |
| | MAX | 21.9 | 5.6 | 7.9 | 0.9 | | 188.5 | | | | | 2.81 | 0.81 | 0.76 | 0.047 | 2.00 | 2.05 | | | | | | | | | | | | | | | | | |
| DP-I06-14 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 20.7 | | 6.0 | 1.55 | | 226.2 | | | | | 3.19 | 0.84 | 0.83 | 0.005 | 2.35 | 2.36 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.4 | | 0.1 | 0.16 | | 19.6 | | | | | 1.58 | 0.37 | 0.37 | 0.000 | 1.20 | 1.20 | | | | | | | | | | | | | | | | | |
| | MIN | 20.4 | 5.3 | 5.9 | 1.44 | | 212.3 | | | | | 2.07 | 0.57 | 0.57 | 0.005 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | |
| | MAX | 20.9 | 5.3 | 6.1 | 1.66 | | 240.0 | | | | | 4.30 | 1.10 | 1.10 | 0.005 | 3.20 | 3.21 | | | | | | | | | | | | | | | | | |
| DP-I06-20 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.4 | | 3.0 | 1.42 | | 362.5 | | | | | 17.28 | 0.78 | 0.78 | 0.005 | 16.50 | 16.51 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.0 | | 1.3 | 0.54 | | 6.4 | | | | | 2.57 | 0.45 | 0.45 | 0.000 | 2.12 | 2.12 | | | | | | | | | | | | | | | | | |
| | MIN | 21.4 | 5.0 | 2.0 | 1.03 | | 358.0 | | | | | 15.46 | 0.46 | 0.46 | 0.005 | 15.00 | 15.01 | | | | | | | | | | | | | | | | | |
| | MAX | 21.4 | 5.0 | 3.9 | 1.80 | | 367.0 | | | | | 19.10 | 1.10 | 1.10 | 0.005 | 18.00 | 18.01 | | | | | | | | | | | | | | | | | |
| DP-I06-26 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.5 | | 2.5 | 1.75 | | 303.5 | | | | | 13.29 | 1.29 | 1.29 | 0.005 | 12.00 | 12.01 | | | 0.75 | 1.00 | | | | | | | | | | | | | |
| | STD. DEV. | 0.2 | | 0.7 | 0.87 | | 2.1 | | | | | 4.12 | 1.29 | 1.29 | 0.000 | 2.83 | 2.83 | | | | | | | | | | | | | | | | | |
| | MIN | 21.3 | 4.9 | 2.0 | 1.13 | | 302.0 | | | | | 10.38 | 0.38 | 0.38 | 0.005 | 10.00 | 10.01 | | | 0.75 | 1.00 | | | | | | | | | | | | | |
| | MAX | 21.6 | 5.0 | 3.0 | 2.36 | | 305.0 | | | | | 16.20 | 2.20 | 2.20 | 0.005 | 14.00 | 14.01 | | | 0.75 | 1.00 | | | | | | | | | | | | | |
| DP-I07-8 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 19.4 | | 17 | 2.2 | | 170.7 | | | | | 1.28 | 0.42 | 0.38 | 0.041 | 0.86 | 0.90 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 19.4 | 5.8 | 17 | 2.2 | | 170.7 | | | | | 1.28 | 0.42 | 0.38 | 0.041 | 0.86 | 0.90 | | | | | | | | | | | | | | | | | |
| | MAX | 19.4 | 5.8 | 17 | 2.2 | | 170.7 | | | | | 1.28 | 0.42 | 0.38 | 0.041 | 0.86 | 0.90 | | | | | | | | | | | | | | | | | |
| DP-I08-5 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.0 | | 15 | 4.69 | | 191.5 | | | | | 2.44 | 2.10 | 0.90 | 1.20 | 0.34 | 1.54 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.0 | 6.5 | 15 | 4.69 | | 191.5 | | | | | 2.44 | 2.10 | 0.90 | 1.20 | 0.34 | 1.54 | | | | | | | | | | | | | | | | | |
| | MAX | 23.0 | 6.5 | 15 | 4.69 | 0.0 | 191.5 | | | | | 2.44 | 2.10 | 0.90 | 1.20 | 0.34 | 1.54 | | | | | | | | | | | | | | | | | |
| DPI09-11 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.5 | | 3.0 | 0.77 | | 180.6 | | | | | 2.22 | 0.72 | 0.72 | 0.005 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.5 | 5.1 | 3.0 | 0.77 | | 180.6 | | | | | 2.22 | 0.72 | 0.72 | 0.005 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | |
| | MAX | 21.5 | 5.1 | 3.0 | 0.77 | | 180.6 | | | | | 2.22 | 0.72 | 0.72 | 0.005 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | |
| DP-I10-6 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 20.2 | | 27 | 5.10 | | 173.4 | | | | | 1.75 | 1.40 | 0.74 | 0.66 | 0.35 | 1.01 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 20.2 | 6.2 | 27 | 5.10 | | 173.4 | | | | | 1.75 | 1.40 | 0.74 | 0.66 | 0.35 | 1.01 | | | | | | | | | | | | | | | | | |
| | MAX | 20.2 | 6.2 | 27 | 5.10 | | 173.4 | | | | | 1.75 | 1.40 | 0.74 | 0.66 | 0.35 | 1.01 | | | | | | | | | | | | | | | | | |
| DP-I11-10 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.4 | | 17 | 0.90 | | 166.8 | | | | | 1.03 | 0.64 | 0.38 | 0.26 | 0.39 | 0.65 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.4 | 5.7 | 17 | 0.90 | | 166.8 | | | | | 1.03 | 0.64 | 0.38 | 0.26 | 0.39 | 0.65 | | | | | | | | | | | | | | | | | |
| | MAX | 21.4 | 5.7 | 17 | 0.90 | | 166.8 | | | | | 1.03 | 0.64 | 0.38 | 0.26 | 0.39 | 0.65 | | | | | | | | | | | | | | | | | |



o:\44237-001\Wpdocs\Report\Draft

# Table F.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | ORP (mV) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-I12-6 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.9 | | 11 | 1.87 | | 127.6 | | | | | 7.77 | 0.67 | 0.67 | 0.005 | 7.10 | 7.11 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.9 | 5.6 | 11 | 1.87 | | 127.6 | | | | | 7.77 | 0.67 | 0.67 | 0.005 | 7.10 | 7.11 | | | | | | | | | | | | | | | | | |
| | MAX | 21.9 | 5.6 | 11 | 1.87 | | 127.6 | | | | | 7.77 | 0.67 | 0.67 | 0.005 | 7.10 | 7.11 | | | | | | | | | | | | | | | | | |
| DP-J08-6 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 19.7 | | 15 | 2.70 | | 140.3 | | | | | 3.75 | 3.70 | 0.70 | 3.00 | 0.05 | 3.05 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 19.7 | 6.0 | 15 | 2.70 | | 140.3 | | | | | 3.75 | 3.70 | 0.70 | 3.00 | 0.05 | 3.05 | | | | | | | | | | | | | | | | | |
| | MAX | 19.7 | 6.0 | 15 | 2.70 | | 140.3 | | | | | 3.75 | 3.70 | 0.70 | 3.00 | 0.05 | 3.05 | | | | | | | | | | | | | | | | | |
| DP-J09-12 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.1 | | 2.0 | 0.81 | | 167.0 | | | | | 1.55 | 0.45 | 0.45 | 0.005 | 1.10 | 1.11 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.1 | 4.8 | 2.0 | 0.81 | | 167.0 | | | | | 1.55 | 0.45 | 0.45 | 0.005 | 1.10 | 1.11 | | | | | | | | | | | | | | | | | |
| | MAX | 21.1 | 4.8 | 2.0 | 0.81 | | 167.0 | | | | | 1.55 | 0.45 | 0.45 | 0.005 | 1.10 | 1.11 | | | | | | | | | | | | | | | | | |
| DP-J09-14 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.7 | | 2.5 | 2.01 | | 229.1 | | | | | 6.06 | 0.61 | 0.60 | 0.005 | 5.45 | 5.46 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.4 | | 0.7 | 1.81 | | 4.3 | | | | | 3.02 | 0.26 | 0.26 | 0.000 | 2.76 | 2.76 | | | | | | | | | | | | | | | | | |
| | MIN | 21.4 | 4.5 | 2.0 | 0.73 | | 226.0 | | | | | 3.92 | 0.42 | 0.42 | 0.005 | 3.50 | 3.51 | | | | | | | | | | | | | | | | | |
| | MAX | 21.9 | 4.8 | 3.0 | 3.29 | | 232.1 | | | | | 8.19 | 0.79 | 0.79 | 0.005 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | |
| DP-J09-20 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.7 | | 3.0 | 1.12 | | 351.6 | | | | | 13.18 | 0.63 | 0.62 | 0.005 | 12.55 | 12.56 | | | | 0.91 | | | | | | | | | | | | | |
| | STD. DEV. | 0.8 | | 1.4 | 0.64 | | 19.0 | | | | | 7.11 | 0.81 | 0.81 | 0.000 | 6.29 | 6.29 | | | | | | | | | | | | | | | | | |
| | MIN | 22.1 | 4.4 | 2.0 | 0.66 | | 338.1 | | | | | 8.15 | 0.05 | 0.05 | 0.005 | 8.10 | 8.11 | | | | 0.91 | | | | | | | | | | | | | |
| | MAX | 23.2 | 4.9 | 4.0 | 1.57 | | 365.0 | | | | | 18.20 | 1.20 | 1.20 | 0.005 | 17.00 | 17.01 | | | | 0.91 | | | | | | | | | | | | | |
| DP-J09-26 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.8 | | 3.0 | 1.62 | | 297.6 | | | | | 14.05 | 1.40 | 1.40 | 0.005 | 12.65 | 12.66 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.4 | | 1.4 | 1.26 | | 0.8 | | | | | 5.16 | 0.42 | 0.42 | 0.000 | 4.74 | 4.74 | | | | | | | | | | | | | | | | | |
| | MIN | 22.5 | 4.9 | 2.0 | 0.73 | | 297.0 | | | | | 10.40 | 1.10 | 1.10 | 0.005 | 9.30 | 9.31 | | | | | | | | | | | | | | | | | |
| | MAX | 23.0 | 5.0 | 4.0 | 2.51 | | 298.2 | | | | | 17.70 | 1.70 | 1.70 | 0.005 | 16.00 | 16.01 | | | | | | | | | | | | | | | | | |
| DP-J10-6 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.0 | | 14 | 3.48 | | 186.6 | | | | | 3.4 | 2.4 | 0.0 | 2.4 | 1.0 | 3.4 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.0 | 5.9 | 14 | 3.48 | | 186.6 | | | | | 3.4 | 2.4 | 0.0 | 2.4 | 1.0 | 3.4 | | | | | | | | | | | | | | | | | |
| | MAX | 24.0 | 5.9 | 14 | 3.48 | | 186.6 | | | | | 3.4 | 2.4 | 0.0 | 2.4 | 1.0 | 3.4 | | | | | | | | | | | | | | | | | |
| DP-J11-12 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 23.7 | | 2.0 | 1.02 | | 196.7 | | | | 14 | 2.65 | 0.55 | 0.55 | 0.005 | 2.10 | 2.11 | 0.010 | | | 1.1 | 0.16 | 6.3 | 2.1 | 0.0 | 0.0 | 65 | 0.05 | 16 | 0.039 | 4.2 | 0.15 | 3.8 | 2.9 |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.7 | 4.4 | 2.0 | 1.02 | | 196.7 | | | | 14 | 2.65 | 0.55 | 0.55 | 0.005 | 2.10 | 2.11 | 0.010 | | | 1.1 | 0.16 | 6.3 | 2.1 | 0.01 | 0.010 | 65 | 0.05 | 16 | 0.039 | 4.2 | 0.15 | 3.8 | 2.9 |
| | MAX | 23.7 | 4.4 | 2.0 | 1.02 | | 196.7 | | | | 14 | 2.65 | 0.55 | 0.55 | 0.005 | 2.10 | 2.11 | 0.010 | | | 1.1 | 0.16 | 6.3 | 2.1 | 0.01 | 0.010 | 65 | 0.05 | 16 | 0.039 | 4.2 | 0.15 | 3.8 | 2.9 |
| DP-J12-13 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.9 | | 4.0 | 1.54 | | 238.0 | | | | | 6.21 | 0.61 | 0.61 | 0.005 | 5.60 | 5.61 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.9 | 4.9 | 4.0 | 1.54 | | 238.0 | | | | | 6.21 | 0.61 | 0.61 | 0.005 | 5.60 | 5.61 | | | | | | | | | | | | | | | | | |
| | MAX | 22.9 | 4.9 | 4.0 | 1.54 | | 238.0 | | | | | 6.21 | 0.61 | 0.61 | 0.005 | 5.60 | 5.61 | | | | | | | | | | | | | | | | | |
| DP-J12-15 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.7 | | 4.0 | 1.32 | | 284.3 | | | | | 7.01 | 0.26 | 0.25 | 0.005 | 6.75 | 6.76 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.8 | | 2.8 | 0.26 | | 4.6 | | | | | 2.76 | 0.29 | 0.29 | 0.000 | 2.47 | 2.47 | | | | | | | | | | | | | | | | | |
| | MIN | 22.1 | 4.8 | 2.0 | 1.13 | | 281.0 | | | | | 5.05 | 0.05 | 0.05 | 0.005 | 5.00 | 5.01 | | | | | | | | | | | | | | | | | |
| | MAX | 23.3 | 5.1 | 5.9 | 1.50 | | 287.5 | | | | | 8.96 | 0.46 | 0.46 | 0.005 | 8.50 | 8.51 | | | | | | | | | | | | | | | | | |
| DP-J12-20 | n | 2 | 2 | 2 | 2 | | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 23.2 | | 4.0 | 1.17 | | 348.5 | | | | 18 | 10.1 | 1.2 | 1.16 | 0.005 | 8.9 | 8.9 | 0.11 | | 2.6 | 1.4 | 0.011 | 14 | 10 | 0.01 | 0.010 | 88 | 0.050 | 33 | 0.020 | 9.6 | 0.059 | 21 | 4.3 |
| | STD. DEV. | 0.4 | | 2.8 | 0.05 | | 7.8 | | | | | 2.0 | 0.5 | 0.47 | 0.000 | 1.6 | 1.6 | | | | 0.14 | | | | | | | | | | | | | |
| | MIN | 22.9 | 5.0 | 2.0 | 1.13 | | 342.9 | | | | 18 | 8.6 | 0.8 | 0.83 | 0.005 | 7.8 | 7.8 | 0.11 | | 2.60 | 1.30 | 0.011 | 14 | 10 | 0.01 | 0.010 | 88 | 0.050 | 33 | 0.020 | 9.6 | 0.059 | 21 | 4.3 |
| | MAX | 23.4 | 5.6 | 5.9 | 1.20 | | 354.0 | | | | 18 | 11.5 | 1.5 | 1.50 | 0.005 | 10.0 | 10.0 | 0.11 | | 2.60 | 1.50 | 0.011 | 14 | 10 | 0.01 | 0.010 | 88 | 0.050 | 33 | 0.020 | 9.6 | 0.059 | 21 | 4.3 |
| DP-J12-27 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.1 | | 3.0 | 1.03 | | 305.1 | | | | | 15.05 | 1.05 | 1.05 | 0.005 | 14.00 | 14.01 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.7 | | 1.4 | 0.16 | | 2.9 | | | | | 2.76 | 0.07 | 0.07 | 0.000 | 2.83 | 2.83 | | | | | | | | | | | | | | | | | |
| | MIN | 22.6 | 4.8 | 2.0 | 0.92 | | 303.0 | | | | | 13.10 | 1.00 | 1.00 | 0.005 | 12.00 | 12.01 | | | | | | | | | | | | | | | | | |
| | MAX | 23.6 | 5.1 | 4.0 | 1.14 | | 307.1 | | | | | 17.00 | 1.10 | 1.10 | 0.005 | 16.00 | 16.01 | | | | | | | | | | | | | | | | | |
| DP-K10-7 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.2 | | 6.9 | 3.79 | | 163.8 | | | | | 2.33 | 2 | 0.4 | 1.6 | 0.33 | 1.93 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.2 | 6.0 | 6.9 | 3.79 | | 163.8 | | | | | 2.33 | 2 | 0.4 | 1.6 | 0.33 | 1.93 | | | | | | | | | | | | | | | | | |
| | MAX | 24.2 | 6.0 | 6.9 | 3.79 | | 163.8 | | | | | 2.33 | 2 | 0.4 | 1.6 | 0.33 | 1.93 | | | | | | | | | | | | | | | | | |
| DP-K11-13 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.1 | | 4.0 | 1.8 | | 168.3 | | | | | 1.89 | 0.59 | 0.59 | 0.005 | 1.3 | 1.31 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.1 | 4.9 | 4.0 | 1.8 | | 168.3 | | | | | 1.89 | 0.59 | 0.59 | 0.005 | 1.3 | 1.31 | | | | | | | | | | | | | | | | | |
| | MAX | 22.1 | 4.9 | 4.0 | 1.8 | | 168.3 | | | | | 1.89 | 0.59 | 0.59 | 0.005 | 1.3 | 1.31 | | | | | | | | | | | | | | | | | |
| DP-K12-5 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 22.3 | | 6.9 | 1.40 | | 59.3 | | | | 55 | 0.81 | 0.77 | 0.68 | 0.092 | 0.04 | 0.13 | 0.34 | | | 7.30 | 0.083 | 1.9 | 0.04 | 0.01 | 0.010 | 11 | 0.050 | 5.5 | 2.2 | 0.86 | 0.210 | 0.40 | 1.9 |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.3 | 5.6 | 6.9 | 1.40 | | 59.3 | | | | 55 | 0.81 | 0.77 | 0.68 | 0.092 | 0.04 | 0.13 | 0.34 | | | 7.30 | 0.083 | 1.9 | 0.04 | 0.01 | 0.010 | 11 | 0.050 | 5.5 | 2.2 | 0.86 | 0.210 | 0.40 | 1.9 |
| | MAX | 22.3 | 5.6 | 6.9 | 1.40 | | 59.3 | | | | 55 | 0.81 | 0.77 | 0.68 | 0.092 | 0.04 | 0.13 | 0.34 | | | 7.30 | 0.083 | 1.9 | 0.04 | 0.01 | 0.010 | 11 | 0.050 | 5.5 | 2.2 | 0.86 | 0.210 | 0.40 | 1.9 |



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Table F.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | ORP (mV) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-M07-15 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.6 | | 4.0 | 0.8 | | 285.5 | | | | | 6.62 | 0.52 | 0.51 | 0.005 | 6.1 | 6.11 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.6 | | 2.8 | 0.1 | | 26.2 | | | | | 0.01 | 0.13 | 0.13 | 0.000 | 0.1 | 0.14 | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 4.8 | 2.0 | 0.7 | | 267.0 | | | | | 6.61 | 0.42 | 0.42 | 0.005 | 6.0 | 6.01 | | | | | | | | | | | | | | | | | |
| | MAX | 23.0 | 5.2 | 5.9 | 0.8 | | 304.0 | | | | | 6.62 | 0.61 | 0.61 | 0.005 | 6.2 | 6.21 | | | | | | | | | | | | | | | | | |
| DP-M07-21 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.3 | | 2.0 | 0.7 | | 368.5 | | | | | 13.7 | 1.2 | 1.18 | 0.0 | 12.5 | 12.5 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.1 | | 0.0 | 0.2 | | 9.1 | | | | | 0.3 | 0.5 | 0.45 | 0.0 | 0.7 | 0.7 | | | | | | | | | | | | | | | | | |
| | MIN | 22.5 | 4.9 | 2.0 | 0.6 | | 362.0 | | | | | 13.5 | 0.9 | 0.86 | 0.005 | 12.0 | 12.0 | | | | | | | | | | | | | | | | | |
| | MAX | 24.0 | 4.9 | 2.0 | 0.9 | | 374.9 | | | | | 13.9 | 1.5 | 1.50 | 0.005 | 13.0 | 13.0 | | | | | | | | | | | | | | | | | |
| DP-M07-27 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.2 | | 4.0 | 0.79 | | 297.3 | | | | | 9.7 | 1.5 | 1.5 | 0.0 | 8.3 | 8.3 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.9 | | 2.8 | 0.42 | | 6.0 | | | | | 0.5 | 1.0 | 1.0 | 0.0 | 0.5 | 0.5 | | | | | | | | | | | | | | | | | |
| | MIN | 22.5 | 4.8 | 2.0 | 0.49 | | 293 | | | | | 9.34 | 0.74 | 0.74 | 0.005 | 7.9 | 7.91 | | | | | | | | | | | | | | | | | |
| | MAX | 23.8 | 5.2 | 5.9 | 1.08 | | 301.5 | | | | | 10.10 | 2.2 | 2.20 | 0.005 | 8.6 | 8.61 | | | | | | | | | | | | | | | | | |
| DP-M12-10 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.0 | | 8.9 | 1.83 | | 161.6 | | | | | 1.49 | 0.60 | 0.52 | 0.083 | 0.89 | 0.97 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.0 | 5.7 | 8.9 | 1.83 | | 161.6 | | | | | 1.49 | 0.60 | 0.52 | 0.083 | 0.89 | 0.97 | | | | | | | | | | | | | | | | | |
| | MAX | 24.0 | 5.7 | 8.9 | 1.83 | | 161.6 | | | | | 1.49 | 0.60 | 0.52 | 0.083 | 0.89 | 0.97 | | | | | | | | | | | | | | | | | |
| DP-N12-14 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.5 | | 2.5 | 1.10 | | 171.0 | | | | | 3.06 | 0.62 | 0.62 | 0.005 | 2.44 | 2.44 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.6 | | 0.7 | 0.26 | | 10.7 | | | | | 2.86 | 0.51 | 0.51 | 0.000 | 2.35 | 2.35 | | | | | | | | | | | | | | | | | |
| | MIN | 22.1 | 4.8 | 2.0 | 0.91 | | 163.4 | | | | | 1.03 | 0.26 | 0.26 | 0.005 | 0.77 | 0.78 | | | | | | | | | | | | | | | | | |
| | MAX | 22.9 | 5.0 | 3.0 | 1.28 | | 178.6 | | | | | 5.08 | 0.98 | 0.98 | 0.005 | 4.10 | 4.11 | | | | | | | | | | | | | | | | | |
| DP-N12-18 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.2 | | 4.0 | 1.11 | | 250 | | | | | 7.2 | 1.1 | 1.1 | 0.005 | 6.1 | 6.11 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.2 | 5.1 | 4.0 | 1.11 | | 250 | | | | | 7.2 | 1.1 | 1.1 | 0.005 | 6.1 | 6.11 | | | | | | | | | | | | | | | | | |
| | MAX | 23.2 | 5.1 | 4.0 | 1.11 | | 250 | | | | | 7.2 | 1.1 | 1.1 | 0.005 | 6.1 | 6.11 | | | | | | | | | | | | | | | | | |
| DP-N12-21 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.8 | | 4.0 | 1.48 | | 291.6 | | | | | 5.7 | 0.57 | 0.57 | 0.005 | 5.15 | 5.16 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.7 | | 2.8 | 0.62 | | 17.7 | | | | | 1.4 | 0.04 | 0.04 | 0.000 | 1.48 | 1.48 | | | | | | | | | | | | | | | | | |
| | MIN | 22.3 | 4.9 | 2.0 | 1.04 | | 279.0 | | | | | 4.7 | 0.54 | 0.54 | 0.005 | 4.10 | 4.11 | | | | | | | | | | | | | | | | | |
| | MAX | 23.3 | 5.2 | 5.9 | 1.91 | | 304.1 | | | | | 6.7 | 0.60 | 0.60 | 0.005 | 6.20 | 6.21 | | | | | | | | | | | | | | | | | |
| DP-N12-24 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.1 | | 4.9 | 0.78 | | 348.0 | | | | | 13.30 | 1.30 | 1.30 | 0.005 | 12.00 | 12.01 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.1 | 5.2 | 4.9 | 0.78 | | 348.0 | | | | | 13.30 | 1.30 | 1.30 | 0.005 | 12.00 | 12.01 | | | | | | | | | | | | | | | | | |
| | MAX | 24.1 | 5.2 | 4.9 | 0.78 | | 348.0 | | | | | 13.30 | 1.30 | 1.30 | 0.005 | 12.00 | 12.01 | | | | | | | | | | | | | | | | | |
| DP-N12-27 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.8 | | 3.5 | 1.57 | | 336.8 | | | | | 16.90 | 1.40 | 1.39 | 0.005 | 15.50 | 15.51 | | | 1.5 | 2.0 | | | | | | | | | | | | | |
| | STD. DEV. | 1.6 | | 2.1 | 1.25 | | 7.4 | | | | | 6.94 | 0.57 | 0.57 | 0.000 | 6.36 | 6.36 | | | | | | | | | | | | | | | | | |
| | MIN | 21.6 | 5.0 | 2.0 | 0.68 | | 331.6 | | | | | 11.99 | 0.99 | 0.99 | 0.005 | 11.00 | 11.01 | | | 1.5 | 2.0 | | | | | | | | | | | | | |
| | MAX | 23.9 | 5.1 | 4.9 | 2.45 | | 342.0 | | | | | 21.80 | 1.80 | 1.80 | 0.005 | 20.00 | 20.01 | | | 1.5 | 2.0 | | | | | | | | | | | | | |
| DP-O10-12 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.0 | | 2.0 | 1.22 | | 186.2 | | | | | 0.19 | 0.14 | 0.14 | 0.005 | 0.05 | 0.06 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.3 | | 0.0 | 0.13 | | 0.4 | | | | | 0.04 | 0.06 | 0.06 | 0.000 | 0.01 | 0.01 | | | | | | | | | | | | | | | | | |
| | MIN | 21.1 | 4.3 | 2.0 | 1.13 | | 185.9 | | | | | 0.16 | 0.10 | 0.10 | 0.005 | 0.04 | 0.05 | | | | | | | | | | | | | | | | | |
| | MAX | 22.9 | 4.3 | 2.0 | 1.31 | | 186.4 | | | | | 0.22 | 0.18 | 0.18 | 0.005 | 0.06 | 0.07 | | | | | | | | | | | | | | | | | |
| DP-O10-18 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.9 | | 4.0 | 0.91 | | 296.3 | | | | | 7.07 | 1.32 | 1.32 | 0.005 | 5.75 | 5.76 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.9 | | 2.8 | 0.19 | | 3.3 | | | | | 3.58 | 1.10 | 1.10 | 0.000 | 2.47 | 2.47 | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 4.8 | 2.0 | 0.77 | | 294.0 | | | | | 4.54 | 0.54 | 0.54 | 0.005 | 4.00 | 4.01 | | | | | | | | | | | | | | | | | |
| | MAX | 23.5 | 5.3 | 5.9 | 1.04 | | 298.6 | | | | | 9.60 | 2.10 | 2.10 | 0.005 | 7.50 | 7.51 | | | | | | | | | | | | | | | | | |
| DP-O10-24 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.0 | | 2.5 | 0.82 | | 271.6 | | | | | 10.3 | 2.25 | 2.24 | 0.0050 | 8.04 | 8.04 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.7 | | 0.7 | 0.18 | | 126.4 | | | | | 14.3 | 3.05 | 3.05 | 0.0000 | 11.26 | 11.26 | | | | | | | | | | | | | | | | | |
| | MIN | 21.8 | 4.2 | 2.0 | 0.69 | | 182.2 | | | | | 0.2 | 0.09 | 0.09 | 0.0050 | 0.07 | 0.08 | | | | | | | | | | | | | | | | | |
| | MAX | 24.2 | 5.1 | 3.0 | 0.95 | | 361.0 | | | | | 20.4 | 4.40 | 4.40 | 0.0050 | 16.00 | 16.01 | | | | | | | | | | | | | | | | | |
| DP-Q15-15 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.7 | | 2.5 | 1.46 | | 294.2 | | | | | 3.54 | 0.34 | 0.34 | 0.005 | 3.20 | 3.21 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.4 | | 0.7 | 1.20 | | 13.0 | | | | | 2.47 | 0.07 | 0.07 | 0.000 | 2.40 | 2.40 | | | | | | | | | | | | | | | | | |
| | MIN | 20.7 | 4.7 | 2.0 | 0.61 | | 285.0 | | | | | 1.79 | 0.29 | 0.29 | 0.005 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | |
| | MAX | 22.7 | 4.8 | 3.0 | 2.31 | | 303.4 | | | | | 5.29 | 0.39 | 0.39 | 0.005 | 4.90 | 4.91 | | | | | | | | | | | | | | | | | |
| DP-Q15-21 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.1 | | 4.0 | 1.09 | | 321.3 | | | | | 7.41 | 0.66 | 0.65 | 0.005 | 6.75 | 6.76 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.6 | | 2.8 | 0.50 | | 3.3 | | | | | 2.13 | 0.35 | 0.35 | 0.000 | 2.47 | 2.47 | | | | | | | | | | | | | | | | | |
| | MIN | 22.6 | 5.0 | 2.0 | 0.73 | | 319.0 | | | | | 5.90 | 0.41 | 0.41 | 0.005 | 5.00 | 5.01 | | | | | | | | | | | | | | | | | |
| | MAX | 23.5 | 5.2 | 5.9 | 1.44 | | 323.6 | | | | | 8.91 | 0.90 | 0.90 | 0.005 | 8.50 | 8.51 | | | | | | | | | | | | | | | | | |



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Table F.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | ORP (mV) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-Q15-26 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.4 | | 4.0 | 1.15 | | 328.5 | | | | | 8.30 | 0.80 | 0.77 | 0.021 | 7.50 | 7.52 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.2 | | 2.8 | 0.26 | | 6.4 | | | | | 1.00 | 0.13 | 0.11 | 0.023 | 1.13 | 1.11 | | | | | | | | | | | | | | | | | |
| | MIN | 21.5 | 5.1 | 2.0 | 0.96 | | 324.0 | | | | | 7.59 | 0.70 | 0.70 | 0.005 | 6.70 | 6.74 | | | | | | | | | | | | | | | | | |
| | MAX | 23.2 | 5.2 | 5.9 | 1.33 | | 333.0 | | | | | 9.00 | 0.89 | 0.85 | 0.037 | 8.30 | 8.31 | | | | | | | | | | | | | | | | | |
| **Standpipe Piezometers** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PZ01-BKG-9 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.8 | | 2.0 | 6.78 | | 146.8 | | | | | 0.37 | 0.36 | 0.25 | 0.11 | 0.01 | 0.12 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.8 | 4.6 | 2.0 | 6.78 | | 146.8 | | | | | 0.37 | 0.36 | 0.25 | 0.11 | 0.01 | 0.12 | | | | | | | | | | | | | | | | | |
| | MAX | 22.8 | 4.6 | 2.0 | 6.78 | | 146.8 | | | | | 0.37 | 0.36 | 0.25 | 0.11 | 0.01 | 0.12 | | | | | | | | | | | | | | | | | |
| PZ02-P02-9 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.4 | | 2.0 | 4.63 | | 73.6 | | | | | 1.73 | 0.96 | 0.96 | 0.005 | 0.77 | 0.78 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.4 | 4.7 | 2.0 | 4.63 | | 73.6 | | | | | 1.73 | 0.96 | 0.96 | 0.005 | 0.77 | 0.78 | | | | | | | | | | | | | | | | | |
| | MAX | 24.4 | 4.7 | 2.0 | 4.63 | | 73.6 | | | | | 1.73 | 0.96 | 0.96 | 0.005 | 0.77 | 0.78 | | | | | | | | | | | | | | | | | |
| PZ03-H11-6 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.9 | | 2.0 | 3.68 | | 138.4 | | | | | 3.80 | 2.30 | 2.29 | 0.006 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.9 | 4.8 | 2.0 | 3.68 | | 138.4 | | | | | 3.80 | 2.30 | 2.29 | 0.006 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | |
| | MAX | 25.9 | 4.8 | 2.0 | 3.68 | | 138.4 | | | | | 3.80 | 2.30 | 2.29 | 0.006 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | |
| PZ04-BKG-9 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 21.7 | | 7.5 | 2.47 | | 75.6 | | | | 28.0 | 0.39 | 0.23 | 0.21 | 0.022 | 0.16 | 0.18 | 0.021 | | 2.9 | 2.7 | 0.091 | 1.7 | 0.3 | 0.01 | 0.010 | 12.0 | 0.050 | 5.6 | 0.066 | 1.6 | 0.1 | 0.9 | 1.8 |
| | STD. DEV. | 0.1 | | 0.8 | 1.94 | | 3.7 | | | | | 0.37 | 0.17 | 0.15 | 0.023 | 0.21 | 0.23 | | | | 0.1 | | | | | | | | | | | | | |
| | MIN | 21.6 | 5.3 | 6.9 | 1.10 | | 72.9 | | | | 28 | 0.12 | 0.11 | 0.11 | 0.005 | 0.01 | 0.02 | 0.021 | | 2.9 | 2.6 | 0.091 | 1.7 | 0.3 | 0.01 | 0.010 | 12 | 0.050 | 5.6 | 0.066 | 1.6 | 0.069 | 0.94 | 1.8 |
| | MAX | 21.7 | 5.4 | 8.1 | 3.84 | | 78.2 | | | | 28 | 0.65 | 0.35 | 0.31 | 0.038 | 0.30 | 0.34 | 0.021 | | 2.9 | 2.8 | 0.091 | 1.7 | 0.3 | 0.01 | 0.010 | 12 | 0.050 | 5.6 | 0.066 | 1.6 | 0.069 | 0.94 | 1.8 |
| PZ05-BKG-9 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.8 | | 6.9 | 4.38 | | 98.8 | | | | | 4.80 | 1.20 | 1.17 | 0.034 | 3.60 | 3.63 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.8 | 5.1 | 6.9 | 4.38 | | 98.8 | | | | | 4.80 | 1.20 | 1.17 | 0.034 | 3.60 | 3.63 | | | | | | | | | | | | | | | | | |
| | MAX | 21.8 | 5.1 | 6.9 | 4.38 | | 98.8 | | | | | 4.80 | 1.20 | 1.17 | 0.034 | 3.60 | 3.63 | | | | | | | | | | | | | | | | | |
| PZ06-BKG-12 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.1 | | 3.0 | 5.41 | | 59.4 | | | | | 0.26 | 0.25 | 0.21 | 0.04 | 0.01 | 0.05 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.1 | 4.7 | 3.0 | 5.41 | | 59.4 | | | | | 0.26 | 0.25 | 0.21 | 0.04 | 0.01 | 0.05 | | | | | | | | | | | | | | | | | |
| | MAX | 23.1 | 4.7 | 3.0 | 5.41 | | 59.4 | | | | | 0.26 | 0.25 | 0.21 | 0.04 | 0.01 | 0.05 | | | | | | | | | | | | | | | | | |
| PZ07-D05-7 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.3 | | 3.0 | 0.39 | | 221.6 | | | | | 5.20 | 1.60 | 1.60 | 0.005 | 3.6 | 3.61 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.3 | 4.7 | 3.0 | 0.39 | | 221.6 | | | | | 5.20 | 1.60 | 1.60 | 0.005 | 3.6 | 3.61 | | | | | | | | | | | | | | | | | |
| | MAX | 25.3 | 4.7 | 3.0 | 0.39 | | 221.6 | | | | | 5.20 | 1.60 | 1.60 | 0.005 | 3.6 | 3.61 | | | | | | | | | | | | | | | | | |
| PZ08-FG7-12 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.6 | | 2.0 | 3.33 | | 126.9 | | | | | 2.13 | 1.30 | 1.30 | 0.005 | 0.83 | 0.84 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.6 | 4.8 | 2.0 | 3.33 | | 126.9 | | | | | 2.13 | 1.30 | 1.30 | 0.005 | 0.83 | 0.84 | | | | | | | | | | | | | | | | | |
| | MAX | 23.6 | 4.8 | 2.0 | 3.33 | | 126.9 | | | | | 2.13 | 1.30 | 1.30 | 0.005 | 0.83 | 0.84 | | | | | | | | | | | | | | | | | |
| PZ09-I08-5 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.9 | | 2.0 | 6.03 | | 94.2 | | | | | 1.99 | 1.40 | 1.40 | 0.005 | 0.59 | 0.60 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.9 | 5.2 | 2.0 | 6.03 | | 94.2 | | | | | 1.99 | 1.40 | 1.40 | 0.005 | 0.59 | 0.60 | | | | | | | | | | | | | | | | | |
| | MAX | 21.9 | 5.2 | 2.0 | 6.03 | | 94.2 | | | | | 1.99 | 1.40 | 1.40 | 0.005 | 0.59 | 0.60 | | | | | | | | | | | | | | | | | |
| PZ10-CD6-13 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.6 | | 26 | 2.85 | | 524.0 | | | | | 7.70 | 2.50 | 2.45 | 0.050 | 5.20 | 5.25 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.6 | 6.0 | 26 | 2.85 | | 524.0 | | | | | 7.70 | 2.50 | 2.45 | 0.050 | 5.20 | 5.25 | | | | | | | | | | | | | | | | | |
| | MAX | 25.6 | 6.0 | 26 | 2.85 | | 524.0 | | | | | 7.70 | 2.50 | 2.45 | 0.050 | 5.20 | 5.25 | | | | | | | | | | | | | | | | | |
| PZ11-E09-10 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.8 | | 12 | 2.33 | | 453.8 | | | | | 23.10 | 2.10 | 1.61 | 0.49 | 21.00 | 21.49 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.8 | 5.6 | 12 | 2.33 | | 453.8 | | | | | 23.10 | 2.10 | 1.61 | 0.49 | 21.00 | 21.49 | | | | | | | | | | | | | | | | | |
| | MAX | 25.8 | 5.6 | 12 | 2.33 | | 453.8 | | | | | 23.10 | 2.10 | 1.61 | 0.49 | 21.00 | 21.49 | | | | | | | | | | | | | | | | | |
| PZ13-F04-8 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.4 | | 7.9 | 2.48 | | 125.5 | | | | | 2.15 | 0.75 | 0.71 | 0.037 | 1.40 | 1.44 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.4 | 5.6 | 7.9 | 2.48 | | 125.5 | | | | | 2.15 | 0.75 | 0.71 | 0.037 | 1.40 | 1.44 | | | | | | | | | | | | | | | | | |
| | MAX | 21.4 | 5.6 | 7.9 | 2.48 | | 125.5 | | | | | 2.15 | 0.75 | 0.71 | 0.037 | 1.40 | 1.44 | | | | | | | | | | | | | | | | | |
| PZ14-G13-7 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.5 | | 15 | 1.04 | | 246.1 | | | | | 7.59 | 0.19 | 0.19 | 0.005 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.5 | 5.8 | 15 | 1.04 | | 246.1 | | | | | 7.59 | 0.19 | 0.19 | 0.005 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | |
| | MAX | 24.5 | 5.8 | 15 | 1.04 | | 246.1 | | | | | 7.59 | 0.19 | 0.19 | 0.005 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | |
| PZ15-A11-6 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.8 | | 4.9 | 2.5 | | 100.0 | | | | | 0.88 | 0.61 | 0.57 | 0.041 | 0.27 | 0.31 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.8 | 5.2 | 4.9 | 2.5 | | 100.0 | | | | | 0.88 | 0.61 | 0.57 | 0.041 | 0.27 | 0.31 | | | | | | | | | | | | | | | | | |
| | MAX | 24.8 | 5.2 | 4.9 | 2.5 | | 100.0 | | | | | 0.88 | 0.61 | 0.57 | 0.041 | 0.27 | 0.31 | | | | | | | | | | | | | | | | | |



o:\44237-001\Wpdocs\Report\Draft

# Table F.1 (con't)
# Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | ORP (mV) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_2$-N | $NO_3$-N | $PO_4$-P | $SO_4$ | B | Ca | Fe | Mg | Mn | K | Na |
| PZ16-C12-28 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 26.5 | | 10.5 | 0.68 | | 293.5 | | | | | 1.25 | 1.01 | 0.99 | 0.017 | 0.24 | 0.26 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.6 | | 0.8 | 0.03 | | 2.3 | | | | | 1.36 | 1.26 | 1.26 | 0.001 | 0.10 | 0.10 | | | | | | | | | | | | | | | | | |
| | MIN | 25.4 | 5.6 | 9.9 | 0.66 | | 291.8 | | | | | 0.29 | 0.12 | 0.10 | 0.016 | 0.17 | 0.19 | | | | | | | | | | | | | | | | | |
| | MAX | 27.6 | 5.7 | 11 | 0.70 | | 295.1 | | | | | 2.21 | 1.90 | 1.88 | 0.017 | 0.31 | 0.33 | | | | | | | | | | | | | | | | | |
| PZ17-I15-26 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.6 | | 3.6 | 1.49 | | 300.6 | | | | | 13.74 | 0.39 | 0.38 | 0.006 | 13.35 | 13.36 | | | 4.0 | 1.0 | | | | | | | | | | | | | |
| | STD. DEV. | 0.7 | | 0.8 | 1.37 | | 9.2 | | | | | 4.86 | 0.30 | 0.30 | 0.001 | 5.16 | 5.16 | | | | | | | | | | | | | | | | | |
| | MIN | 22.1 | 4.8 | 3.0 | 0.52 | | 294.1 | | | | | 10.30 | 0.18 | 0.17 | 0.005 | 9.70 | 9.71 | | | 4.0 | 1.0 | | | | | | | | | | | | | |
| | MAX | 23.1 | 5.7 | 4.1 | 2.46 | | 307.1 | | | | | 17.18 | 0.60 | 0.60 | 0.006 | 17.00 | 17.01 | | | 4.0 | 1.0 | | | | | | | | | | | | | |
| PZ18-R12-26 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.4 | | 8.9 | 0.89 | | 328.1 | | | | | 15.40 | 3.40 | 3.38 | 0.022 | 12.00 | 12.02 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.4 | 5.0 | 8.9 | 0.89 | | 328.1 | | | | | 15.40 | 3.40 | 3.38 | 0.022 | 12.00 | 12.02 | | | | | | | | | | | | | | | | | |
| | MAX | 23.4 | 5.0 | 8.9 | 0.89 | | 328.1 | | | | | 15.40 | 3.40 | 3.38 | 0.022 | 12.00 | 12.02 | | | | | | | | | | | | | | | | | |
| PZ19-G10-26 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.1 | | 4.0 | 1.07 | | 302.1 | | | | | 17.90 | 0.90 | 0.89 | 0.014 | 17.00 | 17.01 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.1 | 5.1 | 4.0 | 1.07 | | 302.1 | | | | | 17.90 | 0.90 | 0.89 | 0.014 | 17.00 | 17.01 | | | | | | | | | | | | | | | | | |
| | MAX | 23.1 | 5.1 | 4.0 | 1.07 | | 302.1 | | | | | 17.90 | 0.90 | 0.89 | 0.014 | 17.00 | 17.01 | | | | | | | | | | | | | | | | | |
| PZ20-G10-15 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.2 | | 15 | 1.97 | | 356.1 | | | | | 22.70 | 3.70 | 3.70 | 0.005 | 19.00 | 19.01 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 5.6 | 15 | 1.97 | | 356.1 | | | | | 22.70 | 3.70 | 3.70 | 0.005 | 19.00 | 19.01 | | | | | | | | | | | | | | | | | |
| | MAX | 22.2 | 5.6 | 15 | 1.97 | | 356.1 | | | | | 22.70 | 3.70 | 3.70 | 0.005 | 19.00 | 19.01 | | | | | | | | | | | | | | | | | |
| PZ21-E11-26 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.6 | | 4.0 | 0.36 | | 295.6 | | | | | 9.85 | 0.55 | 0.54 | 0.012 | 9.30 | 9.31 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.6 | 5.2 | 4.0 | 0.36 | | 295.6 | | | | | 9.85 | 0.55 | 0.54 | 0.012 | 9.30 | 9.31 | | | | | | | | | | | | | | | | | |
| | MAX | 23.6 | 5.2 | 4.0 | 0.36 | | 295.6 | | | | | 9.85 | 0.55 | 0.54 | 0.012 | 9.30 | 9.31 | | | | | | | | | | | | | | | | | |
| PZ22-E11-15 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.4 | | 8.9 | 1.36 | | 416.0 | | | | | 5.60 | 1.40 | 1.39 | 0.007 | 4.20 | 4.21 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.4 | 5.3 | 8.9 | 1.36 | | 416.0 | | | | | 5.60 | 1.40 | 1.39 | 0.007 | 4.20 | 4.21 | | | | | | | | | | | | | | | | | |
| | MAX | 24.4 | 5.3 | 8.9 | 1.36 | | 416.0 | | | | | 5.60 | 1.40 | 1.39 | 0.007 | 4.20 | 4.21 | | | | | | | | | | | | | | | | | |
| PZ23-D09-27 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.4 | | 5.9 | 0.18 | | 306.2 | | | | | 8.50 | 1.20 | 1.20 | 0.005 | 7.30 | 7.31 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.4 | 5.4 | 5.9 | 0.18 | | 306.2 | | | | | 8.50 | 1.20 | 1.20 | 0.005 | 7.30 | 7.31 | | | | | | | | | | | | | | | | | |
| | MAX | 24.4 | 5.4 | 5.9 | 0.18 | | 306.2 | | | | | 8.50 | 1.20 | 1.20 | 0.005 | 7.30 | 7.31 | | | | | | | | | | | | | | | | | |
| PZ24-BKG-26 | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | MEAN | 23.6 | | 4.1 | 0.60 | | 283.6 | | | | 12.0 | 11.8 | 1.3 | 1.2 | 0.0 | 10.6 | 10.6 | 1.2 | | 2.5 | 0.9 | 0.01 | 15.00 | 9.10 | 0.01 | 0.01 | 43.00 | 0.050 | 21.0 | 0.11 | 9.7 | 0.2 | 8.9 | 7.7 |
| | STD. DEV. | 0.7 | | 0.1 | 0.14 | | 17.9 | | | | | 1.1 | 0.9 | 0.9 | 0.0 | 2.1 | 2.0 | | | 1.6 | 0.2 | | | | | | | | | | | | | |
| | MIN | 23.1 | 5.0 | 4.0 | 0.50 | | 270.9 | | | | 12 | 11.00 | 0.6 | 0.60 | 0.005 | 9.1 | 9.16 | 1.2 | | 1.3 | 0.79 | 0.013 | 15 | 9.1 | 0.01 | 0.010 | 43 | 0.050 | 21 | 0.11 | 9.7 | 0.17 | 8.9 | 7.7 |
| | MAX | 24.1 | 5.1 | 4.1 | 0.70 | | 296.2 | | | | 12 | 12.60 | 1.9 | 1.84 | 0.057 | 12 | 12.01 | 1.2 | | 3.6 | 1.1 | 0.013 | 15 | 9.1 | 0.01 | 0.010 | 43 | 0.050 | 21 | 0.11 | 9.7 | 0.17 | 8.9 | 7.7 |
| PZ25-A6.5-10 | n | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.0 | | 48 | 5.7 | | 770.0 | | | | | 22.3 | 2.3 | 2.3 | 0.022 | 20.0 | 20.0 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.0 | 6.0 | 48 | 5.7 | | 770.0 | | | | | 22.3 | 2.3 | 2.3 | 0.022 | 20.0 | 20.0 | | | | | | | | | | | | | | | | | |
| | MAX | 22.0 | 6.0 | 48 | 5.7 | | 770.0 | | | | | 22.3 | 2.3 | 2.3 | 0.022 | 20.0 | 20.0 | | | | | | | | | | | | | | | | | |
| **Blanks** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FB-DI | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 16.8 | | 2.0 | 9.00 | | 1.3 | | | | | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 6.6 | | 0.0 | 0.63 | | 0.2 | | | | | 0.00 | 0.00 | 0.00 | 0.000 | 0.00 | 0.00 | | | | | | | | | | | | | | | | | |
| | MIN | 12.1 | 5.7 | 2.0 | 8.55 | | 1.2 | | | | | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | | | | | | | | | | | | | | | | |
| | MAX | 21.5 | 6.1 | 2.0 | 9.44 | | 1.5 | | | | | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | | | | | | | | | | | | | | | | |
| FB-TAP | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 16.6 | | 140 | 9.60 | | 438.5 | | | | | 0.08 | 0.05 | 0.05 | 0.005 | 0.03 | 0.04 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 9.9 | | 0 | 2.08 | | 9.2 | | | | | 0.03 | 0.00 | 0.00 | 0.000 | 0.03 | 0.03 | | | | | | | | | | | | | | | | | |
| | MIN | 9.6 | 7.0 | 140 | 8.13 | | 432.0 | | | | | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | | | | | | | | | | | | | | | | |
| | MAX | 23.6 | 7.7 | 140 | 11.07 | | 445.0 | | | | | 0.10 | 0.05 | 0.05 | 0.005 | 0.05 | 0.06 | | | | | | | | | | | | | | | | | |
| Equipment Rinsate | n | 2 | 2 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 19.7 | | 2.0 | 5.11 | | 7.3 | | | | | 0.07 | 0.05 | 0.03 | 0.02 | 0.02 | 0.04 | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 11.0 | | 0.0 | 3.95 | | 8.4 | | | | | 0.01 | 0.00 | 0.01 | 0.015 | 0.01 | 0.03 | | | | | | | | | | | | | | | | | |
| | MIN | 11.9 | 6.0 | 2.0 | 2.31 | | 1.4 | | | | | 0.06 | 0.05 | 0.02 | 0.005 | 0.01 | 0.02 | | | | | | | | | | | | | | | | | |
| | MAX | 27.5 | 7.2 | 2.0 | 7.90 | | 13.2 | | | | | 0.08 | 0.05 | 0.05 | 0.026 | 0.03 | 0.06 | | | | | | | | | | | | | | | | | |

Notes:

[1]Total Nitrogen (TN) is a calculated value equal to the sum of TKN and $NO_x$.

[2]Organic Nitrogen (ON) is a calculated value equal to the difference of TKN and $NH_3$.

[3]Total Inorganic Nitrogen (TIN) is a calculated value equal to the sum of $NH_3$ and $NO_x$.

DO - Dissolved oxygen

Gray-shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.

Yellow-shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit, value used for statistical analyses.

Blue-shaded data points indicate the number is greater than reported value.

Orange - shaded data points indicate too many colonies were present. The numberic value represents the dilution factor times the maximum reportable number of colonies.



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# Appendix G: Laboratory Report

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**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102588**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ04-BKG-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-01** | | | | | | |
| Date/Time Collected | | **03/31/11 08:44** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.4 | | | | | | |
| Temperature | | 21.7 °C | | | | | | |
| Conductivity | | 78.2 umhos | | | | | | |
| Dissolved Oxygen | | 3.84 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.038 | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Chemical Oxygen Demand | mg/L | 28 | EPA 410.4 | 25 | 10 | | 04/01/11 14:59 | MMF |
| Chloride | mg/L | 1.7 | EPA 300.0 | 0.20 | 0.050 | | 04/01/11 11:52 | MEJ |
| Fluoride | mg/L | 0.091 | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 11:52 | MEJ |
| Nitrate (as N) | mg/L | 0.30 | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 11:52 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 11:52 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 11:52 | MEJ |
| Phosphorous - Total as P | mg/L | 0.021 I | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 12 | EPA 300.0 | 0.60 | 0.20 | | 04/01/11 11:52 | MEJ |
| Total Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.35 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.30 | EPA 300.0 | 0.08 | 0.02 | | 04/01/11 11:52 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.6 | SM 5310B | 1.0 | 0.50 | | 04/06/11 14:55 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 04/01/11 09:38 | 04/01/11 16:03 | LCB |
| Calcium | mg/L | 5.6 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:03 | LCB |
| Iron | mg/L | 0.066 I | EPA 200.7 | 0.10 | 0.020 | 04/01/11 09:38 | 04/01/11 16:03 | LCB |
| Magnesium | mg/L | 1.6 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:03 | LCB |
| Manganese | mg/L | 0.069 | EPA 200.7 | 0.010 | 0.0010 | 04/01/11 09:38 | 04/01/11 16:03 | LCB |
| Potassium | mg/L | 0.94 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 16:36 | LCB |
| Sodium | mg/L | 1.8 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 16:36 | LCB |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
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**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102588**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ24-BKG-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-02** | | | | | | |
| Date/Time Collected | | **03/31/11 08:14** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.0 | | | | | | |
| Temperature | | 23.1 °C | | | | | | |
| Conductivity | | 270.9 umhos | | | | | | |
| Dissolved Oxygen | | 0.50 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.057 | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Chemical Oxygen Demand | mg/L | 12 I | EPA 410.4 | 25 | 10 | | 04/01/11 14:59 | MMF |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 04/01/11 11:52 | MEJ |
| Fluoride | mg/L | 0.013 I | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 11:52 | MEJ |
| Nitrate (as N) | mg/L | 9.1 | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 11:52 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 11:52 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 11:52 | MEJ |
| Phosphorous - Total as P | mg/L | 1.2 | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 43 | EPA 300.0 | 0.60 | 0.20 | | 04/01/11 11:52 | MEJ |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.9 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Total Organic Carbon | mg/L | 3.6 | SM 5310B | 1.0 | 0.50 | | 04/04/11 13:41 | MEJ |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 9.1 | EPA 300.0 | 0.08 | 0.02 | | 04/01/11 11:52 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.79 I | SM 5310B | 1.0 | 0.50 | | 04/06/11 14:55 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 04/01/11 09:38 | 04/01/11 16:20 | LCB |
| Calcium | mg/L | 21 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:20 | LCB |
| Iron | mg/L | 0.11 | EPA 200.7 | 0.10 | 0.020 | 04/01/11 09:38 | 04/01/11 16:20 | LCB |
| Magnesium | mg/L | 9.7 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:20 | LCB |
| Manganese | mg/L | 0.17 | EPA 200.7 | 0.010 | 0.0010 | 04/01/11 09:38 | 04/01/11 16:20 | LCB |
| Potassium | mg/L | 8.9 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 16:46 | LCB |
| Sodium | mg/L | 7.7 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 16:46 | LCB |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102588**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-AA9-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-03** | | | | | | |
| Date/Time Collected | | **03/30/11 08:55** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.0 | | | | | | |
| Temperature | | 23.0 °C | | | | | | |
| Conductivity | | 699 umhos | | | | | | |
| Dissolved Oxygen | | 0.99 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.021 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.6 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 46 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-AA9-22** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-04** | | | | | | |
| Date/Time Collected | | **03/30/11 09:10** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 23.8 °C | | | | | | |
| Conductivity | | 286 umhos | | | | | | |
| Dissolved Oxygen | | 0.77 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.041 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 7.9 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**April 21, 2011**
**Work Order: 1102588**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-AA9-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-05** | | | | | | |
| Date/Time Collected | | **03/30/11 09:30** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 23.9 °C | | | | | | |
| Conductivity | | 288 umhos | | | | | | |
| Dissolved Oxygen | | 0.82 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.044 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 10 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ15-A11-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-06** | | | | | | |
| Date/Time Collected | | **03/30/11 11:22** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 24.8 °C | | | | | | |
| Conductivity | | 100 umhos | | | | | | |
| Dissolved Oxygen | | 2.52 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.041 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.61 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.27 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102588**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ10-CD6-13** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-07** | | | | | | |
| Date/Time Collected | | **03/30/11 14:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.0 | | | | | | |
| Temperature | | 25.6 °C | | | | | | |
| Conductivity | | 524 umhos | | | | | | |
| Dissolved Oxygen | | 2.85 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.050 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 26 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.5 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 26 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 5.2 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-C11-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-08** | | | | | | |
| Date/Time Collected | | **03/30/11 08:30** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.9 | | | | | | |
| Temperature | | 21.8 °C | | | | | | |
| Conductivity | | 319 umhos | | | | | | |
| Dissolved Oxygen | | 3.50 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.090 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 35 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 35 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 3.1 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ16-C12-28** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-09** | | | | | | |
| Date/Time Collected | | **03/30/11 11:48** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.7 | | | | | | |
| Temperature | | 25.4 °C | | | | | | |
| Conductivity | | 295.1 umhos | | | | | | |
| Dissolved Oxygen | | 0.66 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.016 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 9.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.9 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 9.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.31 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ07-D05-7** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-10** | | | | | | |
| Date/Time Collected | | **03/30/11 13:47** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.7 | | | | | | |
| Temperature | | 25.3 °C | | | | | | |
| Conductivity | | 221.6 umhos | | | | | | |
| Dissolved Oxygen | | 0.39 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.6 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 3.6 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102588**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D07-7** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-11** | | | | | | |
| Date/Time Collected | | **03/30/11 11:45** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.7 | | | | | | |
| Temperature | | 23.3 °C | | | | | | |
| Conductivity | | 365 umhos | | | | | | |
| Dissolved Oxygen | | 0.77 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.011 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Chemical Oxygen Demand | mg/L | 20 I | EPA 410.4 | 25 | 10 | | 04/01/11 14:59 | MMF |
| Chloride | mg/L | 23 | EPA 300.0 | 0.20 | 0.050 | | 03/31/11 12:58 | MEJ |
| Fluoride | mg/L | 0.12 | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Nitrate (as N) | mg/L | 12 | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Phosphorous - Total as P | mg/L | 0.015 I | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 53 | EPA 300.0 | 0.60 | 0.20 | | 03/31/11 12:58 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.6 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Total Organic Carbon | mg/L | 1.7 | SM 5310B | 1.0 | 0.50 | | 03/31/11 09:00 | MEJ |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 12 | EPA 300.0 | 0.08 | 0.02 | | 03/31/11 12:58 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.4 | SM 5310B | 1.0 | 0.50 | | 03/31/11 12:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.096 I | EPA 200.7 | 0.10 | 0.050 | 04/01/11 09:38 | 04/01/11 16:24 | LCB |
| Calcium | mg/L | 27 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:24 | LCB |
| Iron | mg/L | 0.054 I | EPA 200.7 | 0.10 | 0.020 | 04/01/11 09:38 | 04/01/11 16:24 | LCB |
| Magnesium | mg/L | 5.4 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:24 | LCB |
| Manganese | mg/L | 0.0084 I | EPA 200.7 | 0.010 | 0.0010 | 04/01/11 09:38 | 04/01/11 16:24 | LCB |
| Potassium | mg/L | 8.0 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 16:50 | LCB |
| Sodium | mg/L | 20 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 16:50 | LCB |

**Hazen and Sawyer**
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**April 21, 2011**
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**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D7.5-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-12** | | | | | | |
| Date/Time Collected | | **03/30/11 11:10** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.0 | | | | | | |
| Temperature | | 23.8 °C | | | | | | |
| Conductivity | | 514 umhos | | | | | | |
| Dissolved Oxygen | | 0.67 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.009 I | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 3.2 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 29 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Sample Description | | **DP-D7.5-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-13** | | | | | | |
| Date/Time Collected | | **03/30/11 11:40** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 25.0 °C | | | | | | |
| Conductivity | | 296 umhos | | | | | | |
| Dissolved Oxygen | | 1.26 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | | 04/01/11 14:59 | MMF |
| Chloride | mg/L | 10 | EPA 300.0 | 0.20 | 0.050 | | 03/31/11 12:58 | MEJ |
| Fluoride | mg/L | 0.041 | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Nitrate (as N) | mg/L | 7.6 | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Orthophosphate as P | mg/L | 0.16 | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Phosphorous - Total as P | mg/L | 0.16 | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 67 | EPA 300.0 | 0.60 | 0.20 | | 03/31/11 12:58 | MEJ |
| Total Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |

**Hazen and Sawyer**
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**April 21, 2011**
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**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D7.5-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-13** | | | | | | |
| Date/Time Collected | | **03/30/11 11:40** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 25.0 °C | | | | | | |
| Conductivity | | 296 umhos | | | | | | |
| Dissolved Oxygen | | 1.26 mg/L | | | | | | |
| Total Organic Carbon | mg/L | 1.8 | SM 5310B | 1.0 | 0.50 | | 03/31/11 09:00 | MEJ |
| Bicarbonate Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 7.6 | EPA 300.0 | 0.08 | 0.02 | | 03/31/11 12:58 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.3 | SM 5310B | 1.0 | 0.50 | | 03/31/11 12:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 04/01/11 09:38 | 04/01/11 16:27 | LCB |
| Calcium | mg/L | 28 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:27 | LCB |
| Iron | mg/L | 0.022 I | EPA 200.7 | 0.10 | 0.020 | 04/01/11 09:38 | 04/01/11 16:27 | LCB |
| Magnesium | mg/L | 6.5 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:27 | LCB |
| Manganese | mg/L | 0.21 | EPA 200.7 | 0.010 | 0.0010 | 04/01/11 09:38 | 04/01/11 16:27 | LCB |
| Potassium | mg/L | 16 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 16:53 | LCB |
| Sodium | mg/L | 6.7 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 16:53 | LCB |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D7.5-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-14** | | | | | | |
| Date/Time Collected | | **03/30/11 12:10** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 25.0 °C | | | | | | |
| Conductivity | | 292 umhos | | | | | | |
| Dissolved Oxygen | | 1.47 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D7.5-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-14** | | | | | | |
| Date/Time Collected | | **03/30/11 12:10** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 25.0 °C | | | | | | |
| Conductivity | | 292 umhos | | | | | | |
| Dissolved Oxygen | | 1.47 mg/L | | | | | | |
| Nitrate+Nitrite (N) | mg/L | 7.4 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Sample Description | | **DP-D08-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-15** | | | | | | |
| Date/Time Collected | | **03/30/11 10:25** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.6 | | | | | | |
| Temperature | | 24.6 °C | | | | | | |
| Conductivity | | 502 umhos | | | | | | |
| Dissolved Oxygen | | 1.36 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.12 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Chemical Oxygen Demand | mg/L | 16 I | EPA 410.4 | 25 | 10 | | 04/01/11 14:59 | MMF |
| Chloride | mg/L | 42 | EPA 300.0 | 0.20 | 0.050 | | 04/01/11 11:52 | MEJ |
| Fluoride | mg/L | 0.056 | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Nitrate (as N) | mg/L | 19 | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 10:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Orthophosphate as P | mg/L | 0.15 | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Phosphorous - Total as P | mg/L | 0.16 | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 52 | EPA 300.0 | 0.60 | 0.20 | | 03/31/11 12:58 | MEJ |
| Total Alkalinity | mg/L | 20 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.0 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 20 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 19 | EPA 300.0 | 0.08 | 0.02 | | 04/01/11 10:00 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**April 21, 2011**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D08-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-15** | | | | | | |
| Date/Time Collected | | **03/30/11 10:25** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.6 | | | | | | |
| Temperature | | 24.6 °C | | | | | | |
| Conductivity | | 502 umhos | | | | | | |
| Dissolved Oxygen | | 1.36 mg/L | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 3.5 | SM 5310B | 1.0 | 0.50 | | 03/31/11 12:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.094 I | EPA 200.7 | 0.10 | 0.050 | 04/01/11 09:38 | 04/01/11 16:31 | LCB |
| Calcium | mg/L | 33 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:31 | LCB |
| Iron | mg/L | 11 | EPA 200.7 | 0.10 | 0.020 | 04/01/11 09:38 | 04/01/11 16:31 | LCB |
| Magnesium | mg/L | 10 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:31 | LCB |
| Manganese | mg/L | 0.33 | EPA 200.7 | 0.010 | 0.0010 | 04/01/11 09:38 | 04/01/11 16:31 | LCB |
| Potassium | mg/L | 8.0 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 16:57 | LCB |
| Sodium | mg/L | 35 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 16:57 | LCB |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D09-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-16** | | | | | | |
| Date/Time Collected | | **03/30/11 10:05** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.6 | | | | | | |
| Temperature | | 22.6 °C | | | | | | |
| Conductivity | | 487 umhos | | | | | | |
| Dissolved Oxygen | | 1.01 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.8 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 27 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**Hazen and Sawyer**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D09-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-17** | | | | | | |
| Date/Time Collected | | **03/30/11 10:20** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.4 | | | | | | |
| Temperature | | 23.3 °C | | | | | | |
| Conductivity | | 470 umhos | | | | | | |
| Dissolved Oxygen | | 1.16 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 15 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.0 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 15 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 18 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D09-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-18** | | | | | | |
| Date/Time Collected | | **03/30/11 10:35** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 24.2 °C | | | | | | |
| Conductivity | | 298 umhos | | | | | | |
| Dissolved Oxygen | | 0.80 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.40 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 7.9 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D09-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-19** | | | | | | |
| Date/Time Collected | | **03/30/11 10:55** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.0 | | | | | | |
| Temperature | | 24.5 °C | | | | | | |
| Conductivity | | 309 umhos | | | | | | |
| Dissolved Oxygen | | 0.76 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.048 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 11 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.25 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 11 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 1.9 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D10-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-20** | | | | | | |
| Date/Time Collected | | **03/30/11 09:40** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.7 | | | | | | |
| Temperature | | 23.8 °C | | | | | | |
| Conductivity | | 337 umhos | | | | | | |
| Dissolved Oxygen | | 1.45 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.025 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 23 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.9 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 23 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 2.2 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D11-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-21** | | | | | | |
| Date/Time Collected | | **03/30/11 08:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 21.7 °C | | | | | | |
| Conductivity | | 479 umhos | | | | | | |
| Dissolved Oxygen | | 1.39 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.080 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 9.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.8 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 9.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 25 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D12-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-22** | | | | | | |
| Date/Time Collected | | **03/29/11 13:45** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.8 | | | | | | |
| Temperature | | 22.3 °C | | | | | | |
| Conductivity | | 477 umhos | | | | | | |
| Dissolved Oxygen | | 0.65 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.74 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.8 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (N) | mg/L | 9.5 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E02-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-23** | | | | | | |
| Date/Time Collected | | **03/29/11 08:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 21.3 °C | | | | | | |
| Conductivity | | 158.9 umhos | | | | | | |
| Dissolved Oxygen | | 0.46 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.006 I | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 5.0 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.22 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 5.0 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.42 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E03-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102588-24** | | | | | | |
| Date/Time Collected | | **03/29/11 09:15** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 21.3 °C | | | | | | |
| Conductivity | | 211.3 umhos | | | | | | |
| Dissolved Oxygen | | 2.21 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.075 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.81 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (N) | mg/L | 1.8 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC12919 - TOC prep** | | | | | | | | | | |
| **Blank (BC12919-BLK1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BC12919-BS1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Organic Carbon | 9.54 | 1.0 | 0.50 | mg/L | 10 | | 95 | 90-110 | | |
| **Matrix Spike (BC12919-MS1)** | | **Source: 1102417-01** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Organic Carbon | 13.2 | 1.0 | 0.50 | mg/L | 10 | 3.85 | 93 | 85-115 | | |
| **Matrix Spike Dup (BC12919-MSD1)** | | **Source: 1102417-01** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Organic Carbon | 12.6 | 1.0 | 0.50 | mg/L | 10 | 3.85 | 87 | 85-115 | 5 | 10 |
| **Batch BC13009 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BC13009-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BC13009-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BC13009-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | | 107 | 90-110 | | |
| **LCS (BC13009-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.50 | 0.010 | 0.005 | mg/L | 0.50 | | 99 | 90-110 | | |
| **Matrix Spike (BC13009-MS1)** | | **Source: 1102727-07** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.060 | 103 | 90-110 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13009 - Ammonia by SEAL** | | | | | | | | | | |
| **Matrix Spike (BC13009-MS2)** | | **Source: 1102740-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | 0.034 | 102 | 90-110 | | |
| **Matrix Spike Dup (BC13009-MSD1)** | | **Source: 1102727-07** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.060 | 103 | 90-110 | 0.1 | 10 |
| **Matrix Spike Dup (BC13009-MSD2)** | | **Source: 1102740-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.034 | 107 | 90-110 | 5 | 10 |
| **Batch BC13012 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BC13012-BLK1)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BC13012-BLK2)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BC13012-BS1)** | | | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.74 | 0.20 | 0.05 | mg/L | 2.5 | | 108 | 90-110 | | |
| **LCS (BC13012-BS2)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.61 | 0.20 | 0.05 | mg/L | 2.5 | | 103 | 90-110 | | |
| **Matrix Spike (BC13012-MS1)** | | **Source: 1102731-01** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.99 | 0.20 | 0.05 | mg/L | 2.5 | 0.519 | 97 | 80-120 | | |
| **Matrix Spike (BC13012-MS2)** | | **Source: 1102697-02** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.48 J5 | 0.20 | 0.05 | mg/L | 2.5 | 0.808 | 106 | 80-120 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13012 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Matrix Spike Dup (BC13012-MSD1)** | | **Source: 1102731-01** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.92 | 0.20 | 0.05 | mg/L | 2.5 | 0.519 | 95 | 80-120 | 2 | 20 |
| **Matrix Spike Dup (BC13012-MSD2)** | | **Source: 1102697-02** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.57 J5 | 0.20 | 0.05 | mg/L | 2.5 | 0.808 | 109 | 80-120 | 2 | 20 |
| **Batch BC13019 - alkalinity** | | | | | | | | | | |
| **Blank (BC13019-BLK1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BC13019-BS1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BC13019-MS1)** | | **Source: 1102588-22** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 6.9 | 89 | 80-120 | | 26 |
| **Matrix Spike Dup (BC13019-MSD1)** | | **Source: 1102588-22** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 6.9 | 89 | 80-120 | 0 | 26 |
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **Blank (BC13102-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **Blank (BC13102-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK3)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK4)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BC13102-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS3)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **LCS (BC13102-BS4)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BC13102-MS1)** | | **Source: 1102633-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | ND | 101 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS2)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.9 | 97 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS3)** | | **Source: 1102597-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS4)** | | **Source: 1102612-21** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 107 | 80-120 | | 26 |
| **Matrix Spike Dup (BC13102-MSD1)** | | **Source: 1102633-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | ND | 101 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD2)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.9 | 97 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD3)** | | **Source: 1102597-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD4)** | | **Source: 1102612-21** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | 9 | 26 |
| **Batch BC13106 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BC13106-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13106 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BC13106-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BC13106-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.800 | 0.04 | 0.01 | mg/L | 0.80 | | 100 | 90-110 | | |
| **LCS (BC13106-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.827 | 0.04 | 0.01 | mg/L | 0.80 | | 103 | 90-110 | | |
| **Matrix Spike (BC13106-MS1)** | | **Source: 1102727-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.05 | 0.04 | 0.01 | mg/L | 1.0 | ND | 105 | 77-119 | | |
| **Matrix Spike (BC13106-MS2)** | | **Source: 1102742-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.00 | 0.04 | 0.01 | mg/L | 1.0 | ND | 100 | 77-119 | | |
| **Matrix Spike Dup (BC13106-MSD1)** | | **Source: 1102727-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.08 | 0.04 | 0.01 | mg/L | 1.0 | ND | 108 | 77-119 | 3 | 20 |
| **Matrix Spike Dup (BC13106-MSD2)** | | **Source: 1102742-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.02 | 0.04 | 0.01 | mg/L | 1.0 | ND | 102 | 77-119 | 2 | 20 |
| **Batch BC13111 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BC13111-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13111 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS (BC13111-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Orthophosphate as P | 0.853 | 0.040 | 0.010 | mg/L | 0.90 | | 95 | 85-115 | | |
| Chloride | 3.06 | 0.20 | 0.050 | mg/L | 3.0 | | 102 | 85-115 | | |
| Nitrite (as N) | 1.27 | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | | |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | | |
| Sulfate | 8.41 | 0.60 | 0.20 | mg/L | 9.0 | | 93 | 85-115 | | |
| Fluoride | 0.840 | 0.040 | 0.010 | mg/L | 0.90 | | 93 | 85-115 | | |
| **LCS Dup (BC13111-BSD1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Chloride | 3.01 | 0.20 | 0.050 | mg/L | 3.0 | | 100 | 85-115 | 2 | 200 |
| Nitrite (as N) | 1.28 | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | 0.8 | 200 |
| Fluoride | 0.890 | 0.040 | 0.010 | mg/L | 0.90 | | 99 | 85-115 | 6 | 200 |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | 0 | 200 |
| Sulfate | 8.41 | 0.60 | 0.20 | mg/L | 9.0 | | 93 | 85-115 | 0 | 200 |
| Orthophosphate as P | 0.864 | 0.040 | 0.010 | mg/L | 0.90 | | 96 | 85-115 | 1 | 200 |
| **Matrix Spike (BC13111-MS1)** | | **Source: 1102612-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | 0.140 | 89 | 85-115 | | |
| Fluoride | 0.903 | 0.040 | 0.010 | mg/L | 0.90 | 0.0752 | 92 | 85-115 | | |
| Chloride | 6.67 | 0.20 | 0.050 | mg/L | 3.0 | 4.11 | 85 | 80-120 | | |
| Orthophosphate as P | 1.04 | 0.040 | 0.010 | mg/L | 0.90 | 0.176 | 96 | 85-115 | | |
| Sulfate | 39.5 | 0.60 | 0.20 | mg/L | 9.0 | 30.3 | 102 | 85-115 | | |
| Nitrite (as N) | 1.26 | 0.04 | 0.01 | mg/L | 1.4 | ND | 90 | 85-115 | | |
| **Matrix Spike (BC13111-MS2)** | | **Source: 1102765-02** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Fluoride | 872 | 0.040 | 0.010 | mg/L | 900 | 34.8 | 93 | 85-115 | | |
| Chloride | 8,610 | 0.20 | 0.050 | mg/L | 3000 | 5850 | 92 | 80-120 | | |
| Nitrate (as N) | 1,600 | 0.04 | 0.01 | mg/L | 1700 | 14.5 | 93 | 85-115 | | |
| Orthophosphate as P | 1,010 | 0.040 | 0.010 | mg/L | 900 | 62.6 | 105 | 85-115 | | |
| Nitrite (as N) | 1,270 | 0.04 | 0.01 | mg/L | 1400 | ND | 91 | 85-115 | | |
| Sulfate | 9,850 | 0.60 | 0.20 | mg/L | 9000 | 1420 | 94 | 85-115 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13117 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BC13117-BLK1)** | | | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BC13117-BLK2)** | | | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BC13117-BS1)** | | | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.30 | 0.20 | 0.05 | mg/L | 2.5 | | 91 | 90-110 | | |
| **LCS (BC13117-BS2)** | | | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.30 | 0.20 | 0.05 | mg/L | 2.5 | | 91 | 90-110 | | |
| **Matrix Spike (BC13117-MS1)** | | **Source: 1102745-02** | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 5.20 J5 | 0.20 | 0.05 | mg/L | 2.5 | 3.92 | 50 | 80-120 | | |
| **Matrix Spike (BC13117-MS2)** | | **Source: 1102742-07** | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.18 | 0.20 | 0.05 | mg/L | 2.5 | 0.747 | 96 | 80-120 | | |
| **Matrix Spike Dup (BC13117-MSD1)** | | **Source: 1102745-02** | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 5.61 J5 | 0.20 | 0.05 | mg/L | 2.5 | 3.92 | 66 | 80-120 | 8 | 20 |
| **Matrix Spike Dup (BC13117-MSD2)** | | **Source: 1102742-07** | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.16 | 0.20 | 0.05 | mg/L | 2.5 | 0.747 | 95 | 80-120 | 0.6 | 20 |
| **Batch BC13123 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BC13123-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13123 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BC13123-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BC13123-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.815 | 0.04 | 0.01 | mg/L | 0.80 | | 102 | 90-110 | | |
| **LCS (BC13123-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.832 | 0.04 | 0.01 | mg/L | 0.80 | | 104 | 90-110 | | |
| **Matrix Spike (BC13123-MS1)** | | **Source: 1102741-01** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.09 | 0.04 | 0.01 | mg/L | 1.0 | 0.0832 | 101 | 77-119 | | |
| **Matrix Spike (BC13123-MS2)** | | **Source: 1102588-04** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 8.89 | 0.04 | 0.01 | mg/L | 1.0 | 7.92 | 97 | 77-119 | | |
| **Matrix Spike Dup (BC13123-MSD1)** | | **Source: 1102741-01** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.12 | 0.04 | 0.01 | mg/L | 1.0 | 0.0832 | 103 | 77-119 | 2 | 20 |
| **Matrix Spike Dup (BC13123-MSD2)** | | **Source: 1102588-04** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 9.02 | 0.04 | 0.01 | mg/L | 1.0 | 7.92 | 111 | 77-119 | 2 | 20 |
| **Batch BD10108 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10108-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BD10108-BLK2)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10108 - Ammonia by SEAL** | | | | | | | | | | |
| **LCS (BD10108-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | | 108 | 90-110 | | |
| **LCS (BD10108-BS2)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | | 108 | 90-110 | | |
| **Matrix Spike (BD10108-MS1)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.021 | 100 | 90-110 | | |
| **Matrix Spike (BD10108-MS2)** | | **Source: 1102588-04** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.041 | 95 | 90-110 | | |
| **Matrix Spike Dup (BD10108-MSD1)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.51 | 0.010 | 0.005 | mg/L | 0.50 | 0.021 | 99 | 90-110 | 0.8 | 10 |
| **Matrix Spike Dup (BD10108-MSD2)** | | **Source: 1102588-04** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | 0.041 | 97 | 90-110 | 2 | 10 |
| **Batch BD10110 - COD prep** | | | | | | | | | | |
| **Blank (BD10110-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BD10110-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 51 | 25 | 10 | mg/L | 50 | | 102 | 90-110 | | |
| **Matrix Spike (BD10110-MS1)** | | **Source: 1102635-10** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10110 - COD prep** | | | | | | | | | | |
| **Matrix Spike Dup (BD10110-MSD1)** | | **Source: 1102635-10** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | 0 | 32 |
| **Batch BD10113 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BD10113-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BD10113-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chloride | 2.98 | 0.20 | 0.050 | mg/L | 3.0 | | 99 | 85-115 | | |
| Sulfate | 8.42 | 0.60 | 0.20 | mg/L | 9.0 | | 94 | 85-115 | | |
| Nitrite (as N) | 1.27 | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | | |
| Orthophosphate as P | 0.860 | 0.040 | 0.010 | mg/L | 0.90 | | 96 | 85-115 | | |
| Fluoride | 0.888 | 0.040 | 0.010 | mg/L | 0.90 | | 99 | 85-115 | | |
| Nitrate (as N) | 1.63 | 0.04 | 0.01 | mg/L | 1.7 | | 96 | 85-115 | | |
| **LCS Dup (BD10113-BSD1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chloride | 2.95 | 0.20 | 0.050 | mg/L | 3.0 | | 98 | 85-115 | 1 | 200 |
| Fluoride | 0.894 | 0.040 | 0.010 | mg/L | 0.90 | | 99 | 85-115 | 0.7 | 200 |
| Orthophosphate as P | 0.864 | 0.040 | 0.010 | mg/L | 0.90 | | 96 | 85-115 | 0.5 | 200 |
| Nitrate (as N) | 1.65 | 0.04 | 0.01 | mg/L | 1.7 | | 97 | 85-115 | 1 | 200 |
| Nitrite (as N) | 1.28 | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | 0.8 | 200 |
| Sulfate | 8.43 | 0.60 | 0.20 | mg/L | 9.0 | | 94 | 85-115 | 0.1 | 200 |

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|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10113 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BD10113-MS1)** | | **Source: 1102764-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate (as N) | 170 | 0.04 | 0.01 | mg/L | 170 | 12.4 | 93 | 85-115 | | |
| Nitrite (as N) | 126 | 0.04 | 0.01 | mg/L | 140 | ND | 90 | 85-115 | | |
| Fluoride | 86.6 | 0.040 | 0.010 | mg/L | 90 | | 96 | 85-115 | | |
| Sulfate | 946 | 0.60 | 0.20 | mg/L | 900 | 131 | 91 | 85-115 | | |
| Chloride | 875 | 0.20 | 0.050 | mg/L | 300 | 584 | 97 | 80-120 | | |
| Orthophosphate as P | 90.5 | 0.040 | 0.010 | mg/L | 90 | | 101 | 85-115 | | |
| **Matrix Spike (BD10113-MS2)** | | **Source: 1102635-16** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrite (as N) | 1.27 | 0.04 | 0.01 | mg/L | 1.4 | ND | 91 | 85-115 | | |
| Sulfate | 18.2 | 0.60 | 0.20 | mg/L | 9.0 | 9.20 | 100 | 85-115 | | |
| Orthophosphate as P | 0.909 | 0.040 | 0.010 | mg/L | 0.90 | ND | 101 | 85-115 | | |
| Fluoride | 0.922 | 0.040 | 0.010 | mg/L | 0.90 | 0.0579 | 96 | 85-115 | | |
| Chloride | 4.65 | 0.20 | 0.050 | mg/L | 3.0 | 1.64 | 100 | 80-120 | | |
| Nitrate (as N) | 1.62 | 0.04 | 0.01 | mg/L | 1.7 | 0.0324 | 93 | 85-115 | | |
| **Batch BD10114 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BD10114-BLK1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BD10114-BLK2)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BD10114-BS1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.69 | 0.20 | 0.05 | mg/L | 2.5 | | 106 | 90-110 | | |
| **LCS (BD10114-BS2)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.49 | 0.20 | 0.05 | mg/L | 2.5 | | 98 | 90-110 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10114 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Matrix Spike (BD10114-MS1)** | | **Source: 1102777-07** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.48 | 0.20 | 0.05 | mg/L | 2.5 | 0.772 | 107 | 80-120 | | |
| **Matrix Spike (BD10114-MS2)** | | **Source: 1102765-02** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.84 | 0.20 | 0.05 | mg/L | 2.5 | 0.364 | 98 | 80-120 | | |
| **Matrix Spike Dup (BD10114-MSD1)** | | **Source: 1102777-07** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.45 | 0.20 | 0.05 | mg/L | 2.5 | 0.772 | 106 | 80-120 | 1 | 20 |
| **Matrix Spike Dup (BD10114-MSD2)** | | **Source: 1102765-02** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.82 | 0.20 | 0.05 | mg/L | 2.5 | 0.364 | 97 | 80-120 | 0.7 | 20 |
| **Batch BD10201 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10201-BLK1)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BD10201-BLK2)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BD10201-BS1)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.51 | 0.010 | 0.005 | mg/L | 0.50 | | 103 | 90-110 | | |
| **LCS (BD10201-BS2)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.49 | 0.010 | 0.005 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BD10201-MS1)** | | **Source: 1102705-02** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.55 | 0.010 | 0.005 | mg/L | 0.50 | 0.062 | 98 | 90-110 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10201 - Ammonia by SEAL** | | | | | | | | | | |
| **Matrix Spike (BD10201-MS2)** | | **Source: 1102742-07** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.068 | 100 | 90-110 | | |
| **Matrix Spike Dup (BD10201-MSD1)** | | **Source: 1102705-02** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | 0.062 | 94 | 90-110 | 3 | 10 |
| **Matrix Spike Dup (BD10201-MSD2)** | | **Source: 1102742-07** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.55 | 0.010 | 0.005 | mg/L | 0.50 | 0.068 | 96 | 90-110 | 3 | 10 |
| **Batch BD10421 - TOC prep** | | | | | | | | | | |
| **Blank (BD10421-BLK1)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BD10421-BS1)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Total Organic Carbon | 10.1 | 1.0 | 0.50 | mg/L | 10 | | 101 | 90-110 | | |
| **Matrix Spike (BD10421-MS1)** | | **Source: 1102588-02** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Total Organic Carbon | 13.0 | 1.0 | 0.50 | mg/L | 10 | 3.62 | 94 | 85-115 | | |
| **Matrix Spike Dup (BD10421-MSD1)** | | **Source: 1102588-02** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Total Organic Carbon | 12.8 | 1.0 | 0.50 | mg/L | 10 | 3.62 | 92 | 85-115 | 2 | 10 |
| **Batch BD10437 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BD10437-BLK1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10437 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BD10437-BLK2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BD10437-BS1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.506 | 0.040 | 0.010 | mg/L | 0.50 | | 101 | 90-110 | | |
| **LCS (BD10437-BS2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.542 | 0.040 | 0.010 | mg/L | 0.50 | | 108 | 90-110 | | |
| **Matrix Spike (BD10437-MS1)** | | **Source: 1102612-12** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.966 | 0.040 | 0.010 | mg/L | 0.50 | 0.426 | 108 | 75-125 | | |
| **Matrix Spike (BD10437-MS2)** | | **Source: 1102777-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.565 | 0.040 | 0.010 | mg/L | 0.50 | 0.0811 | 97 | 75-125 | | |
| **Matrix Spike Dup (BD10437-MSD1)** | | **Source: 1102612-12** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.954 | 0.040 | 0.010 | mg/L | 0.50 | 0.426 | 106 | 75-125 | 1 | 25 |
| **Matrix Spike Dup (BD10437-MSD2)** | | **Source: 1102777-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.565 | 0.040 | 0.010 | mg/L | 0.50 | 0.0811 | 97 | 75-125 | 0.1 | 25 |
| **Batch BD10518 - alkalinity** | | | | | | | | | | |
| **Blank (BD10518-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10518 - alkalinity** | | | | | | | | | | |
| **Blank (BD10518-BLK2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BD10518-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BD10518-BS2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BD10518-MS1)** | | **Source: 1102588-01** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 6.9 | 92 | 80-120 | | 26 |
| **Matrix Spike (BD10518-MS2)** | | **Source: 1102612-10** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 150 | 8.0 | 2.0 | mg/L | 120 | 12 | 109 | 80-120 | | 26 |
| **Matrix Spike Dup (BD10518-MSD1)** | | **Source: 1102588-01** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 6.9 | 93 | 80-120 | 0.8 | 26 |
| **Matrix Spike Dup (BD10518-MSD2)** | | **Source: 1102612-10** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 12 | 100 | 80-120 | 8 | 26 |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13112 - DOC prep** | | | | | | | | | | |
| **Blank (BC13112-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BC13112-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 9.99 | 1.0 | 0.50 | mg/L | 10 | | 100 | 90-110 | | |
| **Duplicate (BC13112-DUP1)** | | **Source: 1102597-01** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 3.21 | 1.0 | 0.50 | mg/L | | 3.17 | | | 1 | 15 |
| **Matrix Spike (BC13112-MS1)** | | **Source: 1102612-20** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 11.8 | 1.0 | 0.50 | mg/L | 10 | 1.34 | 105 | 85-125 | | |
| **Matrix Spike Dup (BC13112-MSD1)** | | **Source: 1102612-20** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 11.9 | 1.0 | 0.50 | mg/L | 10 | 1.34 | 106 | 85-125 | 0.8 | 25 |
| **Batch BD10638 - DOC prep** | | | | | | | | | | |
| **Blank (BD10638-BLK1)** | | | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BD10638-BS1)** | | | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 10.4 | 1.0 | 0.50 | mg/L | 10 | | 104 | 90-110 | | |
| **Matrix Spike (BD10638-MS1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 11.2 | 1.0 | 0.50 | mg/L | 10 | 1.06 | 102 | 85-125 | | |
| **Matrix Spike Dup (BD10638-MSD1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 11.3 | 1.0 | 0.50 | mg/L | 10 | 1.06 | 103 | 85-125 | 0.8 | 25 |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102588**
**Revised Report**

**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10104 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BD10104-BLK1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Sodium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| Magnesium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Potassium | 0.049 I | 0.050 | 0.010 | mg/L | | | | | | |
| Calcium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Iron | 0.020 U | 0.10 | 0.020 | mg/L | | | | | | |
| **LCS (BD10104-BS1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Sodium | 22 | 0.050 | 0.010 | mg/L | 20 | | 109 | 85-115 | | |
| Magnesium | 21 | 0.050 | 0.010 | mg/L | 20 | | 106 | 85-115 | | |
| Boron | 0.38 | 0.10 | 0.050 | mg/L | 0.40 | | 96 | 85-115 | | |
| Calcium | 21 | 0.050 | 0.010 | mg/L | 20 | | 106 | 85-115 | | |
| Potassium | 22 | 0.050 | 0.010 | mg/L | 20 | | 108 | 85-115 | | |
| Iron | 8.1 | 0.10 | 0.020 | mg/L | 8.0 | | 102 | 85-115 | | |
| Manganese | 0.40 | 0.010 | 0.0010 | mg/L | 0.40 | | 101 | 85-115 | | |
| **Matrix Spike (BD10104-MS1)** | | **Source: 1102588-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Boron | 0.40 | 0.10 | 0.050 | mg/L | 0.40 | ND | 100 | 70-130 | | |
| Iron | 8.2 | 0.10 | 0.020 | mg/L | 8.0 | 0.066 | 102 | 70-130 | | |
| Calcium | 27 | 0.050 | 0.010 | mg/L | 20 | 5.6 | 105 | 70-130 | | |
| Potassium | 22 | 0.050 | 0.010 | mg/L | 20 | 0.94 | 106 | 70-130 | | |
| Manganese | 0.48 | 0.010 | 0.0010 | mg/L | 0.40 | 0.069 | 103 | 70-130 | | |
| Magnesium | 23 | 0.050 | 0.010 | mg/L | 20 | 1.6 | 107 | 70-130 | | |
| Sodium | 23 | 0.050 | 0.010 | mg/L | 20 | 1.8 | 106 | 70-130 | | |
| **Matrix Spike Dup (BD10104-MSD1)** | | **Source: 1102588-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Manganese | 0.48 | 0.010 | 0.0010 | mg/L | 0.40 | 0.069 | 103 | 70-130 | 0.1 | 30 |
| Sodium | 23 | 0.050 | 0.010 | mg/L | 20 | 1.8 | 105 | 70-130 | 2 | 30 |
| Magnesium | 23 | 0.050 | 0.010 | mg/L | 20 | 1.6 | 107 | 70-130 | 0.2 | 30 |
| Potassium | 22 | 0.050 | 0.010 | mg/L | 20 | 0.94 | 105 | 70-130 | 0.8 | 30 |
| Calcium | 27 | 0.050 | 0.010 | mg/L | 20 | 5.6 | 107 | 70-130 | 2 | 30 |
| Boron | 0.41 | 0.10 | 0.050 | mg/L | 0.40 | ND | 102 | 70-130 | 2 | 30 |
| Iron | 8.2 | 0.10 | 0.020 | mg/L | 8.0 | 0.066 | 102 | 70-130 | 0.2 | 30 |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102588**
**Revised Report**

## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

J5 Matrix spike of this sample was outside typical range. All other QC criteria were acceptable.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1102588

Client Name: Hazan and Sawyer

Contact / Phone: Josephin Edeback-Hirst 813-630-4498

Project Name / Location: GCREC Mound Groundwater Analyses

jedeback@hazanandsawyer.com

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 250ml P, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 250ml aG, Cool DOC | Field pH | Field DO | Field Cond | Field Temp | 250ml P, $HNO_3$ B, Ca, Na, K, Mg, Mn, Fe No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | PZ04-BKG-9 | 3/31/11 | 0844 | GW | | X | 1 ** | 1 * | | 1 | 5.4 | 3.84 | 78.2 | 21.7 | 1 |
| 02 | PZ24-BKG-26 | 033111 | ~~0809~~ 0814 | GW | | X | 1 ** | 1 * | 2 | 1 | | | | | 1 |
| 03 | DP-AA9-14 | 3/30/11 | 0855 | GW | | X | 1 | 1 | | | 5.0 | 0.99 | 699 | 23.0 | |
| 04 | DP-AA9-22 | 3/30/11 | 0910 | GW | | X | 1 | 1 | | | 5.3 | 0.77 | 286 | 23.8 | |
| 05 | DP-AA9-27 | 3/30/11 | 0930 | GW | | X | 1 | 1 | | | 5.2 | 0.82 | 288 | 23.9 | |
| 06 | PZ15-A11-6 | 033011 | 1122 | GW | | X | 1 | 1 | | | 5.2 | 2.52 | 100.0 | 24.8 | |
| 07 | PZ10-CD6-13 | 033011 | 1400 | GW | | X | 1 | 1 | | | 6.0 | 2.85 | 524 | 25.6 | |
| 08 | DP-C11-8 | 033011 | 0830 | GW | | X | 1 | 1 | | | 5.9 | 3.50 | 319 | 21.8 | |
| 09 | PZ16-C12-28 | 033011 | 1148 | GW | | X | 1 | 1 | | | 5.7 | 0.66 | 295.1 | 25.4 | |
| 10 | PZ07-D05-7 | 033011 | 1347 | GW | | X | 1 | 1 | | | 4.7 | 0.39 | 221.6 | 25.3 | |
| 11 | DP-D07-7 | 3/30/11 | 1145 | GW | | X | 1 ** | 1 * | 2 | 1 | 4.7 | 0.77 | 365 | 23.3 | 1 |
| 12 | DP-D7.5-14 | 3/30/11 | 1110 | GW | | X | 1 | 1 | | | 5.0 | 0.67 | 514 | 23.8 | |

| Relinquished | Date/Time | Received | Date/Time |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 1630 03-27-11 | Received: | Date/Time: 0500 032911 |
| Relinquished: | Date/Time: 1830 033011 | Received: | Date/Time: |
| Relinquished: | Date/Time: 1430 3/31/11 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A
Samples intact upon arrival? Y N N/A
Received on ice? Temp_____ Y N N/A
Proper preservatives indicated? Y N N/A
Rec'd within holding time? Y N N/A
Volatiles rec'd w/out headspace Y N N/A
Proper containers used? Y N N/A

**Instructions / Remarks**
* COD, TP
** Cl, $NO_x$ 300, OP, $SO_4$, F

1102588

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1,2

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Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1102588

Client Name: Hazan and Sawyer

Contact / Phone: Josephin Edeback-Hirst 813-630-4498

Project Name / Location: GCREC Mound Groundwater Analyses

jedeback@hazanandsawyer.com

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 250ml P, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 250ml aG, Cool DOC | Field pH | Field DO | Field Cond | Field Temp | 250 ml P, $HNO_3$ B, Ca, Fe, Mg, Mn, K, Fe No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | DP-D7.5-20 | 3/30/11 | 1140 | GW | | X | 1 ** | 1 * | 2 | 1 | 5.3 | 1.26 | 296 | 25.0 | 1 |
| 14 | DP-D7.5-26 | 3/30/11 | 1210 | GW | | X | 1 | 1 | | | | | | | |
| 15 | DP-D08-9 | 3/30/11 | 1025 | GW | | X | 1 ** | 1 * | | 1 | 5.6 | 1.36 | 502 | 24.6 | 1 |
| 16 | DP-D09-8 | 3/30/11 | 1005 | GW | | X | 1 | 1 | | | 4.6 | 1.01 | 487 | 22.6 | |
| 17 | DP-D09-15 | 3/30/11 | 1020 | GW | | X | 1 | 1 | | | 5.4 | 1.16 | 470 | 23.3 | |
| 18 | DP-D09-21 | 3/30/11 | 1035 | GW | | X | 1 | 1 | | | 5.3 | 0.80 | 298 | 24.2 | |
| 19 | DP-D09-27 | 3/30/11 | 1055 | GW | | X | 1 | 1 | | | 6.0 | 0.76 | 309 | 24.5 | |
| 20 | DP-D10-8 | 3/30/11 | 0940 | GW | | X | 1 | 1 | | | 5.7 | 1.45 | 337 | 23.8 | |
| 21 | DP-D11-11 | 033011 | 0800 | GW | | X | 1 | 1 | | | 5.3 | 1.39 | 479 | 21.7 | |
| 22 | DP-D12-11 | 032911 | 1345 | GW | | X | 1 | 1 | | | 4.8 | 0.65 | 477 | 22.3 | |
| 23 | DP-E02-8 | 032911 | 0845 | GW | | X | 1 | 1 | | | 5.1 | 0.46 | 158.9 | 21.3 | |
| 24 | DP-E03-10 (Has dupe was E02-6-D) | 032911 | 0915 | GW | | X | 1 | 1 | | | 5.3 | 2.21 | 211.3 | 21.3 | |

| Containers Prepared/ Relinquished: | Date/Time: 1638 03-27-11 | Received: | Date/Time: 0800 032911 |
|---|---|---|---|
| Relinquished: | Date/Time: 1600 032911 | Received: | Date/Time: 3/29/11 1600 |
| Relinquished: | Date/Time: 1430 3/31/11 | Received: | Date/Time: |
| Relinquished: shipped by J. Edeback via courier | Date/Time: 1545 4/1/11 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

22-24

24, 21-22, 8, 3, 4, 5, 20

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace Y N N/A

Proper containers used? Y N N/A

**Instructions / Remarks**

* COD, TP

1102588

Chain of Custody.xls
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Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033111 | SAL Project # | 1102588 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ04-BKG-9 | Sample ID | 01 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 6.85 | PURGE PUMP CODE: PP GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.11 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.13 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.40 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 9.0 | FINAL TUBING LEGNTH IN WELL (FEET) | 9.0 | PURGE TIME START | 0835 | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-0-02 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0838 | 0.30 | 0.30 | 0.10 | 7.01 | 5.4 | 21.7 | 81.8 | 3.64 | 6.26 | clear | none |
| 0841 | 0.30 | 0.60 | 0.10 | 7.01 | 5.4 | 21.7 | 80.8 | 3.91 | 4.11 | | |
| 0844 | 0.30 | 0.90 | 0.10 | 7.01 | 5.4 | 21.7 | 78.2 | 3.84 | 2.02 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | SAMPLE TUBING LEGNTH IN WELL (FEET) | | 9.0 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.10 |
| SAMPLING INITIATED | 0845 | SAMPLING ENDED | | FIELD CLEANED | Y N | CLEANING STEPS | DI |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | Rain Past 24 hrs | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033111 | SAL Project # | 1102588 PZ24-BKG-26 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ24-BKG-26 | Sample ID | 02 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 2.0 | WELL CAPACITY (gal/ft) | 0.167 | Screen Interval (Feet) | UNK To UNK | Static Depth to Water (Feet) | 9.74 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 30.3 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 3.35 | 1/4 WELL VOLUME | 0.83 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 15.0 | FINAL TUBING LEGNTH IN WELL (FEET) | 15.0 | PURGE TIME START | 0740 | PURGE TIME END | 0813 | TOTAL PURGED | 6.40 |
| INST. ID | | | | SAL-SAM-63-____ | SAL-SAM-65-____ | SAL-SAM-63-____ | SAL-SAM-55-__ | SAL-SAM-0____ | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0757 | 3.40 | 3.4 | 0.2 | 10.21 | 5.0 | 23.0 | 269.6 | 0.91 | 147 | Cloudy | None |
| 0803 | 1.0 | 4.4 | 0.2 | 10.21 | 5.0 | 23.1 | 270.1 | 0.84 | 92.5 | | |
| 0808 | 1.0 | 5.4 | 0.2 | 10.21 | 5.0 | 23.1 | 270.3 | 0.62 | 59.6 | | |
| 0813 | 1.0 | 6.4 | 0.2 | 10.21 | 5.0 | 23.1 | 270.9 | 0.50 | 42.3 | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | 15.0 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.2 |
| SAMPLING INITIATED | 0814 | SAMPLING ENDED | 0814 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | (Y) N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | windy Drizzle / Rain Past 24 hrs | | | | | | |
| COMMENTS | could not get turbidity below 20. | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033011 | SAL Project # | 1102588 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ15-A11-6 | Sample ID | 06 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK To UNK | Static Depth to Water (Feet) | 5.70 | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | 7.51 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.108 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.324 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 7.0 | FINAL TUBING LEGNTH IN WELL (FEET) | 7.0 | PURGE TIME START | 1106 | PURGE TIME END | 1121 | TOTAL PURGED | 1.50 |

| INST. ID | | | | | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1109 | 0.30 | 0.30 | 0.10 | 6.61 | 5.3 | 24.8 | 107.9 | 2.85 | 84.4 | cloudy | NONE |
| 1112 | 0.30 | 0.60 | 0.10 | 6.61 | 5.2 | 24.8 | 100.1 | 2.64 | 53.6 | | |
| 1115 | 0.30 | 0.90 | 0.10 | 6.61 | 5.2 | 24.8 | 99.6 | 2.55 | 44.4 | | |
| 1118 | 0.30 | 1.20 | 0.10 | 6.61 | 5.2 | 24.8 | 99.4 | 2.54 | 31.8 | | |
| 1121 | 0.30 | 1.50 | 0.10 | 6.61 | 5.2 | 24.8 | 100.0 | 2.52 | 26.0 | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | SAMPLE TUBING LEGNTH IN WELL (FEET) | | 7.0 | SAMPLE PUMP FLOW RATE (mL/min) | 0.10 | |
| SAMPLING INITIATED | 1122 | SAMPLING ENDED | 1122 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | very windy | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033011 | SAL Project # | 1102588 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ10-CD6-13 | Sample ID | 07 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.15 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 9.47 | PURGE PUMP CODE (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 14.8 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.10 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.30 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | ~~10.0~~ | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 10.0 | FINAL TUBING LEGNTH IN WELL (FEET) | 10.0 | PURGE TIME START | 1350 | PURGE TIME END | 1359 | TOTAL PURGED | 0.90 |

| INST. ID | | | | | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1353 | 0.30 | 0.30 | 0.10 | 12.6 | 6.0 | 25.5 | 528 | 2.97 | 21.8 | clear | None |
| 1356 | 0.30 | 0.60 | 0.10 | 12.6 | 6.0 | 25.6 | 525 | 2.91 | 21.6 | / | / |
| 1359 | 0.30 | 0.90 | 0.10 | 12.6 | 6.0 | 25.6 | 524 | 2.85 | 21.5 | / | / |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | 10.0 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.10 |
| SAMPLING INITIATED | 1400 | SAMPLING ENDED | 1400 | FIELD CLEANED | (Y) N | CLEANING STEPS | OI |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | very windy | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033011 | SAL Project # | 1102588 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ16-C12-28 | Sample ID | 09 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 3.33 | PURGE PUMP CODE (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 29.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.51 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 1.53 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 15.0 | FINAL TUBING LEGNTH IN WELL (FEET) | 15.0 | PURGE TIME START | 1138 | PURGE TIME END | 1147 | TOTAL PURGED | 1.80 |

| INST. ID | | | | | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1141 | 0.60 | 0.60 | 0.20 | 5.62 | 5.8 | 25.3 | 283.5 | 1.04 | 40.9 | | |
| 1144 | 0.60 | 1.20 | 0.20 | 5.62 | 5.8 | 25.3 | 288.3 | 0.86 | 33.3 | | |
| 1147 | 0.60 | 1.80 | 0.20 | 5.62 | 5.7 | 25.4 | 295.1 | 0.66 | 18.7 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | 15.0 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.20 |
| SAMPLING INITIATED | 1148 | SAMPLING ENDED | 1148 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | SUNNY | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033011 | SAL Project # | 1102588 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ07-D05-7 | Sample ID | 11 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 6.65 | PURGE PUMP CODE (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.04 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.14 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.43 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 9.0 | FINAL TUBING LEGNTH IN WELL (FEET) | 9.0 | PURGE TIME START | 1337 | PURGE TIME END | 1346 | TOTAL PURGED | 0.90 |

| INST. ID | | | | | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1340 | 0.30 | 0.30 | 0.10 | 7.11 | 4.7 | 25.3 | 224.2 | 0.47 | 10.5 | | |
| 1343 | 0.30 | 0.60 | 0.10 | 7.11 | 4.7 | 25.3 | 222.0 | 0.39 | 7.01 | | |
| 1346 | 0.30 | 0.90 | 0.10 | 7.11 | 4.7 | 25.3 | 221.6 | 0.39 | 6.68 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | 9.0 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.10 |
| SAMPLING INITIATED | 1347 | SAMPLING ENDED | 1347 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | very windy | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

Revision Date 09/25/09

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102597**

# Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E04-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-01** | | | | | | |
| Date/Time Collected | | **03/29/11 09:50** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.7 | | | | | | |
| Temperature | | 22.3 °C | | | | | | |
| Conductivity | | 90.6 umhos | | | | | | |
| Dissolved Oxygen | | 3.49 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.018 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Chemical Oxygen Demand | mg/L | 39 | EPA 410.4 | 25 | 10 | 03/30/11 14:21 | 03/31/11 16:29 | MMF |
| Chloride | mg/L | 2.7 | EPA 300.0 | 0.20 | 0.050 | | 03/30/11 13:32 | MEJ |
| Fluoride | mg/L | 0.076 | EPA 300.0 | 0.040 | 0.010 | | 03/30/11 13:32 | MEJ |
| Nitrate (as N) | mg/L | 0.46 | EPA 300.0 | 0.04 | 0.01 | | 03/30/11 13:32 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 03/30/11 13:32 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 03/30/11 13:32 | MEJ |
| Phosphorous - Total as P | mg/L | 2.5 | SM 4500P-E | 0.040 | 0.010 | 03/30/11 12:59 | 03/31/11 15:45 | SMB |
| Sulfate | mg/L | 21 | EPA 300.0 | 0.60 | 0.20 | | 03/30/11 13:32 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.67 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.46 | EPA 300.0 | 0.08 | 0.02 | | 03/30/11 13:32 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 3.2 | SM 5310B | 1.0 | 0.50 | | 03/31/11 12:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 03/30/11 10:19 | 03/30/11 15:08 | LCB |
| Calcium | mg/L | 7.5 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:08 | LCB |
| Iron | mg/L | 0.33 | EPA 200.7 | 0.10 | 0.020 | 03/30/11 10:19 | 03/30/11 15:08 | LCB |
| Magnesium | mg/L | 1.8 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:08 | LCB |
| Manganese | mg/L | 0.049 | EPA 200.7 | 0.010 | 0.0010 | 03/30/11 10:19 | 03/30/11 15:08 | LCB |
| Potassium | mg/L | 0.94 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:08 | LCB |
| Sodium | mg/L | 2.3 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:08 | LCB |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E05-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-02** | | | | | | |
| Date/Time Collected | | **03/29/11 10:40** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.0 | | | | | | |
| Temperature | | 24.8 °C | | | | | | |
| Conductivity | | 171.8 umhos | | | | | | |
| Dissolved Oxygen | | 2.96 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 2.6 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 33 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 3.1 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 33 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 0.06 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E06-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-03** | | | | | | |
| Date/Time Collected | | **03/29/11 11:55** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.5 | | | | | | |
| Temperature | | 22.7 °C | | | | | | |
| Conductivity | | 180.6 umhos | | | | | | |
| Dissolved Oxygen | | 10.9 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.007 I | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.82 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 2.4 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |

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

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E07-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-04** | | | | | | |
| Date/Time Collected | | **03/29/11 11:25** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.9 | | | | | | |
| Temperature | | 22.5 °C | | | | | | |
| Conductivity | | 289.0 umhos | | | | | | |
| Dissolved Oxygen | | 1.19 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.052 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.3 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 7.8 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E08-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-05** | | | | | | |
| Date/Time Collected | | **03/29/11 12:30** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.0 | | | | | | |
| Temperature | | 22.6 °C | | | | | | |
| Conductivity | | 348 umhos | | | | | | |
| Dissolved Oxygen | | 1.52 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.6 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 11 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |

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**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ11-E09-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-06** | | | | | | |
| Date/Time Collected | | **03/30/11 12:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.6 | | | | | | |
| Temperature | | 25.8 °C | | | | | | |
| Conductivity | | 453.8 umhos | | | | | | |
| Dissolved Oxygen | | 2.33 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.49 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 12 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.1 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Bicarbonate Alkalinity | mg/L | 12 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 21 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E10-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-07** | | | | | | |
| Date/Time Collected | | **03/29/11 12:40** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.6 | | | | | | |
| Temperature | | 23.0 °C | | | | | | |
| Conductivity | | 407 umhos | | | | | | |
| Dissolved Oxygen | | 0.60 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 8.5 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |

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**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ21-E11-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-08** | | | | | | |
| Date/Time Collected | | **03/30/11 11:04** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 23.6 °C | | | | | | |
| Conductivity | | 295.6 umhos | | | | | | |
| Dissolved Oxygen | | 0.36 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.012 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.55 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 9.3 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ22-E11-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-09** | | | | | | |
| Date/Time Collected | | **03/30/11 10:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 24.4 °C | | | | | | |
| Conductivity | | 416.0 umhos | | | | | | |
| Dissolved Oxygen | | 1.36 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.007 I | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.4 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Bicarbonate Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 4.2 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E12-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-10** | | | | | | |
| Date/Time Collected | | **03/29/11 13:30** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 23.9 °C | | | | | | |
| Conductivity | | 520 umhos | | | | | | |
| Dissolved Oxygen | | 0.35 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.16 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Chemical Oxygen Demand | mg/L | 24 I | EPA 410.4 | 25 | 10 | 03/30/11 14:21 | 03/31/11 16:29 | MMF |
| Chloride | mg/L | 41 | EPA 300.0 | 0.20 | 0.050 | | 03/31/11 12:58 | MEJ |
| Fluoride | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 03/30/11 13:32 | MEJ |
| Nitrate (as N) | mg/L | 22 | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 03/30/11 13:32 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 03/30/11 13:32 | MEJ |
| Phosphorous - Total as P | mg/L | 0.026 I | SM 4500P-E | 0.040 | 0.010 | 03/30/11 12:59 | 03/31/11 15:45 | SMB |
| Sulfate | mg/L | 47 | EPA 300.0 | 0.60 | 0.20 | | 03/30/11 13:32 | MEJ |
| Total Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Total Organic Carbon | mg/L | 1.2 | SM 5310B | 1.0 | 0.50 | | 03/30/11 15:13 | MEJ |
| Bicarbonate Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (N) | mg/L | 22 | EPA 300.0 | 0.08 | 0.02 | | 03/31/11 12:58 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.88 I | SM 5310B | 1.0 | 0.50 | | 03/31/11 12:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.075 I | EPA 200.7 | 0.10 | 0.050 | 03/30/11 10:19 | 03/30/11 15:11 | LCB |
| Calcium | mg/L | 39 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:11 | LCB |
| Iron | mg/L | 0.089 I | EPA 200.7 | 0.10 | 0.020 | 03/30/11 10:19 | 03/30/11 15:11 | LCB |
| Magnesium | mg/L | 9.9 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:11 | LCB |
| Manganese | mg/L | 0.21 | EPA 200.7 | 0.010 | 0.0010 | 03/30/11 10:19 | 03/30/11 15:11 | LCB |
| Potassium | mg/L | 11 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:11 | LCB |
| Sodium | mg/L | 33 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:11 | LCB |

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**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E12-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-11** | | | | | | |
| Date/Time Collected | | **03/30/11 07:35** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.0 | | | | | | |
| Temperature | | 21.9 °C | | | | | | |
| Conductivity | | 460 umhos | | | | | | |
| Dissolved Oxygen | | 0.60 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Chemical Oxygen Demand | mg/L | 14 I | EPA 410.4 | 25 | 10 | | 04/01/11 14:59 | MMF |
| Chloride | mg/L | 36 | EPA 300.0 | 0.20 | 0.050 | | 04/01/11 11:52 | MEJ |
| Fluoride | mg/L | 0.029 I | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Nitrate (as N) | mg/L | 17 | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Orthophosphate as P | mg/L | 0.18 | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Phosphorous - Total as P | mg/L | 0.012 I | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 54 | EPA 300.0 | 0.60 | 0.20 | | 03/31/11 12:58 | MEJ |
| Total Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.5 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Bicarbonate Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 17 | EPA 300.0 | 0.08 | 0.02 | | 03/31/11 12:58 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.92 I | SM 5310B | 1.0 | 0.50 | | 03/31/11 12:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.10 | EPA 200.7 | 0.10 | 0.050 | 04/01/11 09:38 | 04/01/11 16:34 | LCB |
| Calcium | mg/L | 35 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:34 | LCB |
| Iron | mg/L | 0.032 I | EPA 200.7 | 0.10 | 0.020 | 04/01/11 09:38 | 04/01/11 16:34 | LCB |
| Magnesium | mg/L | 7.1 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:34 | LCB |
| Manganese | mg/L | 0.045 | EPA 200.7 | 0.010 | 0.0010 | 04/01/11 09:38 | 04/01/11 16:34 | LCB |
| Potassium | mg/L | 12 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 17:00 | LCB |
| Sodium | mg/L | 33 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 17:00 | LCB |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E12-22** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-12** | | | | | | |
| Date/Time Collected | | **03/30/11 08:20** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 22.5 °C | | | | | | |
| Conductivity | | 297 umhos | | | | | | |
| Dissolved Oxygen | | 0.59 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.29 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | | 04/01/11 14:59 | MMF |
| Chloride | mg/L | 12 | EPA 300.0 | 0.20 | 0.050 | | 03/31/11 12:58 | MEJ |
| Fluoride | mg/L | 0.017 I | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Nitrate (as N) | mg/L | 9.1 | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Orthophosphate as P | mg/L | 0.24 | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Phosphorous - Total as P | mg/L | 0.035 I | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 56 | EPA 300.0 | 0.60 | 0.20 | | 03/31/11 12:58 | MEJ |
| Total Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.9 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Total Organic Carbon | mg/L | 1.2 | SM 5310B | 1.0 | 0.50 | | 03/31/11 09:00 | MEJ |
| Bicarbonate Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 9.1 | EPA 300.0 | 0.08 | 0.02 | | 03/31/11 12:58 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.83 I | SM 5310B | 1.0 | 0.50 | | 03/31/11 12:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.10 | EPA 200.7 | 0.10 | 0.050 | 04/01/11 09:38 | 04/01/11 16:38 | LCB |
| Calcium | mg/L | 29 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:38 | LCB |
| Iron | mg/L | 0.037 I | EPA 200.7 | 0.10 | 0.020 | 04/01/11 09:38 | 04/01/11 16:38 | LCB |
| Magnesium | mg/L | 6.1 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:38 | LCB |
| Manganese | mg/L | 0.16 | EPA 200.7 | 0.010 | 0.0010 | 04/01/11 09:38 | 04/01/11 16:38 | LCB |
| Potassium | mg/L | 10 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 17:11 | LCB |
| Sodium | mg/L | 8.4 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 17:11 | LCB |

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

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**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E12-28** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-13** | | | | | | |
| Date/Time Collected | | **03/30/11 08:45** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 22.8 °C | | | | | | |
| Conductivity | | 310 umhos | | | | | | |
| Dissolved Oxygen | | 0.57 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.013 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | | 04/01/11 14:59 | MMF |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 03/31/11 12:58 | MEJ |
| Fluoride | mg/L | 0.019 I | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Nitrate (as N) | mg/L | 9.8 | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Orthophosphate as P | mg/L | 0.065 | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Phosphorous - Total as P | mg/L | 0.069 | SM 4500P-E | 0.040 | 0.010 | 04/05/11 11:52 | 04/06/11 14:50 | SMB |
| Sulfate | mg/L | 59 | EPA 300.0 | 0.60 | 0.20 | | 03/31/11 12:58 | MEJ |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.9 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 9.8 | EPA 300.0 | 0.08 | 0.02 | | 03/31/11 12:58 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.50 U | SM 5310B | 1.0 | 0.50 | | 03/31/11 12:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 04/01/11 09:38 | 04/01/11 16:41 | LCB |
| Calcium | mg/L | 27 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:41 | LCB |
| Iron | mg/L | 0.023 I | EPA 200.7 | 0.10 | 0.020 | 04/01/11 09:38 | 04/01/11 16:41 | LCB |
| Magnesium | mg/L | 9.5 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:41 | LCB |
| Manganese | mg/L | 0.11 | EPA 200.7 | 0.010 | 0.0010 | 04/01/11 09:38 | 04/01/11 16:41 | LCB |
| Potassium | mg/L | 15 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 17:14 | LCB |
| Sodium | mg/L | 5.3 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 17:14 | LCB |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ13-F04-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-14** | | | | | | |
| Date/Time Collected | | **03/29/11 09:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.6 | | | | | | |
| Temperature | | 21.4 °C | | | | | | |
| Conductivity | | 125.5 umhos | | | | | | |
| Dissolved Oxygen | | 2.48 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.037 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.75 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 1.4 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F04-17** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-15** | | | | | | |
| Date/Time Collected | | **03/29/11 10:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 7.3 | | | | | | |
| Temperature | | 22.0 °C | | | | | | |
| Conductivity | | 415.7 umhos | | | | | | |
| Dissolved Oxygen | | 0.57 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.028 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 90 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.35 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 90 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 1.8 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
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**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F04-22** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-16** | | | | | | |
| Date/Time Collected | | **03/29/11 10:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.0 | | | | | | |
| Temperature | | 22.8 °C | | | | | | |
| Conductivity | | 314.1 umhos | | | | | | |
| Dissolved Oxygen | | 0.72 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.017 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 9.9 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.7 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 9.9 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 8.2 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F05-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-17** | | | | | | |
| Date/Time Collected | | **03/30/11 13:25** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.8 | | | | | | |
| Temperature | | 27.7 °C | | | | | | |
| Conductivity | | 173.3 umhos | | | | | | |
| Dissolved Oxygen | | 7.36 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.13 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.4 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Bicarbonate Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 0.01 U | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
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**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F05-31** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-18** | | | | | | |
| Date/Time Collected | | **03/29/11 11:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 7.3 | | | | | | |
| Temperature | | 24.1 °C | | | | | | |
| Conductivity | | 187.1 umhos | | | | | | |
| Dissolved Oxygen | | 1.7 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.070 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Chemical Oxygen Demand | mg/L | 18 I | EPA 410.4 | 25 | 10 | 03/30/11 14:21 | 03/31/11 16:29 | MMF |
| Chloride | mg/L | 10 | EPA 300.0 | 0.20 | 0.050 | | 03/30/11 13:32 | MEJ |
| Fluoride | mg/L | 0.58 | EPA 300.0 | 0.040 | 0.010 | | 03/30/11 13:32 | MEJ |
| Nitrate (as N) | mg/L | 1.3 | EPA 300.0 | 0.04 | 0.01 | | 03/30/11 13:32 | MEJ |
| Nitrite (as N) | mg/L | 0.11 | EPA 300.0 | 0.04 | 0.01 | | 03/30/11 13:32 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 03/30/11 13:32 | MEJ |
| Phosphorous - Total as P | mg/L | 0.29 | SM 4500P-E | 0.040 | 0.010 | 03/30/11 12:59 | 03/31/11 15:45 | SMB |
| Sulfate | mg/L | 23 | EPA 300.0 | 0.60 | 0.20 | | 03/30/11 13:32 | MEJ |
| Total Alkalinity | mg/L | 69 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.62 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 69 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (N) | mg/L | 1.4 | EPA 300.0 | 0.08 | 0.02 | | 03/30/11 13:32 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.7 | SM 5310B | 1.0 | 0.50 | | 03/31/11 12:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 03/30/11 10:19 | 03/30/11 15:15 | LCB |
| Calcium | mg/L | 31 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:15 | LCB |
| Iron | mg/L | 1.5 | EPA 200.7 | 0.10 | 0.020 | 03/30/11 10:19 | 03/30/11 15:15 | LCB |
| Magnesium | mg/L | 6.4 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:15 | LCB |
| Manganese | mg/L | 0.063 | EPA 200.7 | 0.010 | 0.0010 | 03/30/11 10:19 | 03/30/11 15:15 | LCB |
| Potassium | mg/L | 2.9 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:15 | LCB |
| Sodium | mg/L | 11 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:15 | LCB |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F06-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-19** | | | | | | |
| Date/Time Collected | | **03/29/11 11:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 21.8 °C | | | | | | |
| Conductivity | | 190.6 umhos | | | | | | |
| Dissolved Oxygen | | 0.3 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.056 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.33 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 1.5 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ08-FG7-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-20** | | | | | | |
| Date/Time Collected | | **03/30/11 10:06** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.8 | | | | | | |
| Temperature | | 23.6 °C | | | | | | |
| Conductivity | | 126.9 umhos | | | | | | |
| Dissolved Oxygen | | 3.33 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 0.83 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
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**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F08-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-21** | | | | | | |
| Date/Time Collected | | **03/29/11 12:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 7.6 | | | | | | |
| Temperature | | 22.5 °C | | | | | | |
| Conductivity | | 501 umhos | | | | | | |
| Dissolved Oxygen | | 1.28 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.090 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 140 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 140 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 3.5 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F08-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-22** | | | | | | |
| Date/Time Collected | | **03/29/11 12:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.0 | | | | | | |
| Temperature | | 23.1 °C | | | | | | |
| Conductivity | | 335.6 umhos | | | | | | |
| Dissolved Oxygen | | 0.41 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.030 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 03/30/11 14:21 | 03/31/11 16:29 | MMF |
| Chloride | mg/L | 11 | EPA 300.0 | 0.20 | 0.050 | | 03/30/11 13:32 | MEJ |
| Fluoride | mg/L | 0.032 I | EPA 300.0 | 0.040 | 0.010 | | 03/30/11 13:32 | MEJ |
| Nitrate (as N) | mg/L | 8.6 | EPA 300.0 | 0.04 | 0.01 | | 03/30/11 13:32 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 03/30/11 13:32 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 03/30/11 13:32 | MEJ |
| Phosphorous - Total as P | mg/L | 0.33 | SM 4500P-E | 0.040 | 0.010 | 03/30/11 12:59 | 03/31/11 15:45 | SMB |
| Sulfate | mg/L | 65 | EPA 300.0 | 0.60 | 0.20 | | 03/30/11 13:32 | MEJ |
| Total Alkalinity | mg/L | 9.9 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.1 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F08-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-22** | | | | | | |
| Date/Time Collected | | **03/29/11 12:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.0 | | | | | | |
| Temperature | | 23.1 °C | | | | | | |
| Conductivity | | 335.6 umhos | | | | | | |
| Dissolved Oxygen | | 0.41 mg/L | | | | | | |
| Bicarbonate Alkalinity | mg/L | 9.9 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (N) | mg/L | 8.6 | EPA 300.0 | 0.08 | 0.02 | | 03/30/11 13:32 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.80 I | SM 5310B | 1.0 | 0.50 | | 03/31/11 12:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 03/30/11 10:19 | 03/30/11 15:18 | LCB |
| Calcium | mg/L | 32 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:18 | LCB |
| Iron | mg/L | 0.067 I | EPA 200.7 | 0.10 | 0.020 | 03/30/11 10:19 | 03/30/11 15:18 | LCB |
| Magnesium | mg/L | 7.3 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:18 | LCB |
| Manganese | mg/L | 0.22 | EPA 200.7 | 0.010 | 0.0010 | 03/30/11 10:19 | 03/30/11 15:18 | LCB |
| Potassium | mg/L | 14 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:18 | LCB |
| Sodium | mg/L | 6.4 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:18 | LCB |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F08-28** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-23** | | | | | | |
| Date/Time Collected | | **03/29/11 12:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.3 | | | | | | |
| Temperature | | 23.4 °C | | | | | | |
| Conductivity | | 323.9 umhos | | | | | | |
| Dissolved Oxygen | | 0.37 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.012 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 18 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 18 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 2.9 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
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**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F08-28** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-23** | | | | | | |
| Date/Time Collected | | **03/29/11 12:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.3 | | | | | | |
| Temperature | | 23.4 °C | | | | | | |
| Conductivity | | 323.9 umhos | | | | | | |
| Dissolved Oxygen | | 0.37 mg/L | | | | | | |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Sample Description | | **DP-F09-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-24** | | | | | | |
| Date/Time Collected | | **03/29/11 13:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.6 | | | | | | |
| Temperature | | 24.8 °C | | | | | | |
| Conductivity | | 191.1 umhos | | | | | | |
| Dissolved Oxygen | | 1.15 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.23 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Chemical Oxygen Demand | mg/L | 24 I | EPA 410.4 | 25 | 10 | 03/30/11 14:21 | 03/31/11 16:29 | MMF |
| Chloride | mg/L | 10 | EPA 300.0 | 0.20 | 0.050 | | 03/30/11 13:32 | MEJ |
| Fluoride | mg/L | 0.10 | EPA 300.0 | 0.040 | 0.010 | | 03/30/11 13:32 | MEJ |
| Nitrate (as N) | mg/L | 1.9 | EPA 300.0 | 0.04 | 0.01 | | 03/30/11 13:32 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 03/30/11 13:32 | MEJ |
| Orthophosphate as P | mg/L | 0.026 I | EPA 300.0 | 0.040 | 0.010 | | 03/30/11 13:32 | MEJ |
| Phosphorous - Total as P | mg/L | 0.27 | SM 4500P-E | 0.040 | 0.010 | 03/30/11 12:59 | 03/31/11 15:45 | SMB |
| Sulfate | mg/L | 26 | EPA 300.0 | 0.60 | 0.20 | | 03/30/11 13:32 | MEJ |
| Total Alkalinity | mg/L | 22 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 22 | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Nitrate+Nitrite (N) | mg/L | 1.9 | EPA 300.0 | 0.08 | 0.02 | | 03/30/11 13:32 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/30/11 13:00 | 03/30/11 15:12 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

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**10002 Princess Palm Avenue Suite 200**
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**April 6, 2011**
**Work Order: 1102597**

## Laboratory Report

| **Project Name** | | **GCREC Mound Groundwater Analyses** | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Parameters** | **Units** | **Results *** | **Method** | **PQL** | **MDL** | **Prepared** | **Analyzed** | **By** |
| Sample Description | | **DP-F09-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102597-24** | | | | | | |
| Date/Time Collected | | **03/29/11 13:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.6 | | | | | | |
| Temperature | | 24.8 °C | | | | | | |
| Conductivity | | 191.1 umhos | | | | | | |
| Dissolved Oxygen | | 1.15 mg/L | | | | | | |
| Dissolved Organic Carbon | mg/L | 7.7 | SM 5310B | 1.0 | 0.50 | | 03/31/11 12:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 03/30/11 10:19 | 03/30/11 15:29 | LCB |
| Calcium | mg/L | 14 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:29 | LCB |
| Iron | mg/L | 5.8 | EPA 200.7 | 0.10 | 0.020 | 03/30/11 10:19 | 03/30/11 15:29 | LCB |
| Magnesium | mg/L | 3.5 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:29 | LCB |
| Manganese | mg/L | 0.37 | EPA 200.7 | 0.010 | 0.0010 | 03/30/11 10:19 | 03/30/11 15:29 | LCB |
| Potassium | mg/L | 4.7 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:29 | LCB |
| Sodium | mg/L | 9.1 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 15:29 | LCB |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC12919 - TOC prep** | | | | | | | | | | |
| **Blank (BC12919-BLK1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BC12919-BS1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Organic Carbon | 9.54 | 1.0 | 0.50 | mg/L | 10 | | 95 | 90-110 | | |
| **Matrix Spike (BC12919-MS1)** | | **Source: 1102417-01** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Organic Carbon | 13.2 | 1.0 | 0.50 | mg/L | 10 | 3.85 | 93 | 85-115 | | |
| **Matrix Spike Dup (BC12919-MSD1)** | | **Source: 1102417-01** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Organic Carbon | 12.6 | 1.0 | 0.50 | mg/L | 10 | 3.85 | 87 | 85-115 | 5 | 10 |
| **Batch BC13009 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BC13009-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BC13009-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BC13009-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | | 107 | 90-110 | | |
| **LCS (BC13009-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.50 | 0.010 | 0.005 | mg/L | 0.50 | | 99 | 90-110 | | |
| **Matrix Spike (BC13009-MS1)** | | **Source: 1102727-07** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.060 | 103 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13009 - Ammonia by SEAL** | | | | | | | | | | |
| **Matrix Spike (BC13009-MS2)** | | **Source: 1102740-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | 0.034 | 102 | 90-110 | | |
| **Matrix Spike Dup (BC13009-MSD1)** | | **Source: 1102727-07** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.060 | 103 | 90-110 | 0.1 | 10 |
| **Matrix Spike Dup (BC13009-MSD2)** | | **Source: 1102740-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.034 | 107 | 90-110 | 5 | 10 |
| **Batch BC13012 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BC13012-BLK1)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BC13012-BLK2)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BC13012-BS1)** | | | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.74 | 0.20 | 0.05 | mg/L | 2.5 | | 108 | 90-110 | | |
| **LCS (BC13012-BS2)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.61 | 0.20 | 0.05 | mg/L | 2.5 | | 103 | 90-110 | | |
| **Matrix Spike (BC13012-MS1)** | | **Source: 1102731-01** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.99 | 0.20 | 0.05 | mg/L | 2.5 | 0.519 | 97 | 80-120 | | |
| **Matrix Spike (BC13012-MS2)** | | **Source: 1102697-02** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.48 J5 | 0.20 | 0.05 | mg/L | 2.5 | 0.808 | 106 | 80-120 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13012 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Matrix Spike Dup (BC13012-MSD1)** | | **Source: 1102731-01** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.92 | 0.20 | 0.05 | mg/L | 2.5 | 0.519 | 95 | 80-120 | 2 | 20 |
| **Matrix Spike Dup (BC13012-MSD2)** | | **Source: 1102697-02** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.57 J5 | 0.20 | 0.05 | mg/L | 2.5 | 0.808 | 109 | 80-120 | 2 | 20 |
| **Batch BC13014 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BC13014-BLK1)** | | | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BC13014-BLK2)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BC13014-BS1)** | | | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Phosphorous - Total as P | 0.471 | 0.040 | 0.010 | mg/L | 0.50 | | 94 | 90-110 | | |
| **LCS (BC13014-BS2)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Phosphorous - Total as P | 0.539 | 0.040 | 0.010 | mg/L | 0.50 | | 108 | 90-110 | | |
| **Matrix Spike (BC13014-MS1)** | | **Source: 1102466-02** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Phosphorous - Total as P | 0.514 | 0.040 | 0.010 | mg/L | 0.50 | 0.0553 | 92 | 75-125 | | |
| **Matrix Spike (BC13014-MS2)** | | **Source: 1102697-02** | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Phosphorous - Total as P | 0.520 | 0.040 | 0.010 | mg/L | 0.50 | 0.0758 | 89 | 75-125 | | |
| **Matrix Spike Dup (BC13014-MSD1)** | | **Source: 1102466-02** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Phosphorous - Total as P | 0.516 | 0.040 | 0.010 | mg/L | 0.50 | 0.0553 | 92 | 75-125 | 0.3 | 25 |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13014 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Matrix Spike Dup (BC13014-MSD2)** | | **Source: 1102697-02** | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Phosphorous - Total as P | 0.482 | 0.040 | 0.010 | mg/L | 0.50 | 0.0758 | 81 | 75-125 | 8 | 25 |
| **Batch BC13015 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BC13015-BLK1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| **LCS (BC13015-BS1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Nitrate (as N) | 1.61 | 0.04 | 0.01 | mg/L | 1.7 | | 95 | 85-115 | | |
| Chloride | 2.97 | 0.20 | 0.050 | mg/L | 3.0 | | 99 | 85-115 | | |
| Sulfate | 8.46 | 0.60 | 0.20 | mg/L | 9.0 | | 94 | 85-115 | | |
| Orthophosphate as P | 0.862 | 0.040 | 0.010 | mg/L | 0.90 | | 96 | 85-115 | | |
| Nitrite (as N) | 1.36 | 0.04 | 0.01 | mg/L | 1.4 | | 97 | 85-115 | | |
| Fluoride | 0.869 | 0.040 | 0.010 | mg/L | 0.90 | | 97 | 85-115 | | |
| **LCS Dup (BC13015-BSD1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Fluoride | 0.859 | 0.040 | 0.010 | mg/L | 0.90 | | 95 | 85-115 | 1 | 200 |
| Chloride | 2.90 | 0.20 | 0.050 | mg/L | 3.0 | | 97 | 85-115 | 2 | 200 |
| Sulfate | 8.51 | 0.60 | 0.20 | mg/L | 9.0 | | 95 | 85-115 | 0.6 | 200 |
| Nitrate (as N) | 1.61 | 0.04 | 0.01 | mg/L | 1.7 | | 95 | 85-115 | 0 | 200 |
| Nitrite (as N) | 1.35 | 0.04 | 0.01 | mg/L | 1.4 | | 96 | 85-115 | 0.7 | 200 |
| Orthophosphate as P | 0.876 | 0.040 | 0.010 | mg/L | 0.90 | | 97 | 85-115 | 2 | 200 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13015 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BC13015-MS1)** | | **Source: 1102705-02** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Nitrate (as N) | 2.81 | 0.04 | 0.01 | mg/L | 1.7 | 1.21 | 94 | 85-115 | | |
| Orthophosphate as P | 1.33 | 0.040 | 0.010 | mg/L | 0.90 | 0.496 | 93 | 85-115 | | |
| Nitrite (as N) | 1.48 | 0.04 | 0.01 | mg/L | 1.4 | ND | 106 | 85-115 | | |
| Sulfate | 95.8 | 0.60 | 0.20 | mg/L | 9.0 | 86.2 | 107 | 85-115 | | |
| Fluoride | 1.38 | 0.040 | 0.010 | mg/L | 0.90 | 0.531 | 94 | 85-115 | | |
| Chloride | 48.3 +O | 0.20 | 0.050 | mg/L | 3.0 | 48.1 | 7 | 80-120 | | |
| **Matrix Spike (BC13015-MS2)** | | **Source: 1102754-01** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Nitrite (as N) | 0.350 +O | 0.04 | 0.01 | mg/L | 1.4 | ND | 25 | 85-115 | | |
| Orthophosphate as P | 2.26 +O | 0.040 | 0.010 | mg/L | 0.90 | 2.19 | 8 | 85-115 | | |
| Fluoride | 1.07 | 0.040 | 0.010 | mg/L | 0.90 | 0.109 | 107 | 85-115 | | |
| Nitrate (as N) | 3.97 +O | 0.04 | 0.01 | mg/L | 1.7 | 1.52 | 144 | 85-115 | | |
| Chloride | 42.0 +O | 0.20 | 0.050 | mg/L | 3.0 | 42.8 | NR | 80-120 | | |
| Sulfate | 45.9 | 0.60 | 0.20 | mg/L | 9.0 | 38.2 | 86 | 85-115 | | |
| **Batch BC13016 - COD prep** | | | | | | | | | | |
| **Blank (BC13016-BLK1)** | | | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BC13016-BS1)** | | | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Chemical Oxygen Demand | 53 | 25 | 10 | mg/L | 50 | | 106 | 90-110 | | |
| **Matrix Spike (BC13016-MS1)** | | **Source: 1102664-01** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Chemical Oxygen Demand | 2,100 | 25 | 10 | mg/L | 1000 | 1300 | 87 | 85-115 | | |
| **Matrix Spike Dup (BC13016-MSD1)** | | **Source: 1102664-01** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Chemical Oxygen Demand | 2,200 | 25 | 10 | mg/L | 1000 | 1300 | 91 | 85-115 | 2 | 32 |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13019 - alkalinity** | | | | | | | | | | |
| **Blank (BC13019-BLK1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BC13019-BS1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BC13019-MS1)** | | **Source: 1102588-22** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 6.9 | 89 | 80-120 | | 26 |
| **Matrix Spike Dup (BC13019-MSD1)** | | **Source: 1102588-22** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 6.9 | 89 | 80-120 | 0 | 26 |
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **Blank (BC13102-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **Blank (BC13102-BLK3)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK4)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BC13102-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS3)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS4)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BC13102-MS1)** | | **Source: 1102633-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | ND | 101 | 80-120 | | 26 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **Matrix Spike (BC13102-MS2)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.9 | 97 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS3)** | | **Source: 1102597-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS4)** | | **Source: 1102612-21** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 107 | 80-120 | | 26 |
| **Matrix Spike Dup (BC13102-MSD1)** | | **Source: 1102633-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | ND | 101 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD2)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.9 | 97 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD3)** | | **Source: 1102597-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD4)** | | **Source: 1102612-21** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | 9 | 26 |
| **Batch BC13106 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BC13106-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **Blank (BC13106-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13106 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **LCS (BC13106-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.800 | 0.04 | 0.01 | mg/L | 0.80 | | 100 | 90-110 | | |
| **LCS (BC13106-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.827 | 0.04 | 0.01 | mg/L | 0.80 | | 103 | 90-110 | | |
| **Matrix Spike (BC13106-MS1)** | | **Source: 1102727-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 1.05 | 0.04 | 0.01 | mg/L | 1.0 | ND | 105 | 77-119 | | |
| **Matrix Spike (BC13106-MS2)** | | **Source: 1102742-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 1.00 | 0.04 | 0.01 | mg/L | 1.0 | ND | 100 | 77-119 | | |
| **Matrix Spike Dup (BC13106-MSD1)** | | **Source: 1102727-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 1.08 | 0.04 | 0.01 | mg/L | 1.0 | ND | 108 | 77-119 | 3 | 20 |
| **Matrix Spike Dup (BC13106-MSD2)** | | **Source: 1102742-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 1.02 | 0.04 | 0.01 | mg/L | 1.0 | ND | 102 | 77-119 | 2 | 20 |
| **Batch BC13111 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BC13111-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13111 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS (BC13111-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | | |
| Sulfate | 8.41 | 0.60 | 0.20 | mg/L | 9.0 | | 93 | 85-115 | | |
| Chloride | 3.06 | 0.20 | 0.050 | mg/L | 3.0 | | 102 | 85-115 | | |
| Fluoride | 0.840 | 0.040 | 0.010 | mg/L | 0.90 | | 93 | 85-115 | | |
| Orthophosphate as P | 0.853 | 0.040 | 0.010 | mg/L | 0.90 | | 95 | 85-115 | | |
| Nitrite (as N) | 1.27 | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | | |
| **LCS Dup (BC13111-BSD1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Sulfate | 8.41 | 0.60 | 0.20 | mg/L | 9.0 | | 93 | 85-115 | 0 | 200 |
| Fluoride | 0.890 | 0.040 | 0.010 | mg/L | 0.90 | | 99 | 85-115 | 6 | 200 |
| Nitrite (as N) | 1.28 | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | 0.8 | 200 |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | 0 | 200 |
| Orthophosphate as P | 0.864 | 0.040 | 0.010 | mg/L | 0.90 | | 96 | 85-115 | 1 | 200 |
| Chloride | 3.01 | 0.20 | 0.050 | mg/L | 3.0 | | 100 | 85-115 | 2 | 200 |
| **Matrix Spike (BC13111-MS1)** | | **Source: 1102612-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Chloride | 6.67 | 0.20 | 0.050 | mg/L | 3.0 | 4.11 | 85 | 80-120 | | |
| Fluoride | 0.903 | 0.040 | 0.010 | mg/L | 0.90 | 0.0752 | 92 | 85-115 | | |
| Sulfate | 39.5 | 0.60 | 0.20 | mg/L | 9.0 | 30.3 | 102 | 85-115 | | |
| Nitrite (as N) | 1.26 | 0.04 | 0.01 | mg/L | 1.4 | ND | 90 | 85-115 | | |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | 0.140 | 89 | 85-115 | | |
| Orthophosphate as P | 1.04 | 0.040 | 0.010 | mg/L | 0.90 | 0.176 | 96 | 85-115 | | |
| **Matrix Spike (BC13111-MS2)** | | **Source: 1102765-02** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Fluoride | 872 | 0.040 | 0.010 | mg/L | 900 | 34.8 | 93 | 85-115 | | |
| Chloride | 8,610 | 0.20 | 0.050 | mg/L | 3000 | 5850 | 92 | 80-120 | | |
| Sulfate | 9,850 | 0.60 | 0.20 | mg/L | 9000 | 1420 | 94 | 85-115 | | |
| Nitrate (as N) | 1,600 | 0.04 | 0.01 | mg/L | 1700 | 14.5 | 93 | 85-115 | | |
| Orthophosphate as P | 1,010 | 0.040 | 0.010 | mg/L | 900 | 62.6 | 105 | 85-115 | | |
| Nitrite (as N) | 1,270 | 0.04 | 0.01 | mg/L | 1400 | ND | 91 | 85-115 | | |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

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**Work Order: 1102597**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13118 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BC13118-BLK1)** | | | | | Prepared: 03/31/11 Analyzed: 04/02/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BC13118-BS1)** | | | | | Prepared: 03/31/11 Analyzed: 04/02/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.57 | 0.20 | 0.05 | mg/L | 2.5 | | 101 | 90-110 | | |
| **Matrix Spike (BC13118-MS1)** | | **Source: 1102700-02** | | | Prepared: 03/31/11 Analyzed: 04/02/11 | | | | | |
| Total Kjeldahl Nitrogen | 5.51 J5 | 0.20 | 0.05 | mg/L | 2.5 | 3.59 | 76 | 80-120 | | |
| **Matrix Spike Dup (BC13118-MSD1)** | | **Source: 1102700-02** | | | Prepared: 03/31/11 Analyzed: 04/02/11 | | | | | |
| Total Kjeldahl Nitrogen | 5.23 J5 | 0.20 | 0.05 | mg/L | 2.5 | 3.59 | 65 | 80-120 | 5 | 20 |
| **Batch BC13123 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BC13123-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **Blank (BC13123-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BC13123-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.815 | 0.04 | 0.01 | mg/L | 0.80 | | 102 | 90-110 | | |
| **LCS (BC13123-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.832 | 0.04 | 0.01 | mg/L | 0.80 | | 104 | 90-110 | | |
| **Matrix Spike (BC13123-MS1)** | | **Source: 1102741-01** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 1.09 | 0.04 | 0.01 | mg/L | 1.0 | 0.0832 | 101 | 77-119 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13123 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Matrix Spike (BC13123-MS2)** | | **Source: 1102588-04** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 8.89 | 0.04 | 0.01 | mg/L | 1.0 | 7.92 | 97 | 77-119 | | |
| **Matrix Spike Dup (BC13123-MSD1)** | | **Source: 1102741-01** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 1.12 | 0.04 | 0.01 | mg/L | 1.0 | 0.0832 | 103 | 77-119 | 2 | 20 |
| **Matrix Spike Dup (BC13123-MSD2)** | | **Source: 1102588-04** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (as N) | 9.02 | 0.04 | 0.01 | mg/L | 1.0 | 7.92 | 111 | 77-119 | 2 | 20 |
| **Batch BD10108 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10108-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BD10108-BLK2)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BD10108-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | | 108 | 90-110 | | |
| **LCS (BD10108-BS2)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | | 108 | 90-110 | | |
| **Matrix Spike (BD10108-MS1)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.021 | 100 | 90-110 | | |
| **Matrix Spike (BD10108-MS2)** | | **Source: 1102588-04** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.041 | 95 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10108 - Ammonia by SEAL** | | | | | | | | | | |
| **Matrix Spike Dup (BD10108-MSD1)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.51 | 0.010 | 0.005 | mg/L | 0.50 | 0.021 | 99 | 90-110 | 0.8 | 10 |
| **Matrix Spike Dup (BD10108-MSD2)** | | **Source: 1102588-04** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | 0.041 | 97 | 90-110 | 2 | 10 |
| **Batch BD10110 - COD prep** | | | | | | | | | | |
| **Blank (BD10110-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BD10110-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 51 | 25 | 10 | mg/L | 50 | | 102 | 90-110 | | |
| **Matrix Spike (BD10110-MS1)** | | **Source: 1102635-10** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | | |
| **Matrix Spike Dup (BD10110-MSD1)** | | **Source: 1102635-10** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | 0 | 32 |
| **Batch BD10113 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BD10113-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BD10113-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chloride | 2.98 | 0.20 | 0.050 | mg/L | 3.0 | | 99 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10113 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS Dup (BD10113-BSD1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chloride | 2.95 | 0.20 | 0.050 | mg/L | 3.0 | | 98 | 85-115 | 1 | 200 |
| **Matrix Spike (BD10113-MS1)** | | **Source: 1102764-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chloride | 875 | 0.20 | 0.050 | mg/L | 300 | 584 | 97 | 80-120 | | |
| **Matrix Spike (BD10113-MS2)** | | **Source: 1102635-16** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chloride | 4.65 | 0.20 | 0.050 | mg/L | 3.0 | 1.64 | 100 | 80-120 | | |
| **Batch BD10437 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BD10437-BLK1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BD10437-BLK2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BD10437-BS1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.506 | 0.040 | 0.010 | mg/L | 0.50 | | 101 | 90-110 | | |
| **LCS (BD10437-BS2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.542 | 0.040 | 0.010 | mg/L | 0.50 | | 108 | 90-110 | | |
| **Matrix Spike (BD10437-MS1)** | | **Source: 1102612-12** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.966 | 0.040 | 0.010 | mg/L | 0.50 | 0.426 | 108 | 75-125 | | |
| **Matrix Spike (BD10437-MS2)** | | **Source: 1102777-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.565 | 0.040 | 0.010 | mg/L | 0.50 | 0.0811 | 97 | 75-125 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10437 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Matrix Spike Dup (BD10437-MSD1)** | | **Source: 1102612-12** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.954 | 0.040 | 0.010 | mg/L | 0.50 | 0.426 | 106 | 75-125 | 1 | 25 |
| **Matrix Spike Dup (BD10437-MSD2)** | | **Source: 1102777-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.565 | 0.040 | 0.010 | mg/L | 0.50 | 0.0811 | 97 | 75-125 | 0.1 | 25 |
| **Batch BD10511 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BD10511-BLK1)** | | | | | Prepared: 04/05/11 Analyzed: 04/06/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BD10511-BLK2)** | | | | | Prepared: 04/05/11 Analyzed: 04/06/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BD10511-BS1)** | | | | | Prepared: 04/05/11 Analyzed: 04/06/11 | | | | | |
| Phosphorous - Total as P | 0.455 | 0.040 | 0.010 | mg/L | 0.50 | | 91 | 90-110 | | |
| **LCS (BD10511-BS2)** | | | | | Prepared: 04/05/11 Analyzed: 04/06/11 | | | | | |
| Phosphorous - Total as P | 0.465 | 0.040 | 0.010 | mg/L | 0.50 | | 93 | 90-110 | | |
| **Matrix Spike (BD10511-MS1)** | | **Source: 1102750-01** | | | Prepared: 04/05/11 Analyzed: 04/06/11 | | | | | |
| Phosphorous - Total as P | 0.608 | 0.040 | 0.010 | mg/L | 0.50 | 0.105 | 101 | 75-125 | | |
| **Matrix Spike (BD10511-MS2)** | | **Source: 1102750-02** | | | Prepared: 04/05/11 Analyzed: 04/06/11 | | | | | |
| Phosphorous - Total as P | 0.477 | 0.040 | 0.010 | mg/L | 0.50 | 0.0268 | 90 | 75-125 | | |
| **Matrix Spike Dup (BD10511-MSD1)** | | **Source: 1102750-01** | | | Prepared: 04/05/11 Analyzed: 04/06/11 | | | | | |
| Phosphorous - Total as P | 0.596 | 0.040 | 0.010 | mg/L | 0.50 | 0.105 | 98 | 75-125 | 2 | 25 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10511 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Matrix Spike Dup (BD10511-MSD2)** | | **Source: 1102750-02** | | | Prepared: 04/05/11 Analyzed: 04/06/11 | | | | | |
| Phosphorous - Total as P | 0.515 | 0.040 | 0.010 | mg/L | 0.50 | 0.0268 | 98 | 75-125 | 8 | 25 |

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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13112 - DOC prep** | | | | | | | | | | |
| **Blank (BC13112-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BC13112-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 9.99 | 1.0 | 0.50 | mg/L | 10 | | 100 | 90-110 | | |
| **Duplicate (BC13112-DUP1)** | | **Source: 1102597-01** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 3.21 | 1.0 | 0.50 | mg/L | | 3.17 | | | 1 | 15 |
| **Matrix Spike (BC13112-MS1)** | | **Source: 1102612-20** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 11.8 | 1.0 | 0.50 | mg/L | 10 | 1.34 | 105 | 85-125 | | |
| **Matrix Spike Dup (BC13112-MSD1)** | | **Source: 1102612-20** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 11.9 | 1.0 | 0.50 | mg/L | 10 | 1.34 | 106 | 85-125 | 0.8 | 25 |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13002 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BC13002-BLK1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Potassium | 0.036 I | 0.050 | 0.010 | mg/L | | | | | | |
| Iron | 0.036 I | 0.10 | 0.020 | mg/L | | | | | | |
| Magnesium | 0.048 I | 0.050 | 0.010 | mg/L | | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Sodium | 0.31 | 0.050 | 0.010 | mg/L | | | | | | |
| Calcium | 0.034 I | 0.050 | 0.010 | mg/L | | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| **LCS (BC13002-BS1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Magnesium | 22 | 0.050 | 0.010 | mg/L | 20 | | 108 | 85-115 | | |
| Sodium | 21 | 0.050 | 0.010 | mg/L | 20 | | 103 | 85-115 | | |
| Calcium | 21 | 0.050 | 0.010 | mg/L | 20 | | 106 | 85-115 | | |
| Iron | 8.3 | 0.10 | 0.020 | mg/L | 8.0 | | 104 | 85-115 | | |
| Potassium | 20 | 0.050 | 0.010 | mg/L | 20 | | 102 | 85-115 | | |
| Boron | 0.40 | 0.10 | 0.050 | mg/L | 0.40 | | 99 | 85-115 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | | 103 | 85-115 | | |
| **Matrix Spike (BC13002-MS1)** | | **Source: 1102032-01** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Potassium | 23 | 0.050 | 0.010 | mg/L | 20 | 2.2 | 102 | 70-130 | | |
| Boron | 0.41 | 0.10 | 0.050 | mg/L | 0.40 | ND | 104 | 70-130 | | |
| Calcium | 27 | 0.050 | 0.010 | mg/L | 20 | 5.4 | 110 | 70-130 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | ND | 102 | 70-130 | | |
| Sodium | 23 | 0.050 | 0.010 | mg/L | 20 | 3.0 | 102 | 70-130 | | |
| Iron | 8.2 | 0.10 | 0.020 | mg/L | 8.0 | 0.034 | 101 | 70-130 | | |
| Magnesium | 22 | 0.050 | 0.010 | mg/L | 20 | 0.70 | 105 | 70-130 | | |
| **Matrix Spike Dup (BC13002-MSD1)** | | **Source: 1102032-01** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Potassium | 23 | 0.050 | 0.010 | mg/L | 20 | 2.2 | 106 | 70-130 | 4 | 30 |
| Boron | 0.42 | 0.10 | 0.050 | mg/L | 0.40 | ND | 105 | 70-130 | 1 | 30 |
| Sodium | 24 | 0.050 | 0.010 | mg/L | 20 | 3.0 | 105 | 70-130 | 3 | 30 |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | ND | 103 | 70-130 | 0.7 | 30 |
| Calcium | 28 | 0.050 | 0.010 | mg/L | 20 | 5.4 | 114 | 70-130 | 3 | 30 |
| Magnesium | 22 | 0.050 | 0.010 | mg/L | 20 | 0.70 | 106 | 70-130 | 1 | 30 |
| Iron | 8.3 | 0.10 | 0.020 | mg/L | 8.0 | 0.034 | 103 | 70-130 | 1 | 30 |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10104 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BD10104-BLK1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Sodium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Magnesium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Potassium | 0.049 I | 0.050 | 0.010 | mg/L | | | | | | |
| Calcium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| Iron | 0.020 U | 0.10 | 0.020 | mg/L | | | | | | |
| **LCS (BD10104-BS1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Sodium | 22 | 0.050 | 0.010 | mg/L | 20 | | 109 | 85-115 | | |
| Boron | 0.38 | 0.10 | 0.050 | mg/L | 0.40 | | 96 | 85-115 | | |
| Potassium | 22 | 0.050 | 0.010 | mg/L | 20 | | 108 | 85-115 | | |
| Manganese | 0.40 | 0.010 | 0.0010 | mg/L | 0.40 | | 101 | 85-115 | | |
| Calcium | 21 | 0.050 | 0.010 | mg/L | 20 | | 106 | 85-115 | | |
| Iron | 8.1 | 0.10 | 0.020 | mg/L | 8.0 | | 102 | 85-115 | | |
| Magnesium | 21 | 0.050 | 0.010 | mg/L | 20 | | 106 | 85-115 | | |
| **Matrix Spike (BD10104-MS1)** | | **Source: 1102588-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Manganese | 0.48 | 0.010 | 0.0010 | mg/L | 0.40 | 0.069 | 103 | 70-130 | | |
| Sodium | 23 | 0.050 | 0.010 | mg/L | 20 | 1.8 | 106 | 70-130 | | |
| Iron | 8.2 | 0.10 | 0.020 | mg/L | 8.0 | 0.066 | 102 | 70-130 | | |
| Magnesium | 23 | 0.050 | 0.010 | mg/L | 20 | 1.6 | 107 | 70-130 | | |
| Boron | 0.40 | 0.10 | 0.050 | mg/L | 0.40 | ND | 100 | 70-130 | | |
| Calcium | 27 | 0.050 | 0.010 | mg/L | 20 | 5.6 | 105 | 70-130 | | |
| Potassium | 22 | 0.050 | 0.010 | mg/L | 20 | 0.94 | 106 | 70-130 | | |
| **Matrix Spike Dup (BD10104-MSD1)** | | **Source: 1102588-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Manganese | 0.48 | 0.010 | 0.0010 | mg/L | 0.40 | 0.069 | 103 | 70-130 | 0.1 | 30 |
| Potassium | 22 | 0.050 | 0.010 | mg/L | 20 | 0.94 | 105 | 70-130 | 0.8 | 30 |
| Boron | 0.41 | 0.10 | 0.050 | mg/L | 0.40 | ND | 102 | 70-130 | 2 | 30 |
| Iron | 8.2 | 0.10 | 0.020 | mg/L | 8.0 | 0.066 | 102 | 70-130 | 0.2 | 30 |
| Sodium | 23 | 0.050 | 0.010 | mg/L | 20 | 1.8 | 105 | 70-130 | 2 | 30 |
| Magnesium | 23 | 0.050 | 0.010 | mg/L | 20 | 1.6 | 107 | 70-130 | 0.2 | 30 |
| Calcium | 27 | 0.050 | 0.010 | mg/L | 20 | 5.6 | 107 | 70-130 | 2 | 30 |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102597**

## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below.
Questions regarding this report should be directed to Client Services at 813-855-1844.

| | |
|---|---|
| J5 | Matrix spike of this sample was outside typical range. All other QC criteria were acceptable. |
| +O | Matrix spike source sample was over the reccommended range for the method. |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1102597

Client Name: Hazan and Sawyer

Contact / Phone: Josephin Edeback-Hirst 813-630-4498

Project Name / Location: GCREC Mound Groundwater Analyses

jedeback@hazanandsawyer.com

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 250ml P, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 250ml aG, Cool DOC | Field pH | Field DO | Field Cond | Field Temp | 250 ml P, $HNO_3$ B, Ca, Fe, K, Mg, Mn, Na No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-E04-6 | 032911 | 950 | GW | | X | 1** | 1* | | 1 | 4.7 | 3.49 | 90.6 | 22.3 | 1 |
| 02 | DP-E05-6 | 032911 | 1090 | GW | | X | 1 | 1 | | | 6.0 | 2.96 | 171.8 | 24.8 | |
| 03 | DP-E06-8 | 032911 | 1155 | GW | | X | 1 | 1 | | | 4.5 | 1.09 | 180.6 | 22.7 | |
| 04 | DP-E07-10 | 032911 | 1125 | GW | | X | 1 | 1 | | | 4.9 | 1.19 | 289.0 | 22.5 | |
| 05 | DP-E08-8 | 032911 | 1230 | GW | | X | 1 | 1 | | | 5.0 | 1.52 | 348 | 22.6 | |
| 06 | PZ11-E09-10 | 033011 | 1255 | GW | | X | 1 | 1 | | | 5.6 | 2.33 | 453.8 | 25.8 | |
| 07 | DP-E10-6 | 032911 | 1240 | GW | | X | 1 | 1 | | | 4.6 | 0.60 | 407 | 23.0 | |
| 08 | PZ21-E11-26 | 033011 | 1104 | GW | | X | 1 | 1 | | | 5.2 | 0.36 | 295.6 | 23.6 | |
| 09 | PZ22-E11-15 | 033011 | 1030 | GW | | X | 1 | 1 | | | 5.3 | 1.36 | 416.0 | 24.4 | |
| 10 | DP-E12-10 | 032911 | 1330 | GW | | X | 1** | 1* | 2 | 1 | 5.1 | 0.35 | 520 | 23.9 | 1 |
| 11 | DP-E12-15 | 033011 | 0745 | GW | | X | 1** | 1* | | 1 | 5.0 | 0.60 | 460 | 21.9 | 1 |
| 12 | DP-E12-22 | 033011 | 0820 | GW | | X | 1** | 1* | 2 | 1 | 5.3 | 0.59 | 297 | 22.5 | 1 |

| | Date/Time | Received | Date/Time |
|---|---|---|---|
| Containers Prepared/ Relinquished: | 1600 03-27-11 | | 0500 032911 |
| Relinquished: | 1830 033011 | | |
| Relinquished: | ~~1430~~ ~~3/31/11~~ MW | | |
| Relinquished: | | | |
| Relinquished: | | | |

Seal intact? Y N (N/A)

Samples intact upon arrival? (Y) N N/A

Received on ice? Temp_____ (Y) N N/A

Proper preservatives indicated? (Y) N N/A

Rec'd within holding time? (Y) N N/A

Volatiles rec'd w/out headspace Y N (N/A)

Proper containers used? (Y) N N/A

**Instructions / Remarks**

* COD, TP

** Cl, F, $SO_4$, OP, NOx 300

1102597

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1102597

| | |
|---|---|
| Client Name: Hazan and Sawyer | Contact / Phone: Josephin Edeback-Hirst 813-630-4498 |
| Project Name / Location: GCREC Mound Groundwater Analyses | jedeback@hazanandsawyer.com |
| Samplers: (Signature) | |

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 250ml P, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 250ml aG, Cool DOC | Field pH | Field DO | Field Cond | Field Temp | 250 ml P, $HNO_3$ B, Ca, Fe, K, Mg, Mn, Na | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | DP-E12-28 | 033011 | 0845 | GW | | X | 1** | 1* | | 1 | 5.3 | 0.57 | 310 | 22.8 | 1 | |
| 14 | PZ13-F04-8 | 032911 | 0925 | GW | | X | 1 | 1 | | | 5.6 | 2.48 | 125.5 | 21.4 | Z 1 | |
| 15 | DP-F04-17 | 032911 | 1025 | GW | | X | 1 | 1 | | | 7.3 | 0.57 | 415.7 | 22.0 | Z 1 | |
| 16 | DP-F04-22 | 032911 | 1045 | GW | | X | 1 | 1 | | | 6.0 | 0.72 | 314.1 | 22.8 | Z 1 | MW 4/1 |
| 17 | DP-F05-5 | 3/30/11 | 1325 | GW | | X | 1 | 1 | | | 5.8 | 7.36 | 173.3 | 27.7 | | |
| 18 | DP-F05-31 | 032911 | 1115 | GW | | X | 1** | 1* | | 1 | 7.3 | 1.70 | 187.1 | 24.1 | 4 1 | |
| 19 | DP-F06-10 | 032911 | 1140 | GW | | X | 1 | 1 | | | 5.2 | 0.30 | 190.6 | 21.8 | Z 1 | |
| 20 | PZ08-FG7-6 | 033011 | 1006 | GW | | X | 1 | 1 | | | 4.8 | 3.33 | 126.9 | 23.6 | | |
| 21 | DP-F08-14 | 032911 | 1215 | GW | | X | 1 | 1 | | | 7.6 | 1.28 | 501 | 22.5 | | |
| 22 | DP-F08-20 | 032911 | 1230 | GW | | X | 1** | 1* | | 1 | 6.0 | 0.41 | 335.6 | 23.1 | 1 | |
| 23 | DP-F08-28 | 032911 | 1245 | GW | | X | 1 | 1 | | | 6.3 | 0.37 | 323.9 | 23.4 | | |
| 24 | DP-F09-5 | 032911 | 1315 | GW | | X | 1** | 1* | | 1 | 6.6 | 1.15 | 191.1 | 24.8 | 1 | |

| | | | |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 1600 03-27-11 | Received: | Date/Time: 0500 032911 |
| Relinquished: | Date/Time: 1600 032911 | Received: | Date/Time: 3/29/11 1600 |
| Relinquished: | Date/Time: 1830 033011 | Received: | Date/Time: |
| Relinquished: | Date/Time: ~~1400~~ 3/31/11 MW | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N (N/A)
Samples intact upon arrival? (Y) N N/A
Received on ice? Temp_____ (Y) N N/A
Proper preservatives indicated? (Y) N N/A
Rec'd within holding time? (Y) N N/A
Volatiles rec'd w/out headspace Y N (N/A)
Proper containers used? (Y) N N/A

**Instructions / Remarks**
* COD, TP
** Cl, F, OP, NOx 300, SO4

1102597

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

Chain of Custody

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102612**
**Revised Report**

# Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F10-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-01** | | | | | | |
| Date/Time Collected | | **03/30/11 07:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.7 | | | | | | |
| Temperature | | 21.3 °C | | | | | | |
| Conductivity | | 475.9 umhos | | | | | | |
| Dissolved Oxygen | | 0.80 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 1.1 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.3 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 30 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F11-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-02** | | | | | | |
| Date/Time Collected | | **03/30/11 08:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 21.4 °C | | | | | | |
| Conductivity | | 412.7 umhos | | | | | | |
| Dissolved Oxygen | | 0.90 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.44 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 21 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102612**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F11-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-03** | | | | | | |
| Date/Time Collected | | **03/30/11 08:20** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 21.8 °C | | | | | | |
| Conductivity | | 453.3 umhos | | | | | | |
| Dissolved Oxygen | | 0.28 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.14 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 28 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F11-18** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-04** | | | | | | |
| Date/Time Collected | | **03/30/11 08:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.4 | | | | | | |
| Temperature | | 22.2 °C | | | | | | |
| Conductivity | | 433.9 umhos | | | | | | |
| Dissolved Oxygen | | 1.18 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.067 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.0 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 18 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102612**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F11-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-05** | | | | | | |
| Date/Time Collected | | **03/30/11 09:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 22.5 °C | | | | | | |
| Conductivity | | 318.4 umhos | | | | | | |
| Dissolved Oxygen | | 0.43 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 20 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F11-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-06** | | | | | | |
| Date/Time Collected | | **03/30/11 09:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 22.8 °C | | | | | | |
| Conductivity | | 301.1 umhos | | | | | | |
| Dissolved Oxygen | | 0.30 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.008 I | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 15 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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**Hazen and Sawyer**
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**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102612**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F11-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-07** | | | | | | |
| Date/Time Collected | | **03/30/11 09:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 23.2 °C | | | | | | |
| Conductivity | | 307.5 umhos | | | | | | |
| Dissolved Oxygen | | 0.39 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.008 I | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 7.3 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F12-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-08** | | | | | | |
| Date/Time Collected | | **03/31/11 08:50** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.0 | | | | | | |
| Temperature | | 21.5 °C | | | | | | |
| Conductivity | | 427 umhos | | | | | | |
| Dissolved Oxygen | | 0.90 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.16 | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 23 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102612**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F15-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-09** | | | | | | |
| Date/Time Collected | | **03/31/11 09:22** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 09:22** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 21.7 °C | | | | | | |
| Conductivity | | 512 umhos | | | | | | |
| Dissolved Oxygen | | 0.53 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.12 | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 11 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.74 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 11 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 31 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F15-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-10** | | | | | | |
| Date/Time Collected | | **03/31/11 09:37** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.4 | | | | | | |
| Temperature | | 22.3 °C | | | | | | |
| Conductivity | | 383 umhos | | | | | | |
| Dissolved Oxygen | | 0.78 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 12 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.4 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 12 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 19 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

**Hazen and Sawyer**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F15-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-11** | | | | | | |
| Date/Time Collected | | **03/31/11 10:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 22.5 °C | | | | | | |
| Conductivity | | 306 umhos | | | | | | |
| Dissolved Oxygen | | 0.78 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.074 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 17 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G05-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-12** | | | | | | |
| Date/Time Collected | | **03/30/11 13:40** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.1 | | | | | | |
| Temperature | | 26.2 °C | | | | | | |
| Conductivity | | 151.9 umhos | | | | | | |
| Dissolved Oxygen | | 2.49 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 1.4 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Chemical Oxygen Demand | mg/L | 32 | EPA 410.4 | 25 | 10 | | 04/01/11 14:59 | MMF |
| Chloride | mg/L | 4.1 | EPA 300.0 | 0.20 | 0.050 | | 03/31/11 12:58 | MEJ |
| Fluoride | mg/L | 0.075 | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Nitrate (as N) | mg/L | 0.14 | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Orthophosphate as P | mg/L | 0.18 | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Phosphorous - Total as P | mg/L | 0.43 | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 30 | EPA 300.0 | 0.60 | 0.20 | | 03/31/11 12:58 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G05-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-12** | | | | | | |
| Date/Time Collected | | **03/30/11 13:40** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.1 | | | | | | |
| Temperature | | 26.2 °C | | | | | | |
| Conductivity | | 151.9 umhos | | | | | | |
| Dissolved Oxygen | | 2.49 mg/L | | | | | | |
| Total Alkalinity | mg/L | 22 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.9 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 22 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.14 | EPA 300.0 | 0.08 | 0.02 | | 03/31/11 12:58 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 8.7 | SM 5310B | 1.0 | 0.50 | | 03/31/11 12:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 04/01/11 09:38 | 04/01/11 16:45 | LCB |
| Calcium | mg/L | 11 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:45 | LCB |
| Iron | mg/L | 8.2 | EPA 200.7 | 0.10 | 0.020 | 04/01/11 09:38 | 04/01/11 16:45 | LCB |
| Magnesium | mg/L | 3.3 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:45 | LCB |
| Manganese | mg/L | 0.40 | EPA 200.7 | 0.010 | 0.0010 | 04/01/11 09:38 | 04/01/11 16:45 | LCB |
| Potassium | mg/L | 2.8 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 17:18 | LCB |
| Sodium | mg/L | 2.6 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 17:18 | LCB |
| Sample Description | | **DP-G07-13** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-13** | | | | | | |
| Date/Time Collected | | **03/30/11 15:05** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.8 | | | | | | |
| Temperature | | 25.2 °C | | | | | | |
| Conductivity | | 232 umhos | | | | | | |
| Dissolved Oxygen | | 2.19 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.33 | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-13** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-13** | | | | | | |
| Date/Time Collected | | **03/30/11 15:05** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.8 | | | | | | |
| Temperature | | 25.2 °C | | | | | | |
| Conductivity | | 232 umhos | | | | | | |
| Dissolved Oxygen | | 2.19 mg/L | | | | | | |
| Total Alkalinity | mg/L | 14 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.70 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 14 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 2.7 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-14** | | | | | | |
| Date/Time Collected | | **03/30/11 15:30** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 23.4 °C | | | | | | |
| Conductivity | | 272 umhos | | | | | | |
| Dissolved Oxygen | | 1.20 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.45 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 4.5 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-17** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-15** | | | | | | |
| Date/Time Collected | | **03/30/11 15:50** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 23.7 °C | | | | | | |
| Conductivity | | 317 umhos | | | | | | |
| Dissolved Oxygen | | 1.52 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/01/11 07:51 | SMD |
| Total Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 8.9 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-16** | | | | | | |
| Date/Time Collected | | **03/31/11 07:55** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.6 | | | | | | |
| Temperature | | 22.2 °C | | | | | | |
| Conductivity | | 326 umhos | | | | | | |
| Dissolved Oxygen | | 0.57 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.071 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.6 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 13 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102612**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-17** | | | | | | |
| Date/Time Collected | | **03/31/11 08:15** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.7 | | | | | | |
| Temperature | | 22.3 °C | | | | | | |
| Conductivity | | 271 umhos | | | | | | |
| Dissolved Oxygen | | 0.94 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.5 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 13 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-18** | | | | | | |
| Date/Time Collected | | **03/31/11 08:35** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 22.3 °C | | | | | | |
| Conductivity | | 303 umhos | | | | | | |
| Dissolved Oxygen | | 0.95 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.8 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 15 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

**Hazen and Sawyer**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G08-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-19** | | | | | | |
| Date/Time Collected | | **03/30/11 15:15** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.6 | | | | | | |
| Temperature | | 26.1 °C | | | | | | |
| Conductivity | | 157.8 umhos | | | | | | |
| Dissolved Oxygen | | 7.64 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.92 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 1.6 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G09-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-20** | | | | | | |
| Date/Time Collected | | **03/30/11 15:45** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.4 | | | | | | |
| Temperature | | 24.0 °C | | | | | | |
| Conductivity | | 285 umhos | | | | | | |
| Dissolved Oxygen | | 2.08 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 41 | EPA 410.4 | 25 | 10 | | 04/01/11 14:59 | MMF |
| Chloride | mg/L | 13 | EPA 300.0 | 0.20 | 0.050 | | 03/31/11 12:58 | MEJ |
| Fluoride | mg/L | 0.036 I | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Nitrate (as N) | mg/L | 9.1 | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Phosphorous - Total as P | mg/L | 0.11 | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 51 | EPA 300.0 | 0.60 | 0.20 | | 03/31/11 12:58 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G09-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-20** | | | | | | |
| Date/Time Collected | | **03/30/11 15:45** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.4 | | | | | | |
| Temperature | | 24.0 °C | | | | | | |
| Conductivity | | 285 umhos | | | | | | |
| Dissolved Oxygen | | 2.08 mg/L | | | | | | |
| Total Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 9.1 | EPA 300.0 | 0.08 | 0.02 | | 03/31/11 12:58 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.3 | SM 5310B | 1.0 | 0.50 | | 03/31/11 12:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 04/01/11 09:38 | 04/01/11 16:55 | LCB |
| Calcium | mg/L | 27 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:55 | LCB |
| Iron | mg/L | 1.1 | EPA 200.7 | 0.10 | 0.020 | 04/01/11 09:38 | 04/01/11 16:55 | LCB |
| Magnesium | mg/L | 5.6 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/01/11 16:55 | LCB |
| Manganese | mg/L | 0.26 | EPA 200.7 | 0.010 | 0.0010 | 04/01/11 09:38 | 04/01/11 16:55 | LCB |
| Potassium | mg/L | 7.0 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 17:21 | LCB |
| Sodium | mg/L | 12 | EPA 200.7 | 0.050 | 0.010 | 04/01/11 09:38 | 04/05/11 17:21 | LCB |
| Sample Description | | **PZ19-G10-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-21** | | | | | | |
| Date/Time Collected | | **03/30/11 09:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 23.1 °C | | | | | | |
| Conductivity | | 302.1 umhos | | | | | | |
| Dissolved Oxygen | | 1.07 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.014 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ19-G10-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-21** | | | | | | |
| Date/Time Collected | | **03/30/11 09:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 23.1 °C | | | | | | |
| Conductivity | | 302.1 umhos | | | | | | |
| Dissolved Oxygen | | 1.07 mg/L | | | | | | |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.90 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 17 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Sample Description | | **PZ20-G10-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-22** | | | | | | |
| Date/Time Collected | | **03/30/11 09:01** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.6 | | | | | | |
| Temperature | | 22.2 °C | | | | | | |
| Conductivity | | 356.1 umhos | | | | | | |
| Dissolved Oxygen | | 1.97 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 15 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 3.7 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 15 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 19 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G11-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-23** | | | | | | |
| Date/Time Collected | | **03/31/11 08:05** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 21.2 °C | | | | | | |
| Conductivity | | 295 umhos | | | | | | |
| Dissolved Oxygen | | 1.38 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.015 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.2 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 12 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102612-24** | | | | | | |
| Date/Time Collected | | **03/31/11 08:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.7 | | | | | | |
| Temperature | | 21.4 °C | | | | | | |
| Conductivity | | 341 umhos | | | | | | |
| Dissolved Oxygen | | 2.62 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.036 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.7 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 10 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **Blank (BC13102-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK3)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK4)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BC13102-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **LCS (BC13102-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS3)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS4)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BC13102-MS1)** | | **Source: 1102633-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | ND | 101 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS2)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.9 | 97 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS3)** | | **Source: 1102597-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS4)** | | **Source: 1102612-21** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 107 | 80-120 | | 26 |
| **Matrix Spike Dup (BC13102-MSD1)** | | **Source: 1102633-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | ND | 101 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD2)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.9 | 97 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD3)** | | **Source: 1102597-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | 0 | 26 |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **Matrix Spike Dup (BC13102-MSD4)** | | **Source: 1102612-21** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | 9 | 26 |
| **Batch BC13111 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BC13111-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BC13111-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Orthophosphate as P | 0.853 | 0.040 | 0.010 | mg/L | 0.90 | | 95 | 85-115 | | |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | | |
| Nitrite (as N) | 1.27 | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | | |
| Sulfate | 8.41 | 0.60 | 0.20 | mg/L | 9.0 | | 93 | 85-115 | | |
| Fluoride | 0.840 | 0.040 | 0.010 | mg/L | 0.90 | | 93 | 85-115 | | |
| Chloride | 3.06 | 0.20 | 0.050 | mg/L | 3.0 | | 102 | 85-115 | | |
| **LCS Dup (BC13111-BSD1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Sulfate | 8.41 | 0.60 | 0.20 | mg/L | 9.0 | | 93 | 85-115 | 0 | 200 |
| Nitrite (as N) | 1.28 | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | 0.8 | 200 |
| Orthophosphate as P | 0.864 | 0.040 | 0.010 | mg/L | 0.90 | | 96 | 85-115 | 1 | 200 |
| Chloride | 3.01 | 0.20 | 0.050 | mg/L | 3.0 | | 100 | 85-115 | 2 | 200 |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | 0 | 200 |
| Fluoride | 0.890 | 0.040 | 0.010 | mg/L | 0.90 | | 99 | 85-115 | 6 | 200 |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13111 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BC13111-MS1)** | | **Source: 1102612-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Chloride | 6.67 | 0.20 | 0.050 | mg/L | 3.0 | 4.11 | 85 | 80-120 | | |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | 0.140 | 89 | 85-115 | | |
| Nitrite (as N) | 1.26 | 0.04 | 0.01 | mg/L | 1.4 | ND | 90 | 85-115 | | |
| Orthophosphate as P | 1.04 | 0.040 | 0.010 | mg/L | 0.90 | 0.176 | 96 | 85-115 | | |
| Sulfate | 39.5 | 0.60 | 0.20 | mg/L | 9.0 | 30.3 | 102 | 85-115 | | |
| Fluoride | 0.903 | 0.040 | 0.010 | mg/L | 0.90 | 0.0752 | 92 | 85-115 | | |
| **Matrix Spike (BC13111-MS2)** | | **Source: 1102765-02** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate (as N) | 1,600 | 0.04 | 0.01 | mg/L | 1700 | 14.5 | 93 | 85-115 | | |
| Sulfate | 9,850 | 0.60 | 0.20 | mg/L | 9000 | 1420 | 94 | 85-115 | | |
| Fluoride | 872 | 0.040 | 0.010 | mg/L | 900 | 34.8 | 93 | 85-115 | | |
| Chloride | 8,610 | 0.20 | 0.050 | mg/L | 3000 | 5850 | 92 | 80-120 | | |
| Orthophosphate as P | 1,010 | 0.040 | 0.010 | mg/L | 900 | 62.6 | 105 | 85-115 | | |
| Nitrite (as N) | 1,270 | 0.04 | 0.01 | mg/L | 1400 | ND | 91 | 85-115 | | |
| **Batch BC13117 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BC13117-BLK1)** | | | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BC13117-BLK2)** | | | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BC13117-BS1)** | | | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.30 | 0.20 | 0.05 | mg/L | 2.5 | | 91 | 90-110 | | |
| **LCS (BC13117-BS2)** | | | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.30 | 0.20 | 0.05 | mg/L | 2.5 | | 91 | 90-110 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13117 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Matrix Spike (BC13117-MS1)** | | **Source: 1102745-02** | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 5.20 J5 | 0.20 | 0.05 | mg/L | 2.5 | 3.92 | 50 | 80-120 | | |
| **Matrix Spike (BC13117-MS2)** | | **Source: 1102742-07** | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.18 | 0.20 | 0.05 | mg/L | 2.5 | 0.747 | 96 | 80-120 | | |
| **Matrix Spike Dup (BC13117-MSD1)** | | **Source: 1102745-02** | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 5.61 J5 | 0.20 | 0.05 | mg/L | 2.5 | 3.92 | 66 | 80-120 | 8 | 20 |
| **Matrix Spike Dup (BC13117-MSD2)** | | **Source: 1102742-07** | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.16 | 0.20 | 0.05 | mg/L | 2.5 | 0.747 | 95 | 80-120 | 0.6 | 20 |
| **Batch BD10106 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BD10106-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **Blank (BD10106-BLK2)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BD10106-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.749 | 0.04 | 0.01 | mg/L | 0.80 | | 94 | 90-110 | | |
| **LCS (BD10106-BS2)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.765 | 0.04 | 0.01 | mg/L | 0.80 | | 96 | 90-110 | | |
| **Matrix Spike (BD10106-MS1)** | | **Source: 1102727-07** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 1.40 | 0.04 | 0.01 | mg/L | 1.0 | 0.370 | 103 | 77-119 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10106 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Matrix Spike (BD10106-MS2)** | | **Source: 1102740-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.976 | 0.04 | 0.01 | mg/L | 1.0 | ND | 98 | 77-119 | | |
| **Matrix Spike Dup (BD10106-MSD1)** | | **Source: 1102727-07** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 1.38 | 0.04 | 0.01 | mg/L | 1.0 | 0.370 | 102 | 77-119 | 1 | 20 |
| **Matrix Spike Dup (BD10106-MSD2)** | | **Source: 1102740-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.976 | 0.04 | 0.01 | mg/L | 1.0 | ND | 98 | 77-119 | 0.01 | 20 |
| **Batch BD10108 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10108-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BD10108-BLK2)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BD10108-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | | 108 | 90-110 | | |
| **LCS (BD10108-BS2)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | | 108 | 90-110 | | |
| **Matrix Spike (BD10108-MS1)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.021 | 100 | 90-110 | | |
| **Matrix Spike (BD10108-MS2)** | | **Source: 1102588-04** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.041 | 95 | 90-110 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10108 - Ammonia by SEAL** | | | | | | | | | | |
| **Matrix Spike Dup (BD10108-MSD1)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.51 | 0.010 | 0.005 | mg/L | 0.50 | 0.021 | 99 | 90-110 | 0.8 | 10 |
| **Matrix Spike Dup (BD10108-MSD2)** | | **Source: 1102588-04** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | 0.041 | 97 | 90-110 | 2 | 10 |
| **Batch BD10110 - COD prep** | | | | | | | | | | |
| **Blank (BD10110-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BD10110-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 51 | 25 | 10 | mg/L | 50 | | 102 | 90-110 | | |
| **Matrix Spike (BD10110-MS1)** | | **Source: 1102635-10** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | | |
| **Matrix Spike Dup (BD10110-MSD1)** | | **Source: 1102635-10** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | 0 | 32 |
| **Batch BD10114 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BD10114-BLK1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BD10114-BLK2)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10114 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **LCS (BD10114-BS1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.69 | 0.20 | 0.05 | mg/L | 2.5 | | 106 | 90-110 | | |
| **LCS (BD10114-BS2)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.49 | 0.20 | 0.05 | mg/L | 2.5 | | 98 | 90-110 | | |
| **Matrix Spike (BD10114-MS1)** | | **Source: 1102777-07** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.48 | 0.20 | 0.05 | mg/L | 2.5 | 0.772 | 107 | 80-120 | | |
| **Matrix Spike (BD10114-MS2)** | | **Source: 1102765-02** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.84 | 0.20 | 0.05 | mg/L | 2.5 | 0.364 | 98 | 80-120 | | |
| **Matrix Spike Dup (BD10114-MSD1)** | | **Source: 1102777-07** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.45 | 0.20 | 0.05 | mg/L | 2.5 | 0.772 | 106 | 80-120 | 1 | 20 |
| **Matrix Spike Dup (BD10114-MSD2)** | | **Source: 1102765-02** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.82 | 0.20 | 0.05 | mg/L | 2.5 | 0.364 | 97 | 80-120 | 0.7 | 20 |
| **Batch BD10118 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BD10118-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BD10118-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.850 | 0.04 | 0.01 | mg/L | 0.80 | | 106 | 90-110 | | |
| **Matrix Spike (BD10118-MS1)** | | **Source: 1102777-07** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 1.03 | 0.04 | 0.01 | mg/L | 1.0 | 0.126 | 91 | 77-119 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10118 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Matrix Spike Dup (BD10118-MSD1)** | | **Source: 1102777-07** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 1.03 | 0.04 | 0.01 | mg/L | 1.0 | 0.126 | 91 | 77-119 | 0.02 | 20 |
| **Batch BD10201 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10201-BLK1)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BD10201-BLK2)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BD10201-BS1)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.51 | 0.010 | 0.005 | mg/L | 0.50 | | 103 | 90-110 | | |
| **LCS (BD10201-BS2)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.49 | 0.010 | 0.005 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BD10201-MS1)** | | **Source: 1102705-02** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.55 | 0.010 | 0.005 | mg/L | 0.50 | 0.062 | 98 | 90-110 | | |
| **Matrix Spike (BD10201-MS2)** | | **Source: 1102742-07** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.068 | 100 | 90-110 | | |
| **Matrix Spike Dup (BD10201-MSD1)** | | **Source: 1102705-02** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | 0.062 | 94 | 90-110 | 3 | 10 |
| **Matrix Spike Dup (BD10201-MSD2)** | | **Source: 1102742-07** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.55 | 0.010 | 0.005 | mg/L | 0.50 | 0.068 | 96 | 90-110 | 3 | 10 |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10203 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10203-BLK1)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BD10203-BLK2)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BD10203-BS1)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.49 | 0.010 | 0.005 | mg/L | 0.50 | | 98 | 90-110 | | |
| **LCS (BD10203-BS2)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.48 | 0.010 | 0.005 | mg/L | 0.50 | | 96 | 90-110 | | |
| **Matrix Spike (BD10203-MS1)** | | **Source: 1102633-18** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.051 | 94 | 90-110 | | |
| **Matrix Spike (BD10203-MS2)** | | **Source: 1102625-10** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.047 | 94 | 90-110 | | |
| **Matrix Spike Dup (BD10203-MSD1)** | | **Source: 1102633-18** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | 0.051 | 98 | 90-110 | 4 | 10 |
| **Matrix Spike Dup (BD10203-MSD2)** | | **Source: 1102625-10** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | 0.047 | 99 | 90-110 | 5 | 10 |
| **Batch BD10437 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BD10437-BLK1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102612**
**Revised Report**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10437 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BD10437-BLK2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BD10437-BS1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.506 | 0.040 | 0.010 | mg/L | 0.50 | | 101 | 90-110 | | |
| **LCS (BD10437-BS2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.542 | 0.040 | 0.010 | mg/L | 0.50 | | 108 | 90-110 | | |
| **Matrix Spike (BD10437-MS1)** | | **Source: 1102612-12** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.966 | 0.040 | 0.010 | mg/L | 0.50 | 0.426 | 108 | 75-125 | | |
| **Matrix Spike (BD10437-MS2)** | | **Source: 1102777-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.565 | 0.040 | 0.010 | mg/L | 0.50 | 0.0811 | 97 | 75-125 | | |
| **Matrix Spike Dup (BD10437-MSD1)** | | **Source: 1102612-12** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.954 | 0.040 | 0.010 | mg/L | 0.50 | 0.426 | 106 | 75-125 | 1 | 25 |
| **Matrix Spike Dup (BD10437-MSD2)** | | **Source: 1102777-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.565 | 0.040 | 0.010 | mg/L | 0.50 | 0.0811 | 97 | 75-125 | 0.1 | 25 |
| **Batch BD10518 - alkalinity** | | | | | | | | | | |
| **Blank (BD10518-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102612**
**Revised Report**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10518 - alkalinity** | | | | | | | | | | |
| **Blank (BD10518-BLK2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BD10518-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BD10518-BS2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BD10518-MS1)** | | **Source: 1102588-01** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 6.9 | 92 | 80-120 | | 26 |
| **Matrix Spike (BD10518-MS2)** | | **Source: 1102612-10** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 150 | 8.0 | 2.0 | mg/L | 120 | 12 | 109 | 80-120 | | 26 |
| **Matrix Spike Dup (BD10518-MSD1)** | | **Source: 1102588-01** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 6.9 | 93 | 80-120 | 0.8 | 26 |
| **Matrix Spike Dup (BD10518-MSD2)** | | **Source: 1102612-10** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 12 | 100 | 80-120 | 8 | 26 |

**Hazen and Sawyer**
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**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102612**
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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13112 - DOC prep** | | | | | | | | | | |
| **Blank (BC13112-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BC13112-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 9.99 | 1.0 | 0.50 | mg/L | 10 | | 100 | 90-110 | | |
| **Duplicate (BC13112-DUP1)** | | **Source: 1102597-01** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 3.21 | 1.0 | 0.50 | mg/L | | 3.17 | | | 1 | 15 |
| **Matrix Spike (BC13112-MS1)** | | **Source: 1102612-20** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 11.8 | 1.0 | 0.50 | mg/L | 10 | 1.34 | 105 | 85-125 | | |
| **Matrix Spike Dup (BC13112-MSD1)** | | **Source: 1102612-20** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 11.9 | 1.0 | 0.50 | mg/L | 10 | 1.34 | 106 | 85-125 | 0.8 | 25 |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
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**Metals - Quality Control**

| Analyte | Result | | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10104 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | | |
| **Blank (BD10104-BLK1)** | | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Potassium | 0.049 | I | 0.050 | 0.010 | mg/L | | | | | | |
| Iron | 0.020 | U | 0.10 | 0.020 | mg/L | | | | | | |
| Manganese | 0.0010 | U | 0.010 | 0.0010 | mg/L | | | | | | |
| Magnesium | 0.010 | U | 0.050 | 0.010 | mg/L | | | | | | |
| Boron | 0.050 | U | 0.10 | 0.050 | mg/L | | | | | | |
| Sodium | 0.010 | U | 0.050 | 0.010 | mg/L | | | | | | |
| Calcium | 0.010 | U | 0.050 | 0.010 | mg/L | | | | | | |
| **LCS (BD10104-BS1)** | | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Iron | 8.1 | | 0.10 | 0.020 | mg/L | 8.0 | | 102 | 85-115 | | |
| Sodium | 22 | | 0.050 | 0.010 | mg/L | 20 | | 109 | 85-115 | | |
| Boron | 0.38 | | 0.10 | 0.050 | mg/L | 0.40 | | 96 | 85-115 | | |
| Magnesium | 21 | | 0.050 | 0.010 | mg/L | 20 | | 106 | 85-115 | | |
| Potassium | 22 | | 0.050 | 0.010 | mg/L | 20 | | 108 | 85-115 | | |
| Calcium | 21 | | 0.050 | 0.010 | mg/L | 20 | | 106 | 85-115 | | |
| Manganese | 0.40 | | 0.010 | 0.0010 | mg/L | 0.40 | | 101 | 85-115 | | |
| **Matrix Spike (BD10104-MS1)** | | | **Source: 1102588-01** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Sodium | 23 | | 0.050 | 0.010 | mg/L | 20 | 1.8 | 106 | 70-130 | | |
| Calcium | 27 | | 0.050 | 0.010 | mg/L | 20 | 5.6 | 105 | 70-130 | | |
| Magnesium | 23 | | 0.050 | 0.010 | mg/L | 20 | 1.6 | 107 | 70-130 | | |
| Boron | 0.40 | | 0.10 | 0.050 | mg/L | 0.40 | ND | 100 | 70-130 | | |
| Potassium | 22 | | 0.050 | 0.010 | mg/L | 20 | 0.94 | 106 | 70-130 | | |
| Iron | 8.2 | | 0.10 | 0.020 | mg/L | 8.0 | 0.066 | 102 | 70-130 | | |
| Manganese | 0.48 | | 0.010 | 0.0010 | mg/L | 0.40 | 0.069 | 103 | 70-130 | | |
| **Matrix Spike Dup (BD10104-MSD1)** | | | **Source: 1102588-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Manganese | 0.48 | | 0.010 | 0.0010 | mg/L | 0.40 | 0.069 | 103 | 70-130 | 0.1 | 30 |
| Iron | 8.2 | | 0.10 | 0.020 | mg/L | 8.0 | 0.066 | 102 | 70-130 | 0.2 | 30 |
| Magnesium | 23 | | 0.050 | 0.010 | mg/L | 20 | 1.6 | 107 | 70-130 | 0.2 | 30 |
| Potassium | 22 | | 0.050 | 0.010 | mg/L | 20 | 0.94 | 105 | 70-130 | 0.8 | 30 |
| Boron | 0.41 | | 0.10 | 0.050 | mg/L | 0.40 | ND | 102 | 70-130 | 2 | 30 |
| Sodium | 23 | | 0.050 | 0.010 | mg/L | 20 | 1.8 | 105 | 70-130 | 2 | 30 |
| Calcium | 27 | | 0.050 | 0.010 | mg/L | 20 | 5.6 | 107 | 70-130 | 2 | 30 |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 6, 2011**
**Work Order: 1102612**
**Revised Report**

## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

J5 Matrix spike of this sample was outside typical range. All other QC criteria were acceptable.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1102612

Client Name: Hazan and Sawyer

Contact / Phone: Josephin Edeback-Hirst 813-630-4498

Project Name / Location: GCREC Mound Groundwater Analyses

jedeback@hazanandsawyer.com

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 250ml P, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 250ml aG, Cool DOC | Field pH | Field DO | Field Cond | Field Temp | 250 ml P, HNO3 Ca, Fe, Na, K, Mn, Mg, B No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-F10-11 | 032911 | 0745 | GW | | X | 1 | 1 | | | 4.7 | 0.80 | 475.9 | 21.3 | |
| 02 | DP-F11-11 | 033011 | 0800 | GW | | X | 1 | 1 | | | 5.3 | 0.90 | 412.7 | 21.4 | |
| 03 | DP-F11-15 | 033011 | 0820 | GW | | X | 1 | 1 | | | 5.1 | 0.28 | 453.3 | 21.8 | |
| 04 | DP-F11-18 | 033011 | 0840 | GW | | X | 1 | 1 | | | 5.4 | 1.18 | 433.9 | 22.2 | |
| 05 | DP-F11-21 | 033011 | 0900 | GW | | X | 1 | 1 | | | 5.2 | 0.43 | 318.4 | 22.5 | |
| 06 | DP-F11-24 | 033011 | 0930 | GW | | X | 1 | 1 | | | 5.1 | 0.30 | 301.1 | 22.8 | |
| 07 | DP-F11-27 | 033011 | 0950 | GW | | X | 1 | 1 | | | 5.3 | 0.39 | 307.5 | 23.2 | |
| JMH 08 | DP-F12-10 | 3/31/11 | 0850 | GW | | X | 1 | 1 | | | 5.0 | 0.90 | 427 | 24.5 | |
| JMH 09 | DP-F15-14 | 3/31/11 | 0922 | GW | | X | 1 | 1 | | | 5.2 | 0.53 | 512 | 24.7 | |
| JMH 10 | DP-F15-20 | 3/31/11 | 0937 | GW | | X | 1 | 1 | | | 5.4 | 0.78 | 383 | 22.3 | |
| JMH 11 | DP-F15-26 | 3/31/11 | 1000 | GW | | X | 1 | 1 | | | 5.2 | 0.78 | 306 | 22.5 | |
| 12 | DP-G05-6 | 3/30/11 | 1340 | GW | | X | 1 ** | 1 * | | 1 | 6.1 | 2.49 | 151.9 | 24.2 | 1 |

| | | | |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 1700 03-27-11 | Received: | Date/Time: 0500 032911 |
| Relinquished: | Date/Time: 1830 033011 | Received: | Date/Time: |
| Relinquished: | Date/Time: 1430 3/31/11 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

1-7, 12, 13-16, 19-22

8-11, 17-18, 23-24

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace Y N N/A

Proper containers used? Y N N/A

**Instructions / Remarks**

* COD, TP

** F, Cl, $SO_4$, OP, NOx 300

1102612

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1102612

| | |
|---|---|
| Client Name: Hazan and Sawyer | Contact / Phone: Josephin Edeback-Hirst 813-630-4498 |
| Project Name / Location: GCREC Mound Groundwater Analyses | jedeback@hazanandsawyer.com |
| Samplers: (Signature) | |

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| | SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 250ml P, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 250ml aG, Cool DOC | Field pH | Field DO | Field Cond | Field Temp | 250ml P, $HNO_3$ Ca, Fe, K, Na, Tn, Mg, B | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 13 | DP-G07-13 | 3/30/11 | 1505 | GW | | X | 1 | 1 | | | 5.8 | 2.19 | 232 | 25.2 | | |
| | 14 | DP-G07-15 | 3/30/11 | 1530 | GW | | X | 1 | 1 | | | 5.2 | 1.20 | 272 | 23.4 | | |
| | 15 | DP-G07-17 | 3/30/11 | 1550 | GW | | X | 1 | 1 | | | 5.3 | 1.52 | 317 | 23.7 | | |
| JMH | 16 | DP-G07-21 | 3/31/11 | 0755 | GW | | X | 1 | 1 | | | 5.6 | 0.57 | 326 | 22.2 | | |
| JMH | 17 | DP-G07-24 | 3/31/11 | 0815 | GW | | X | 1 | 1 | | | 5.7 | 0.94 | 271 | 22.3 | | |
| JMH | 18 | DP-G07-27 | 3/31/11 | 0835 | GW | | X | 1 | 1 | | | 5.2 | 0.95 | 303 | 22.3 | | |
| | 19 | DP-G08-5 | 3/30/11 | 1515 | GW | | X | 1 | 1 | | | 5.6 | 7.64 | 157.8 | 26.1 | | |
| | 20 | DP-G09-11 | 3/30/11 | 1545 | GW | | X | 1** | 1* | | 1 | 5.4 | 2.08 | 285 | 24.0 | 1 | |
| | 21 | PZ19-G10-26 | 033011 | 0945 | GW | | X | 1 | 1 | | | 5.1 | 1.07 | 302.1 | 23.1 | | |
| | 22 | PZ20-G10-15 | 033011 | 0901 | GW | | X | 1 | 1 | | | 5.6 | 1.97 | 356.1 | 22.2 | | |
| JMH | 23 | DP-G11-8 | 3/31/11 | 0805 | GW | | X | 1 | 1 | | | 5.1 | 1.38 | 295 | 21.2 | | |
| JMH | 24 | DP-G12-9 | 3-31-11 | 0830 | GW | | X | 1 | 1 | | | 4.7 | 2.62 | 341 | 21.4 | | |

| Containers Prepared/ Relinquished: | Date/Time: 1700 03-27-11 | Received: | Date/Time: 032911 0500 |
|---|---|---|---|
| Relinquished: | Date/Time: 1830 033011 | Received: | Date/Time: |
| Relinquished: | Date/Time: 1430 3/31/11 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

1-7, 12-15, 19-22, 8-11, 16-18, 23, 24

| | |
|---|---|
| Seal intact? | Y N (N/A) |
| Samples intact upon arrival? | (Y) N N/A |
| Received on ice? Temp_____ | (Y) N N/A |
| Proper preservatives indicated? | (Y) N N/A |
| Rec'd within holding time? | (Y) N N/A |
| Volatiles rec'd w/out headspace | Y N (N/A) |
| Proper containers used? | (Y) N N/A |

**Instructions / Remarks**

*COD, TP

** Cl, F, $SO_4$, OP, NOx 300

1102612

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033011 | SAL Project # | 1102612 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ19-G10-26 | Sample ID | 21 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 2.0 | WELL CAPACITY (gal/ft) | 0.16 | Screen Interval (Feet) | UNK To UNK | Static Depth to Water (Feet) | 7.4 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 30.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 3.68 | 1/4 WELL VOLUME | 0.92 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 15.0 | FINAL TUBING LEGNTH IN WELL (FEET) | 15.0 | PURGE TIME START | 0915 | PURGE TIME END | 0944 | TOTAL PURGED | 5.8 |

| INST. ID | | | | | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0934 | 3.8 | 3.8 | 0.20 | | 5.1 | 23.2 | 312.2 | 1.13 | 27.3 | Cloudy | None |
| 0939 | 1.0 | 4.8 | 0.20 | | 5.1 | 23.1 | 304.8 | 1.10 | 18.4 | | |
| 0944 | 1.0 | 5.8 | 0.20 | | 5.1 | 23.1 | 302.1 | 1.07 | 18.3 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | 15 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.20 |
| SAMPLING INITIATED | 0945 | SAMPLING ENDED | 0945 | FIELD CLEANED | (Y) N | CLEANING STEPS | clean tubing DI |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | Sunny / windy | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033011 | SAL Project # | 1102612 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ20-G10-15 | Sample ID | 22 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK To UNK | Static Depth to Water (Feet) | 7.49 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 19.4 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.238 | 1/4 WELL VOLUME | 0.05 | 3 WELL VOLUMES | 0.714 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | ~~15~~ 15.0 | FINAL TUBING LEGNTH IN WELL (FEET) | 15.0 | PURGE TIME START | 0851 | PURGE TIME END | 0900 | TOTAL PURGED | 0.90 |
| INST. ID | | | | SAL-SAM-63-03 | SAL-SAM-65-63 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0854 | 0.30 | 0.30 | 0.10 | 9.61 | 5.6 | 22.1 | 356.0 | 1.97 | 9.70 | cloudy | none |
| 0857 | 0.30 | 0.60 | 0.10 | 9.61 | 5.6 | 22.1 | 356.2 | 1.96 | 9.61 | | |
| 0900 | 0.30 | 0.90 | 0.10 | 9.61 | 5.6 | 22.2 | 356.1 | 1.97 | 9.58 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | GAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | 15.00 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.10 |
| SAMPLING INITIATED | 0901 | SAMPLING ENDED | 0901 | FIELD CLEANED | (Y) N | CLEANING STEPS | New tubing |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | 033011 | | | |
| WEATHER CONDITIONS | SUNNY | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

Revision Date 09/25/09

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 8, 2011**
**Work Order: 1102625**
**Revised Report**

# Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-01** | | | | | | |
| Date/Time Collected | | **03/31/11 08:45** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.5 | | | | | | |
| Temperature | | 21.8 °C | | | | | | |
| Conductivity | | 487 umhos | | | | | | |
| Dissolved Oxygen | | 0.96 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.28 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.7 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 26 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-18** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-02** | | | | | | |
| Date/Time Collected | | **03/31/11 08:55** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 22.2 °C | | | | | | |
| Conductivity | | 494 umhos | | | | | | |
| Dissolved Oxygen | | 1.40 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.7 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 29 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

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**Tampa, FLORIDA 33619**

**April 8, 2011**
**Work Order: 1102625**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-03** | | | | | | |
| Date/Time Collected | | **03/31/11 09:15** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.4 | | | | | | |
| Temperature | | 22.7 °C | | | | | | |
| Conductivity | | 385 umhos | | | | | | |
| Dissolved Oxygen | | 0.50 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.099 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 4.0 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 13 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-04** | | | | | | |
| Date/Time Collected | | **03/31/11 09:30** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.4 | | | | | | |
| Temperature | | 22.7 °C | | | | | | |
| Conductivity | | 324 umhos | | | | | | |
| Dissolved Oxygen | | 0.82 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 3.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.98 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 3.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 12 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

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**Tampa, FLORIDA 33619**

**April 8, 2011**
**Work Order: 1102625**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-05** | | | | | | |
| Date/Time Collected | | **03/31/11 09:50** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.4 | | | | | | |
| Temperature | | 22.9 °C | | | | | | |
| Conductivity | | 311 umhos | | | | | | |
| Dissolved Oxygen | | 0.43 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.12 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 12 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ14-G13-7** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-06** | | | | | | |
| Date/Time Collected | | **03/30/11 15:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.8 | | | | | | |
| Temperature | | 24.5 °C | | | | | | |
| Conductivity | | 246.1 umhos | | | | | | |
| Dissolved Oxygen | | 1.04 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 15 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.19 I | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 15 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 7.4 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 8, 2011**
**Work Order: 1102625**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-H06-7** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-07** | | | | | | |
| Date/Time Collected | | **04/01/11 07:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.0 | | | | | | |
| Temperature | | 19.8 °C | | | | | | |
| Conductivity | | 152.4 umhos | | | | | | |
| Dissolved Oxygen | | 4.04 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.65 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 18 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 18 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 0.15 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-H08-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-08** | | | | | | |
| Date/Time Collected | | **03/31/11 11:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.2 | | | | | | |
| Temperature | | 22.7 °C | | | | | | |
| Conductivity | | 189 umhos | | | | | | |
| Dissolved Oxygen | | 2.97 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.88 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 24 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.2 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 24 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 0.75 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

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**April 8, 2011**
**Work Order: 1102625**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-H10-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-09** | | | | | | |
| Date/Time Collected | | **03/31/11 10:10** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.2 | | | | | | |
| Temperature | | 22.2 °C | | | | | | |
| Conductivity | | 204.5 umhos | | | | | | |
| Dissolved Oxygen | | 5.83 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.089 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 25 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.21 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 25 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 1.9 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-H12-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-10** | | | | | | |
| Date/Time Collected | | **03/31/11 09:02** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.6 | | | | | | |
| Temperature | | 21.9 °C | | | | | | |
| Conductivity | | 188.5 umhos | | | | | | |
| Dissolved Oxygen | | 0.94 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.047 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.81 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 2.0 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 8, 2011**
**Work Order: 1102625**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I06-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-11** | | | | | | |
| Date/Time Collected | | **04/01/11 07:58** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 20.9 °C | | | | | | |
| Conductivity | | 212.3 umhos | | | | | | |
| Dissolved Oxygen | | 1.44 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.57 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 1.5 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I06-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-12** | | | | | | |
| Date/Time Collected | | **04/01/11 08:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.0 | | | | | | |
| Temperature | | 21.4 °C | | | | | | |
| Conductivity | | 358 umhos | | | | | | |
| Dissolved Oxygen | | 1.03 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 3.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 3.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 18 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

**Hazen and Sawyer**
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**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I06-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-13** | | | | | | |
| Date/Time Collected | | **04/01/11 08:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.9 | | | | | | |
| Temperature | | 21.6 °C | | | | | | |
| Conductivity | | 305 umhos | | | | | | |
| Dissolved Oxygen | | 1.13 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.2 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 14 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I07-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-14** | | | | | | |
| Date/Time Collected | | **04/01/11 07:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.8 | | | | | | |
| Temperature | | 19.4 °C | | | | | | |
| Conductivity | | 170.7 umhos | | | | | | |
| Dissolved Oxygen | | 2.23 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.041 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 17 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.42 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 17 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 0.86 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 8, 2011**
**Work Order: 1102625**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I09-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-15** | | | | | | |
| Date/Time Collected | | **03/31/11 10:35** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 21.5 °C | | | | | | |
| Conductivity | | 180.6 umhos | | | | | | |
| Dissolved Oxygen | | 0.77 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.72 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 1.5 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I11-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-16** | | | | | | |
| Date/Time Collected | | **04/01/11 09:20** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.7 | | | | | | |
| Temperature | | 21.4 °C | | | | | | |
| Conductivity | | 166.8 umhos | | | | | | |
| Dissolved Oxygen | | 0.90 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.26 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 17 | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.64 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 17 | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 0.39 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

**Hazen and Sawyer**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ17-I15-26** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1102625-17** | | | | | | | |
| Date/Time Collected | | **03/31/11 10:35** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | | |
| **Client Provided Field Data** | | | | | | | | | |
| pH | | 4.8 | | | | | | | |
| Temperature | | 23.1 °C | | | | | | | |
| Conductivity | | 307.1 umhos | | | | | | | |
| Dissolved Oxygen | | 2.46 mg/L | | | | | | | |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 0.006 | I | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 3.0 | I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.18 | I | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 3.0 | I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 17 | | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

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|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J08-6** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1102625-18** | | | | | | | |
| Date/Time Collected | | **04/01/11 08:25** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | | |
| **Client Provided Field Data** | | | | | | | | | |
| pH | | 6.0 | | | | | | | |
| Temperature | | 19.7 °C | | | | | | | |
| Conductivity | | 140.3 umhos | | | | | | | |
| Dissolved Oxygen | | 2.70 mg/L | | | | | | | |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 3.0 | | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 15 | | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 3.7 | | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 15 | | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 0.05 | | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J09-12** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-19** | | | | | | |
| Date/Time Collected | | **04/01/11 08:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.8 | | | | | | |
| Temperature | | 21.1 °C | | | | | | |
| Conductivity | | 167 umhos | | | | | | |
| Dissolved Oxygen | | 0.81 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.45 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 1.1 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Sample Description | | **DP-J09-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-20** | | | | | | |
| Date/Time Collected | | **04/01/11 09:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.8 | | | | | | |
| Temperature | | 21.4 °C | | | | | | |
| Conductivity | | 226 umhos | | | | | | |
| Dissolved Oxygen | | 0.73 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.79 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 7.4 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 8, 2011**
**Work Order: 1102625**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J09-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-21** | | | | | | |
| Date/Time Collected | | **04/01/11 09:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.4 | | | | | | |
| Temperature | | 22.1 °C | | | | | | |
| Conductivity | | 365 umhos | | | | | | |
| Dissolved Oxygen | | 0.66 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 17 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.91 I | SM 5310B | 1.0 | 0.50 | | 04/06/11 14:55 | MEJ |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J09-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-22** | | | | | | |
| Date/Time Collected | | **04/01/11 09:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.0 | | | | | | |
| Temperature | | 22.5 °C | | | | | | |
| Conductivity | | 297 umhos | | | | | | |
| Dissolved Oxygen | | 0.73 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.7 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 16 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J09-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-22** | | | | | | |
| Date/Time Collected | | **04/01/11 09:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.0 | | | | | | |
| Temperature | | 22.5 °C | | | | | | |
| Conductivity | | 297 umhos | | | | | | |
| Dissolved Oxygen | | 0.73 mg/L | | | | | | |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Sample Description | | **DP-J10-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-23** | | | | | | |
| Date/Time Collected | | **04/01/11 11:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.9 | | | | | | |
| Temperature | | 24.0 °C | | | | | | |
| Conductivity | | 186.6 umhos | | | | | | |
| Dissolved Oxygen | | 3.48 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 2.4 | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 14 | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.4 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 14 | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (as N) | mg/L | 1.0 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Sample Description | | **DP-J11-12** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-24** | | | | | | |
| Date/Time Collected | | **04/01/11 11:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.4 | | | | | | |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J11-12** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102625-24** | | | | | | |
| Date/Time Collected | | **04/01/11 11:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.4 | | | | | | |
| Temperature | | 23.7 °C | | | | | | |
| Conductivity | | 196.7 umhos | | | | | | |
| Dissolved Oxygen | | 1.02 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Chemical Oxygen Demand | mg/L | 14 I | EPA 410.4 | 25 | 10 | | 04/05/11 13:00 | MMF |
| Chloride | mg/L | 6.3 | EPA 300.0 | 0.20 | 0.050 | | 04/01/11 16:00 | MEJ |
| Fluoride | mg/L | 0.16 | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 16:00 | MEJ |
| Nitrate (as N) | mg/L | 2.1 | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 16:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 16:00 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 16:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.010 U | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 65 | EPA 300.0 | 0.60 | 0.20 | | 04/01/11 16:00 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.55 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 2.1 | EPA 300.0 | 0.08 | 0.02 | | 04/01/11 16:00 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.1 | SM 5310B | 1.0 | 0.50 | | 04/06/11 14:55 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 04/05/11 11:45 | 04/05/11 17:31 | LCB |
| Calcium | mg/L | 16 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:31 | LCB |
| Iron | mg/L | 0.039 I | EPA 200.7 | 0.10 | 0.020 | 04/05/11 11:45 | 04/05/11 17:31 | LCB |
| Magnesium | mg/L | 4.2 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:31 | LCB |
| Manganese | mg/L | 0.15 | EPA 200.7 | 0.010 | 0.0010 | 04/05/11 11:45 | 04/05/11 17:31 | LCB |
| Potassium | mg/L | 3.8 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:31 | LCB |
| Sodium | mg/L | 2.9 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:31 | LCB |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **Blank (BC13102-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK3)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK4)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BC13102-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **LCS (BC13102-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS3)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS4)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BC13102-MS1)** | | **Source: 1102633-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | ND | 101 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS2)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.9 | 97 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS3)** | | **Source: 1102597-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS4)** | | **Source: 1102612-21** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 107 | 80-120 | | 26 |
| **Matrix Spike Dup (BC13102-MSD1)** | | **Source: 1102633-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | ND | 101 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD2)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.9 | 97 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD3)** | | **Source: 1102597-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | 0 | 26 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **Matrix Spike Dup (BC13102-MSD4)** | | **Source: 1102612-21** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | 9 | 26 |
| **Batch BD10113 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BD10113-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BD10113-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Orthophosphate as P | 0.860 | 0.040 | 0.010 | mg/L | 0.90 | | 96 | 85-115 | | |
| Nitrate (as N) | 1.63 | 0.04 | 0.01 | mg/L | 1.7 | | 96 | 85-115 | | |
| Sulfate | 8.42 | 0.60 | 0.20 | mg/L | 9.0 | | 94 | 85-115 | | |
| Nitrite (as N) | 1.27 | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | | |
| Chloride | 2.98 | 0.20 | 0.050 | mg/L | 3.0 | | 99 | 85-115 | | |
| Fluoride | 0.888 | 0.040 | 0.010 | mg/L | 0.90 | | 99 | 85-115 | | |
| **LCS Dup (BD10113-BSD1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chloride | 2.95 | 0.20 | 0.050 | mg/L | 3.0 | | 98 | 85-115 | 1 | 200 |
| Nitrate (as N) | 1.65 | 0.04 | 0.01 | mg/L | 1.7 | | 97 | 85-115 | 1 | 200 |
| Sulfate | 8.43 | 0.60 | 0.20 | mg/L | 9.0 | | 94 | 85-115 | 0.1 | 200 |
| Nitrite (as N) | 1.28 | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | 0.8 | 200 |
| Fluoride | 0.894 | 0.040 | 0.010 | mg/L | 0.90 | | 99 | 85-115 | 0.7 | 200 |
| Orthophosphate as P | 0.864 | 0.040 | 0.010 | mg/L | 0.90 | | 96 | 85-115 | 0.5 | 200 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10113 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BD10113-MS1)** | | **Source: 1102764-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrite (as N) | 126 | 0.04 | 0.01 | mg/L | 140 | ND | 90 | 85-115 | | |
| Orthophosphate as P | 90.5 | 0.040 | 0.010 | mg/L | 90 | | 101 | 85-115 | | |
| Chloride | 875 | 0.20 | 0.050 | mg/L | 300 | 584 | 97 | 80-120 | | |
| Sulfate | 946 | 0.60 | 0.20 | mg/L | 900 | 131 | 91 | 85-115 | | |
| Fluoride | 86.6 | 0.040 | 0.010 | mg/L | 90 | | 96 | 85-115 | | |
| Nitrate (as N) | 170 | 0.04 | 0.01 | mg/L | 170 | 12.4 | 93 | 85-115 | | |
| **Matrix Spike (BD10113-MS2)** | | **Source: 1102635-16** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Orthophosphate as P | 0.909 | 0.040 | 0.010 | mg/L | 0.90 | ND | 101 | 85-115 | | |
| Fluoride | 0.922 | 0.040 | 0.010 | mg/L | 0.90 | 0.0579 | 96 | 85-115 | | |
| Nitrite (as N) | 1.27 | 0.04 | 0.01 | mg/L | 1.4 | ND | 91 | 85-115 | | |
| Sulfate | 18.2 | 0.60 | 0.20 | mg/L | 9.0 | 9.20 | 100 | 85-115 | | |
| Nitrate (as N) | 1.62 | 0.04 | 0.01 | mg/L | 1.7 | 0.0324 | 93 | 85-115 | | |
| Chloride | 4.65 | 0.20 | 0.050 | mg/L | 3.0 | 1.64 | 100 | 80-120 | | |
| **Batch BD10114 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BD10114-BLK1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BD10114-BLK2)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BD10114-BS1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.69 | 0.20 | 0.05 | mg/L | 2.5 | | 106 | 90-110 | | |
| **LCS (BD10114-BS2)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.49 | 0.20 | 0.05 | mg/L | 2.5 | | 98 | 90-110 | | |

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**April 8, 2011**
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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10114 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Matrix Spike (BD10114-MS1)** | | **Source: 1102777-07** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.48 | 0.20 | 0.05 | mg/L | 2.5 | 0.772 | 107 | 80-120 | | |
| **Matrix Spike (BD10114-MS2)** | | **Source: 1102765-02** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.84 | 0.20 | 0.05 | mg/L | 2.5 | 0.364 | 98 | 80-120 | | |
| **Matrix Spike Dup (BD10114-MSD1)** | | **Source: 1102777-07** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.45 | 0.20 | 0.05 | mg/L | 2.5 | 0.772 | 106 | 80-120 | 1 | 20 |
| **Matrix Spike Dup (BD10114-MSD2)** | | **Source: 1102765-02** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.82 | 0.20 | 0.05 | mg/L | 2.5 | 0.364 | 97 | 80-120 | 0.7 | 20 |
| **Batch BD10118 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BD10118-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BD10118-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.850 | 0.04 | 0.01 | mg/L | 0.80 | | 106 | 90-110 | | |
| **Matrix Spike (BD10118-MS1)** | | **Source: 1102777-07** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 1.03 | 0.04 | 0.01 | mg/L | 1.0 | 0.126 | 91 | 77-119 | | |
| **Matrix Spike Dup (BD10118-MSD1)** | | **Source: 1102777-07** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (as N) | 1.03 | 0.04 | 0.01 | mg/L | 1.0 | 0.126 | 91 | 77-119 | 0.02 | 20 |
| **Batch BD10203 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10203-BLK1)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10203 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10203-BLK2)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BD10203-BS1)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.49 | 0.010 | 0.005 | mg/L | 0.50 | | 98 | 90-110 | | |
| **LCS (BD10203-BS2)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.48 | 0.010 | 0.005 | mg/L | 0.50 | | 96 | 90-110 | | |
| **Matrix Spike (BD10203-MS1)** | | **Source: 1102633-18** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.051 | 94 | 90-110 | | |
| **Matrix Spike (BD10203-MS2)** | | **Source: 1102625-10** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.047 | 94 | 90-110 | | |
| **Matrix Spike Dup (BD10203-MSD1)** | | **Source: 1102633-18** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | 0.051 | 98 | 90-110 | 4 | 10 |
| **Matrix Spike Dup (BD10203-MSD2)** | | **Source: 1102625-10** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | 0.047 | 99 | 90-110 | 5 | 10 |
| **Batch BD10204 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BD10204-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **Blank (BD10204-BLK2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10204 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **LCS (BD10204-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.766 | 0.04 | 0.01 | mg/L | 0.80 | | 96 | 90-110 | | |
| **LCS (BD10204-BS2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.742 | 0.04 | 0.01 | mg/L | 0.80 | | 93 | 90-110 | | |
| **Matrix Spike (BD10204-MS1)** | | **Source: 1102740-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.986 | 0.04 | 0.01 | mg/L | 1.0 | 0.0331 | 95 | 77-119 | | |
| **Matrix Spike (BD10204-MS2)** | | **Source: 1102740-03** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (as N) | 10.0 J5 | 0.04 | 0.01 | mg/L | 1.0 | ND | 1000 | 77-119 | | |
| **Matrix Spike Dup (BD10204-MSD1)** | | **Source: 1102740-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (as N) | 0.982 | 0.04 | 0.01 | mg/L | 1.0 | 0.0331 | 95 | 77-119 | 0.4 | 20 |
| **Matrix Spike Dup (BD10204-MSD2)** | | **Source: 1102740-03** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (as N) | 12.7 J5 | 0.04 | 0.01 | mg/L | 1.0 | ND | NR | 77-119 | 24 | 20 |
| **Batch BD10415 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BD10415-BLK1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BD10415-BLK2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BD10415-BS1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.69 | 0.20 | 0.05 | mg/L | 2.5 | | 106 | 90-110 | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10415 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **LCS (BD10415-BS2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.70 | 0.20 | 0.05 | mg/L | 2.5 | | 107 | 90-110 | | |
| **Matrix Spike (BD10415-MS1)** | | **Source: 1102831-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.34 | 0.20 | 0.05 | mg/L | 2.5 | 0.695 | 104 | 80-120 | | |
| **Matrix Spike (BD10415-MS2)** | | **Source: 1102786-02** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.68 | 0.20 | 0.05 | mg/L | 2.5 | 0.966 | 107 | 80-120 | | |
| **Matrix Spike Dup (BD10415-MSD1)** | | **Source: 1102831-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.44 | 0.20 | 0.05 | mg/L | 2.5 | 0.695 | 108 | 80-120 | 3 | 20 |
| **Matrix Spike Dup (BD10415-MSD2)** | | **Source: 1102786-02** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.65 | 0.20 | 0.05 | mg/L | 2.5 | 0.966 | 106 | 80-120 | 0.9 | 20 |
| **Batch BD10437 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BD10437-BLK1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BD10437-BLK2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BD10437-BS1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.506 | 0.040 | 0.010 | mg/L | 0.50 | | 101 | 90-110 | | |
| **LCS (BD10437-BS2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.542 | 0.040 | 0.010 | mg/L | 0.50 | | 108 | 90-110 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10437 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Matrix Spike (BD10437-MS1)** | | **Source: 1102612-12** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.966 | 0.040 | 0.010 | mg/L | 0.50 | 0.426 | 108 | 75-125 | | |
| **Matrix Spike (BD10437-MS2)** | | **Source: 1102777-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.565 | 0.040 | 0.010 | mg/L | 0.50 | 0.0811 | 97 | 75-125 | | |
| **Matrix Spike Dup (BD10437-MSD1)** | | **Source: 1102612-12** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.954 | 0.040 | 0.010 | mg/L | 0.50 | 0.426 | 106 | 75-125 | 1 | 25 |
| **Matrix Spike Dup (BD10437-MSD2)** | | **Source: 1102777-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.565 | 0.040 | 0.010 | mg/L | 0.50 | 0.0811 | 97 | 75-125 | 0.1 | 25 |
| **Batch BD10518 - alkalinity** | | | | | | | | | | |
| **Blank (BD10518-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BD10518-BLK2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10518 - alkalinity** | | | | | | | | | | |
| **LCS (BD10518-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BD10518-BS2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BD10518-MS1)** | | **Source: 1102588-01** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 6.9 | 92 | 80-120 | | 26 |
| **Matrix Spike (BD10518-MS2)** | | **Source: 1102612-10** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 150 | 8.0 | 2.0 | mg/L | 120 | 12 | 109 | 80-120 | | 26 |
| **Matrix Spike Dup (BD10518-MSD1)** | | **Source: 1102588-01** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 6.9 | 93 | 80-120 | 0.8 | 26 |
| **Matrix Spike Dup (BD10518-MSD2)** | | **Source: 1102612-10** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 12 | 100 | 80-120 | 8 | 26 |
| **Batch BD10605 - COD prep** | | | | | | | | | | |
| **Blank (BD10605-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BD10605-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | | 110 | 90-110 | | |
| **Matrix Spike (BD10605-MS1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Chemical Oxygen Demand | 61 | 25 | 10 | mg/L | 50 | 14 | 94 | 85-115 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10605 - COD prep** | | | | | | | | | | |
| **Matrix Spike Dup (BD10605-MSD1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Chemical Oxygen Demand | 65 | 25 | 10 | mg/L | 50 | 14 | 102 | 85-115 | 6 | 32 |
| **Batch BD10626 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10626-BLK1)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BD10626-BLK2)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BD10626-BS1)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | | 106 | 90-110 | | |
| **LCS (BD10626-BS2)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | | 106 | 90-110 | | |
| **Matrix Spike (BD10626-MS1)** | | **Source: 1102777-07** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.56 | 0.010 | 0.005 | mg/L | 0.50 | 0.042 | 104 | 90-110 | | |
| **Matrix Spike (BD10626-MS2)** | | **Source: 1102831-07** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | 0.032 | 102 | 90-110 | | |
| **Matrix Spike Dup (BD10626-MSD1)** | | **Source: 1102777-07** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.042 | 96 | 90-110 | 7 | 10 |
| **Matrix Spike Dup (BD10626-MSD2)** | | **Source: 1102831-07** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.55 | 0.010 | 0.005 | mg/L | 0.50 | 0.032 | 103 | 90-110 | 0.7 | 10 |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10725 - alkalinity** | | | | | | | | | | |
| **Blank (BD10725-BLK1)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BD10725-BLK2)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BD10725-BS1)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BD10725-BS2)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BD10725-MS1)** | | **Source: 1102625-15** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 98 | 80-120 | | 26 |
| **Matrix Spike (BD10725-MS2)** | | **Source: 1102630-11** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 8.9 | 94 | 80-120 | | 26 |
| **Matrix Spike Dup (BD10725-MSD1)** | | **Source: 1102625-15** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 98 | 80-120 | 0 | 26 |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10725 - alkalinity** | | | | | | | | | | |
| **Matrix Spike Dup (BD10725-MSD2)** | | **Source: 1102630-11** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 8.9 | 94 | 80-120 | 0 | 26 |

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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10638 - DOC prep** | | | | | | | | | | |
| **Blank (BD10638-BLK1)** | | | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BD10638-BS1)** | | | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 10.4 | 1.0 | 0.50 | mg/L | 10 | | 104 | 90-110 | | |
| **Matrix Spike (BD10638-MS1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 11.2 | 1.0 | 0.50 | mg/L | 10 | 1.06 | 102 | 85-125 | | |
| **Matrix Spike Dup (BD10638-MSD1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 11.3 | 1.0 | 0.50 | mg/L | 10 | 1.06 | 103 | 85-125 | 0.8 | 25 |

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**April 8, 2011**
**Work Order: 1102625**
**Revised Report**

**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10407 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BD10407-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Calcium | 0.016 I | 0.050 | 0.010 | mg/L | | | | | | |
| Iron | 0.020 U | 0.10 | 0.020 | mg/L | | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| Sodium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Magnesium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Potassium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| **LCS (BD10407-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | | 106 | 85-115 | | |
| Sodium | 21 | 0.050 | 0.010 | mg/L | 20 | | 105 | 85-115 | | |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | | 104 | 85-115 | | |
| Manganese | 0.43 | 0.010 | 0.0010 | mg/L | 0.40 | | 107 | 85-115 | | |
| Magnesium | 21 | 0.050 | 0.010 | mg/L | 20 | | 107 | 85-115 | | |
| Calcium | 21 | 0.050 | 0.010 | mg/L | 20 | | 105 | 85-115 | | |
| Boron | 0.41 | 0.10 | 0.050 | mg/L | 0.40 | | 102 | 85-115 | | |
| **Matrix Spike (BD10407-MS1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Boron | 0.42 | 0.10 | 0.050 | mg/L | 0.40 | ND | 104 | 70-130 | | |
| Calcium | 35 | 0.050 | 0.010 | mg/L | 20 | 16 | 93 | 70-130 | | |
| Potassium | 23 | 0.050 | 0.010 | mg/L | 20 | 3.8 | 97 | 70-130 | | |
| Magnesium | 25 | 0.050 | 0.010 | mg/L | 20 | 4.2 | 102 | 70-130 | | |
| Manganese | 0.55 | 0.010 | 0.0010 | mg/L | 0.40 | 0.15 | 99 | 70-130 | | |
| Sodium | 23 | 0.050 | 0.010 | mg/L | 20 | 2.9 | 99 | 70-130 | | |
| Iron | 8.3 | 0.10 | 0.020 | mg/L | 8.0 | 0.039 | 103 | 70-130 | | |
| **Matrix Spike (BD10407-MS2)** | | **Source: 1102803-04** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Magnesium | 23 | 0.050 | 0.010 | mg/L | 20 | 3.4 | 99 | 70-130 | | |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | 1.2 | 98 | 70-130 | | |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | 0.51 | 99 | 70-130 | | |
| Boron | 0.42 | 0.10 | 0.050 | mg/L | 0.40 | ND | 105 | 70-130 | | |
| Sodium | 34 | 0.050 | 0.010 | mg/L | 20 | 16 | 91 | 70-130 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0027 | 102 | 70-130 | | |
| Calcium | 66 +O | 0.050 | 0.010 | mg/L | 20 | 54 | 65 | 70-130 | | |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 8, 2011**
**Work Order: 1102625**
**Revised Report**

**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10407 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Matrix Spike Dup (BD10407-MSD1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Manganese | 0.57 | 0.010 | 0.0010 | mg/L | 0.40 | 0.15 | 104 | 70-130 | 3 | 30 |
| Potassium | 24 | 0.050 | 0.010 | mg/L | 20 | 3.8 | 103 | 70-130 | 5 | 30 |
| Calcium | 38 | 0.050 | 0.010 | mg/L | 20 | 16 | 106 | 70-130 | 7 | 30 |
| Sodium | 24 | 0.050 | 0.010 | mg/L | 20 | 2.9 | 105 | 70-130 | 5 | 30 |
| Boron | 0.44 | 0.10 | 0.050 | mg/L | 0.40 | ND | 109 | 70-130 | 5 | 30 |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | 0.039 | 106 | 70-130 | 3 | 30 |
| Magnesium | 26 | 0.050 | 0.010 | mg/L | 20 | 4.2 | 107 | 70-130 | 3 | 30 |
| **Matrix Spike Dup (BD10407-MSD2)** | | **Source: 1102803-04** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Sodium | 35 | 0.050 | 0.010 | mg/L | 20 | 16 | 98 | 70-130 | 4 | 30 |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0027 | 103 | 70-130 | 1 | 30 |
| Magnesium | 24 | 0.050 | 0.010 | mg/L | 20 | 3.4 | 103 | 70-130 | 3 | 30 |
| Calcium | 70 +O | 0.050 | 0.010 | mg/L | 20 | 54 | 81 | 70-130 | 5 | 30 |
| Boron | 0.43 | 0.10 | 0.050 | mg/L | 0.40 | ND | 109 | 70-130 | 3 | 30 |
| Iron | 8.7 | 0.10 | 0.020 | mg/L | 8.0 | 0.51 | 103 | 70-130 | 3 | 30 |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | 1.2 | 100 | 70-130 | 3 | 30 |

**Hazen and Sawyer**
**10002 Princess Palm Avenue Suite 200**
**Tampa, FLORIDA 33619**

**April 8, 2011**
**Work Order: 1102625**
**Revised Report**

## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

| | |
|---|---|
| J5 | Matrix spike of this sample was outside typical range. All other QC criteria were acceptable. |
| +O | Matrix spike source sample was over the reccommended range for the method. |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1102625

| | |
|---|---|
| Client Name: Hazan and Sawyer | Contact / Phone: Josephin Edeback-Hirst 813-630-4498 |
| Project Name / Location: GCREC Mound Groundwater Analyses | jedeback@hazanandsawyer.com |
| Samplers: (Signature) | |

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| | SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 250ml P, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 250ml aG, Cool DOC | Field pH | Field DO | Field Cond | Field Temp | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JMH | 01 | DP-G12-15 | 3/31/11 | 0845 | GW | | X | 1 | 1 | | | 5.5 | 0.96 | 487 | 21.8 | |
| JMH | 02 | DP-G12-18 | 3/31/11 | 855 | GW | | X | 1 | 1 | | | 5.2 | 1.40 | 494 | 22.2 | |
| JMH | 03 | DP-G12-21 | 3/31/11 | 915 | GW | | X | 1 | 1 | | | 5.4 | 0.50 | 385 | 22.7 | |
| JMH | 04 | DP-G12-24 | 3/31/11 | 9:30 | GW | | X | 1 | 1 | | | 5.4 | 0.82 | 324 | 22.7 | |
| JMH | 05 | DP-G12-27 | 3/31/11 | 950 | GW | | X | 1 | 1 | | | 5.4 | 0.43 | 311 | 22.9 | |
| | 06 | PZ14-G13-7 | 03/30/11 | 1505 | GW | | X | 1 | 1 | | | 5.8 | 4.04 | 246.1 | 24.5 | |
| | 07 | DP-H06-7 | 4/1/11 | 0755 | GW | | X | 1 | 1 | | | Cool ~~5.8~~ SA | 4.04 SA ~~4.04~~ | 152.4 SA ~~246.1~~ | 19.8 SA ~~24.5~~ | |
| JMH | 08 | DP-H06-10 (08) | 3/31/11 | 1100 | GW | | X | 1 | 1 | | | 6.2 | 2.97 | 189 | 22.7 | |
| JMH | 09 | DP-H06-11 (10) | 3/31/11 | 1010 | GW | | X | 1 | 1 | | | 6.2 | 5.83 | 2045 | 22.2 | |
| JMH | 10 | DP-H12-5 | 3/31/11 | ~~1035~~ 902 | GW | | X | 1 | 1 | | | 5.6 | 0.94 | 188.5 | 21.9 | |
| | 11 | DP-I06-14 | 4/1/11 | 0758 | GW | | X | 1 | 1 | | | 5.3 | 1.44 | 212.3 | 20.9 | |
| | 12 | DP-I06-20 | 4/1/11 | 0815 | GW | | X | 1 | 1 | | | 5.0 | 1.03 | 358 | 21.4 | |

| Containers Prepared/ Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|
| | 1430 03-26-11 | | 0500 032911 |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| | 1830 033011 | | |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| | 1430 3/31/11 | | |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N (N/A)
Samples intact upon arrival? (Y) N N/A
Received on ice? Temp_____ (Y) N N/A
Proper preservatives indicated? (Y) N N/A
Rec'd within holding time? (Y) N N/A
Volatiles rec'd w/out headspace Y N (N/A)
Proper containers used? (Y) N N/A

**Instructions / Remarks**

1102625

6

1-5, 8-10, 15, 17

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1102625

| | |
|---|---|
| Client Name: Hazan and Sawyer | Contact / Phone: Josephin Edeback-Hirst 813-630-4498 |
| Project Name / Location: GCREC Mound Groundwater Analyses | jedeback@hazanandsawyer.com |
| Samplers: (Signature) | |

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| | SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 250ml P, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 250ml aG, Cool DOC | Field pH | Field DO | Field Cond | Field Temp | 250 ml P, $HNO_3$ B, Ca, Na, K, Fe, Mn, Mg No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 13 | DP-I06-26 | 4/1/11 | 0830 | GW | | X | 1 | 1 | | | 4.9 | 1.13 | 305 | 21.6 | |
| | 14 | DP-I07-8 | ↓ | 0725 | GW | | X | 1 | 1 | | | 5.8 | 2.23 | 170.7 | 19.4 | |
| JMH | 15 | DP-I09-11 | 3/31/11 | 1035 | GW | | X | 1 | 1 | | | 5.1 | 0.77 | 180.6 | 21.5 | |
| | 16 | DP-I11-10 | 4/1/11 | 0920 | GW | | X | 1 | 1 | | | 5.7 | 0.90 | 166.8 | 21.4 | |
| | 17 | PZ17-I15-26 | 3/31/11 | 1035 | GW | | X | 1 | 1 | | | 4.8 | 2.46 | 307.1 | 23.1 | |
| | 18 | DP-J08-6 | 4/1/11 | 0825 | GW | | X | 1 | 1 | | | 6.0 | 2.70 | 140.3 | 19.7 | |
| | 19 | DP-J09-12 | | 0850 | GW | | X | 1 | 1 | | | 4.8 | 0.81 | 167.0 | 21.1 | |
| | 20 | DP-J09-14 | | 0910 | GW | | X | 1 | 1 | | | 4.8 | 0.73 | 226 | 21.4 | |
| | 21 | DP-J09-20 | | 0930 | GW | | X | 1 | 1 | | | 4.4 | 0.66 | 365 | 22.1 | |
| | 22 | DP-J09-26 | | 0950 | GW | | X | 1 | 1 | | | 5.0 | 0.73 | 297 | 22.5 | |
| | 23 | DP-J10-6 | | 1105 | GW | | X | 1 | 1 | | | 5.9 | 3.48 | 186.6 | 24.0 | |
| | 24 | DP-J11-12 | ↓ | 1140 | GW | | X | 1 ** | 1 * | | 1 | 4.4 | 1.02 | 196.7 | 23.7 | 1 |

| | | | |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 1430 03-26-11 | Received: | Date/Time: 0500 03-29-11 |
| Relinquished: | Date/Time: 1430 3/31/11 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

| | |
|---|---|
| Seal intact? | Y N N/A |
| Samples intact upon arrival? | Y N N/A |
| Received on ice? Temp_____ | Y N N/A |
| Proper preservatives indicated? | Y N N/A |
| Rec'd within holding time? | Y N N/A |
| Volatiles rec'd w/out headspace? | Y N N/A |
| Proper containers used? | Y N N/A |

**Instructions / Remarks**

* COD, TP

** Cl, F, $SO_4$, OP, $NO_x$ 300

1102625

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033011 | SAL Project # | 1102625 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ14-G13-7 | Sample ID | 06 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK To UNK | Static Depth to Water (Feet) | 5.2 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.25 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.24 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.72 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 9.0 | FINAL TUBING LEGNTH IN WELL (FEET) | 9.0 | PURGE TIME START | 1455 | PURGE TIME END | 1504 | TOTAL PURGED | 0.90 |
| INST. ID | | | | SAL-SAM-63-03 | SAL-SAM-~~65~~-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1458 | 0.30 | 0.30 | 0.10 | | 5.8 | 24.5 | 239.6 | 4.10 | 263 | Brown | None |
| 1501 | 0.30 | 0.60 | 0.10 | | 5.8 | 24.5 | 240.0 | 4.06 | 115 | | |
| 1504 | 0.30 | 0.90 | 0.10 | | 5.8 | 24.5 | 246.1 | 4.04 | 72.7 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | 9.0 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.10 |
| SAMPLING INITIATED | 1505 | SAMPLING ENDED | 1505 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | very windy | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033111 | SAL Project # | 1102625 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ17-I15-26 | Sample ID | 17 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK To UNK | Static Depth to Water (Feet) | 7.55 | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | 30.45 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.45 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 1.35 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 25.0 | FINAL TUBING LEGNTH IN WELL (FEET) | 25.0 | PURGE TIME START | 1025 | PURGE TIME END | 1034 | TOTAL PURGED | 1.80 |
| INST. ID | | | | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1028 | 0.60 | 0.60 | 0.20 | 11.67 | 4.8 | ~~299.5~~ 23.1 | 299.5 | 3.47 | 258 | cloudy | none |
| 1031 | 0.60 | 1.20 | 0.20 | 11.67 | 4.8 | ~~299.8~~ 23.1 | 299.8 | 3.27 | 107 | | |
| 1034 | 0.60 | 1.80 | 0.20 | 11.67 | 4.8 | ~~307.1~~ 23.1 | 307.1 | 2.46 | 69.4 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | 25.0 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.20 |
| SAMPLING INITIATED | 1035 | SAMPLING ENDED | 1035 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | Rain Past 24 hrs - Drizzle - Wind | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 12, 2011**
**Work Order: 1102630**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J12-13** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-01** | | | | | | |
| Date/Time Collected | | **04/01/11 11:50** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.9 | | | | | | |
| Temperature | | 22.9 °C | | | | | | |
| Conductivity | | 238 umhos | | | | | | |
| Dissolved Oxygen | | 1.54 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.61 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 5.6 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J12-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-02** | | | | | | |
| Date/Time Collected | | **04/01/11 12:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 23.3 °C | | | | | | |
| Conductivity | | 281 umhos | | | | | | |
| Dissolved Oxygen | | 1.13 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.46 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 8.5 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 12, 2011**
**Work Order: 1102630**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J12-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-03** | | | | | | |
| Date/Time Collected | | **04/01/11 12:50** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.6 | | | | | | |
| Temperature | | 23.4 °C | | | | | | |
| Conductivity | | 354 umhos | | | | | | |
| Dissolved Oxygen | | 1.20 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Chemical Oxygen Demand | mg/L | 18 I | EPA 410.4 | 25 | 10 | | 04/05/11 13:00 | MMF |
| Chloride | mg/L | 14 | EPA 300.0 | 0.20 | 0.050 | | 04/01/11 16:00 | MEJ |
| Fluoride | mg/L | 0.011 I | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 16:00 | MEJ |
| Nitrate (as N) | mg/L | 10 | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 16:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 16:00 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 16:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.11 | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 88 | EPA 300.0 | 0.60 | 0.20 | | 04/01/11 16:00 | MEJ |
| Total Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 10 | EPA 300.0 | 0.08 | 0.02 | | 04/01/11 16:00 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.3 | SM 5310B | 1.0 | 0.50 | | 04/06/11 14:55 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 04/05/11 11:45 | 04/05/11 17:42 | LCB |
| Calcium | mg/L | 33 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:42 | LCB |
| Iron | mg/L | 0.020 U | EPA 200.7 | 0.10 | 0.020 | 04/05/11 11:45 | 04/05/11 17:42 | LCB |
| Magnesium | mg/L | 9.6 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:42 | LCB |
| Manganese | mg/L | 0.059 | EPA 200.7 | 0.010 | 0.0010 | 04/05/11 11:45 | 04/05/11 17:42 | LCB |
| Potassium | mg/L | 21 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:42 | LCB |
| Sodium | mg/L | 4.3 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:42 | LCB |

**Hazen and Sawyer**
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**April 12, 2011**
**Work Order: 1102630**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J12-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-04** | | | | | | |
| Date/Time Collected | | **04/01/11 13:11** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 23.6 °C | | | | | | |
| Conductivity | | 303 umhos | | | | | | |
| Dissolved Oxygen | | 0.92 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.0 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 16 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-K10-7** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-05** | | | | | | |
| Date/Time Collected | | **04/01/11 11:25** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.0 | | | | | | |
| Temperature | | 24.2 °C | | | | | | |
| Conductivity | | 163.8 umhos | | | | | | |
| Dissolved Oxygen | | 3.79 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 1.6 | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.0 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.33 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

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**April 12, 2011**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-K11-13** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-06** | | | | | | |
| Date/Time Collected | | **04/01/11 10:30** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.9 | | | | | | |
| Temperature | | 22.1 °C | | | | | | |
| Conductivity | | 168.3 umhos | | | | | | |
| Dissolved Oxygen | | 1.84 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.59 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 1.3 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-K12-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-07** | | | | | | |
| Date/Time Collected | | **04/01/11 10:05** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.6 | | | | | | |
| Temperature | | 22.3 °C | | | | | | |
| Conductivity | | 59.3 umhos | | | | | | |
| Dissolved Oxygen | | 1.40 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.092 | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Chemical Oxygen Demand | mg/L | 55 | EPA 410.4 | 25 | 10 | | 04/05/11 13:00 | MMF |
| Chloride | mg/L | 1.9 | EPA 300.0 | 0.20 | 0.050 | | 04/01/11 16:00 | MEJ |
| Fluoride | mg/L | 0.083 | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 16:00 | MEJ |
| Nitrate (as N) | mg/L | 0.04 | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 16:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 16:00 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 16:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.34 | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 11 | EPA 300.0 | 0.60 | 0.20 | | 04/01/11 16:00 | MEJ |

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**April 12, 2011**
**Work Order: 1102630**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-K12-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-07** | | | | | | |
| Date/Time Collected | | **04/01/11 10:05** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.6 | | | | | | |
| Temperature | | 22.3 °C | | | | | | |
| Conductivity | | 59.3 umhos | | | | | | |
| Dissolved Oxygen | | 1.40 mg/L | | | | | | |
| Total Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.77 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.04 I | EPA 300.0 | 0.08 | 0.02 | | 04/01/11 16:00 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 7.3 | SM 5310B | 1.0 | 0.50 | | 04/06/11 14:55 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 04/05/11 11:45 | 04/05/11 17:52 | LCB |
| Calcium | mg/L | 5.5 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:52 | LCB |
| Iron | mg/L | 2.2 | EPA 200.7 | 0.10 | 0.020 | 04/05/11 11:45 | 04/05/11 17:52 | LCB |
| Magnesium | mg/L | 0.86 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:52 | LCB |
| Manganese | mg/L | 0.21 | EPA 200.7 | 0.010 | 0.0010 | 04/05/11 11:45 | 04/05/11 17:52 | LCB |
| Potassium | mg/L | 0.40 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:52 | LCB |
| Sodium | mg/L | 1.9 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:52 | LCB |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-M07-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-08** | | | | | | |
| Date/Time Collected | | **04/01/11 14:10** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 23.0 °C | | | | | | |
| Conductivity | | 267 umhos | | | | | | |
| Dissolved Oxygen | | 0.71 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |

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**Work Order: 1102630**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-M07-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-08** | | | | | | |
| Date/Time Collected | | **04/01/11 14:10** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 23.0 °C | | | | | | |
| Conductivity | | 267 umhos | | | | | | |
| Dissolved Oxygen | | 0.71 mg/L | | | | | | |
| Total Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.61 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 6.0 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Sample Description | | **DP-M07-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-09** | | | | | | |
| Date/Time Collected | | **04/01/11 14:15** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.9 | | | | | | |
| Temperature | | 24.0 °C | | | | | | |
| Conductivity | | 362 umhos | | | | | | |
| Dissolved Oxygen | | 0.88 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 12 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 12, 2011**
**Work Order: 1102630**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-M07-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-10** | | | | | | |
| Date/Time Collected | | **04/01/11 14:20** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 23.8 °C | | | | | | |
| Conductivity | | 293 umhos | | | | | | |
| Dissolved Oxygen | | 1.08 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.2 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 7.9 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-M12-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-11** | | | | | | |
| Date/Time Collected | | **04/01/11 12:10** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.7 | | | | | | |
| Temperature | | 24.0 °C | | | | | | |
| Conductivity | | 161.6 umhos | | | | | | |
| Dissolved Oxygen | | 1.83 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.083 | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.60 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.89 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

**Hazen and Sawyer**
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**April 12, 2011**
**Work Order: 1102630**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-N12-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-12** | | | | | | |
| Date/Time Collected | | **04/01/11 12:40** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.8 | | | | | | |
| Temperature | | 22.9 °C | | | | | | |
| Conductivity | | 178.6 umhos | | | | | | |
| Dissolved Oxygen | | 0.91 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.98 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 4.1 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-N12-18** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-13** | | | | | | |
| Date/Time Collected | | **04/01/11 13:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 23.2 °C | | | | | | |
| Conductivity | | 250 umhos | | | | | | |
| Dissolved Oxygen | | 1.11 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 6.1 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

**Hazen and Sawyer**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-N12-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-14** | | | | | | |
| Date/Time Collected | | **04/01/11 13:20** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 23.3 °C | | | | | | |
| Conductivity | | 279 umhos | | | | | | |
| Dissolved Oxygen | | 1.04 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.54 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 6.2 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-N12-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-15** | | | | | | |
| Date/Time Collected | | **04/01/11 13:40** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 24.1 °C | | | | | | |
| Conductivity | | 348 umhos | | | | | | |
| Dissolved Oxygen | | 0.78 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 12 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-N12-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-16** | | | | | | |
| Date/Time Collected | | **04/01/11 13:55** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 23.9 °C | | | | | | |
| Conductivity | | 342 umhos | | | | | | |
| Dissolved Oxygen | | 0.68 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.8 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 20 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-O10-12** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-17** | | | | | | |
| Date/Time Collected | | **04/01/11 13:30** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.3 | | | | | | |
| Temperature | | 22.9 °C | | | | | | |
| Conductivity | | 185.9 umhos | | | | | | |
| Dissolved Oxygen | | 1.13 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.18 I | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.04 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

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**April 12, 2011**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-O10-18** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-18** | | | | | | |
| Date/Time Collected | | **04/01/11 13:50** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 23.5 °C | | | | | | |
| Conductivity | | 294 umhos | | | | | | |
| Dissolved Oxygen | | 1.04 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.1 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 7.5 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-O10-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-19** | | | | | | |
| Date/Time Collected | | **04/01/11 14:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 24.2 °C | | | | | | |
| Conductivity | | 361 umhos | | | | | | |
| Dissolved Oxygen | | 0.95 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 4.4 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 16 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

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**April 12, 2011**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-Q15-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-20** | | | | | | |
| Date/Time Collected | | **04/04/11 09:15** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/04/11 13:15** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.8 | | | | | | |
| Temperature | | 22.7 °C | | | | | | |
| Conductivity | | 285 umhos | | | | | | |
| Dissolved Oxygen | | 0.61 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.39 | EPA 351.2 | 0.20 | 0.05 | 04/06/11 12:10 | 04/07/11 10:03 | SMB |
| Bicarbonate Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 4.9 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 12:17 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-Q15-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-21** | | | | | | |
| Date/Time Collected | | **04/04/11 09:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/04/11 09:40** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 23.5 °C | | | | | | |
| Conductivity | | 319 umhos | | | | | | |
| Dissolved Oxygen | | 0.73 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.41 | EPA 351.2 | 0.20 | 0.05 | 04/06/11 12:10 | 04/07/11 10:03 | SMB |
| Bicarbonate Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 8.5 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 12:17 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 12, 2011**
**Work Order: 1102630**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-Q15-26** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1102630-22** | | | | | | | |
| Date/Time Collected | | **04/04/11 10:10** | | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | | |
| Date/Time Received | | **04/04/11 13:15** | | | | | | | |
| **Client Provided Field Data** | | | | | | | | | |
| pH | | 5.2 | | | | | | | |
| Temperature | | 23.2 °C | | | | | | | |
| Conductivity | | 333 umhos | | | | | | | |
| Dissolved Oxygen | | 1.33 mg/L | | | | | | | |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 0.037 | | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 5.9 | I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.89 | | EPA 351.2 | 0.20 | 0.05 | 04/06/11 12:10 | 04/07/11 10:03 | SMB |
| Bicarbonate Alkalinity | mg/L | 5.9 | I | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 6.7 | | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 12:17 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ18-R12-26** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1102630-23** | | | | | | | |
| Date/Time Collected | | **03/31/11 11:03** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | | |
| **Client Provided Field Data** | | | | | | | | | |
| pH | | 5.0 | | | | | | | |
| Temperature | | 23.4 °C | | | | | | | |
| Conductivity | | 328.1 umhos | | | | | | | |
| Dissolved Oxygen | | 0.89 mg/L | | | | | | | |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 0.022 | | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 8.9 | | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 3.4 | | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 8.9 | | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Nitrate+Nitrite (N) | mg/L | 12 | | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | | 04/07/11 12:25 | JMK |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 12, 2011**
**Work Order: 1102630**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ02-P02-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102630-24** | | | | | | |
| Date/Time Collected | | **03/30/11 15:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.7 | | | | | | |
| Temperature | | 24.4 °C | | | | | | |
| Conductivity | | 73.6 umhos | | | | | | |
| Dissolved Oxygen | | 4.63 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/07/11 09:13 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.96 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.77 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **Blank (BC13102-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK3)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK4)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BC13102-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **LCS (BC13102-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS3)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS4)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BC13102-MS1)** | | **Source: 1102633-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | ND | 101 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS2)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.9 | 97 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS3)** | | **Source: 1102597-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS4)** | | **Source: 1102612-21** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 107 | 80-120 | | 26 |
| **Matrix Spike Dup (BC13102-MSD1)** | | **Source: 1102633-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | ND | 101 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD2)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.9 | 97 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD3)** | | **Source: 1102597-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | 0 | 26 |

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**Inorganics - Quality Control**

| Analyte | Result | | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | | |
| **Matrix Spike Dup (BC13102-MSD4)** | | | **Source: 1102612-21** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | 9 | 26 |
| **Batch BD10113 - Ion Chromatography 300.0 Prep** | | | | | | | | | | | |
| **Blank (BD10113-BLK1)** | | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Fluoride | 0.010 | U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 | U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 | U | 0.20 | 0.050 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 | U | 0.040 | 0.010 | mg/L | | | | | | |
| Sulfate | 0.20 | U | 0.60 | 0.20 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 | U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BD10113-BS1)** | | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Orthophosphate as P | 0.860 | | 0.040 | 0.010 | mg/L | 0.90 | | 96 | 85-115 | | |
| Sulfate | 8.42 | | 0.60 | 0.20 | mg/L | 9.0 | | 94 | 85-115 | | |
| Nitrite (as N) | 1.27 | | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | | |
| Nitrate (as N) | 1.63 | | 0.04 | 0.01 | mg/L | 1.7 | | 96 | 85-115 | | |
| Fluoride | 0.888 | | 0.040 | 0.010 | mg/L | 0.90 | | 99 | 85-115 | | |
| Chloride | 2.98 | | 0.20 | 0.050 | mg/L | 3.0 | | 99 | 85-115 | | |
| **LCS Dup (BD10113-BSD1)** | | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chloride | 2.95 | | 0.20 | 0.050 | mg/L | 3.0 | | 98 | 85-115 | 1 | 200 |
| Sulfate | 8.43 | | 0.60 | 0.20 | mg/L | 9.0 | | 94 | 85-115 | 0.1 | 200 |
| Orthophosphate as P | 0.864 | | 0.040 | 0.010 | mg/L | 0.90 | | 96 | 85-115 | 0.5 | 200 |
| Nitrite (as N) | 1.28 | | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | 0.8 | 200 |
| Nitrate (as N) | 1.65 | | 0.04 | 0.01 | mg/L | 1.7 | | 97 | 85-115 | 1 | 200 |
| Fluoride | 0.894 | | 0.040 | 0.010 | mg/L | 0.90 | | 99 | 85-115 | 0.7 | 200 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10113 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BD10113-MS1)** | | **Source: 1102764-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chloride | 875 | 0.20 | 0.050 | mg/L | 300 | 584 | 97 | 80-120 | | |
| Nitrate (as N) | 170 | 0.04 | 0.01 | mg/L | 170 | 12.4 | 93 | 85-115 | | |
| Sulfate | 946 | 0.60 | 0.20 | mg/L | 900 | 131 | 91 | 85-115 | | |
| Orthophosphate as P | 90.5 | 0.040 | 0.010 | mg/L | 90 | | 101 | 85-115 | | |
| Fluoride | 86.6 | 0.040 | 0.010 | mg/L | 90 | | 96 | 85-115 | | |
| Nitrite (as N) | 126 | 0.04 | 0.01 | mg/L | 140 | ND | 90 | 85-115 | | |
| **Matrix Spike (BD10113-MS2)** | | **Source: 1102635-16** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrite (as N) | 1.27 | 0.04 | 0.01 | mg/L | 1.4 | ND | 91 | 85-115 | | |
| Chloride | 4.65 | 0.20 | 0.050 | mg/L | 3.0 | 1.64 | 100 | 80-120 | | |
| Fluoride | 0.922 | 0.040 | 0.010 | mg/L | 0.90 | 0.0579 | 96 | 85-115 | | |
| Orthophosphate as P | 0.909 | 0.040 | 0.010 | mg/L | 0.90 | ND | 101 | 85-115 | | |
| Nitrate (as N) | 1.62 | 0.04 | 0.01 | mg/L | 1.7 | 0.0324 | 93 | 85-115 | | |
| Sulfate | 18.2 | 0.60 | 0.20 | mg/L | 9.0 | 9.20 | 100 | 85-115 | | |
| **Batch BD10114 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BD10114-BLK1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BD10114-BLK2)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BD10114-BS1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.69 | 0.20 | 0.05 | mg/L | 2.5 | | 106 | 90-110 | | |
| **LCS (BD10114-BS2)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.49 | 0.20 | 0.05 | mg/L | 2.5 | | 98 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10114 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Matrix Spike (BD10114-MS1)** | | **Source: 1102777-07** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.48 | 0.20 | 0.05 | mg/L | 2.5 | 0.772 | 107 | 80-120 | | |
| **Matrix Spike (BD10114-MS2)** | | **Source: 1102765-02** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.84 | 0.20 | 0.05 | mg/L | 2.5 | 0.364 | 98 | 80-120 | | |
| **Matrix Spike Dup (BD10114-MSD1)** | | **Source: 1102777-07** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.45 | 0.20 | 0.05 | mg/L | 2.5 | 0.772 | 106 | 80-120 | 1 | 20 |
| **Matrix Spike Dup (BD10114-MSD2)** | | **Source: 1102765-02** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.82 | 0.20 | 0.05 | mg/L | 2.5 | 0.364 | 97 | 80-120 | 0.7 | 20 |
| **Batch BD10118 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BD10118-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BD10118-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 0.850 | 0.04 | 0.01 | mg/L | 0.80 | | 106 | 90-110 | | |
| **Matrix Spike (BD10118-MS1)** | | **Source: 1102777-07** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 1.03 | 0.04 | 0.01 | mg/L | 1.0 | 0.126 | 91 | 77-119 | | |
| **Matrix Spike Dup (BD10118-MSD1)** | | **Source: 1102777-07** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 1.03 | 0.04 | 0.01 | mg/L | 1.0 | 0.126 | 91 | 77-119 | 0.02 | 20 |
| **Batch BD10204 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BD10204-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10204 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BD10204-BLK2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BD10204-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.766 | 0.04 | 0.01 | mg/L | 0.80 | | 96 | 90-110 | | |
| **LCS (BD10204-BS2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.742 | 0.04 | 0.01 | mg/L | 0.80 | | 93 | 90-110 | | |
| **Matrix Spike (BD10204-MS1)** | | **Source: 1102740-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.986 | 0.04 | 0.01 | mg/L | 1.0 | 0.0331 | 95 | 77-119 | | |
| **Matrix Spike (BD10204-MS2)** | | **Source: 1102740-03** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 10.0 J5 | 0.04 | 0.01 | mg/L | 1.0 | ND | 1000 | 77-119 | | |
| **Matrix Spike Dup (BD10204-MSD1)** | | **Source: 1102740-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.982 | 0.04 | 0.01 | mg/L | 1.0 | 0.0331 | 95 | 77-119 | 0.4 | 20 |
| **Matrix Spike Dup (BD10204-MSD2)** | | **Source: 1102740-03** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 12.7 J5 | 0.04 | 0.01 | mg/L | 1.0 | ND | NR | 77-119 | 24 | 20 |
| **Batch BD10415 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BD10415-BLK1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BD10415-BLK2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10415 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **LCS (BD10415-BS1)** | | | | | Prepared: 04/04/11 | Analyzed: 04/05/11 | | | | |
| Total Kjeldahl Nitrogen | 2.69 | 0.20 | 0.05 | mg/L | 2.5 | | 106 | 90-110 | | |
| **LCS (BD10415-BS2)** | | | | | Prepared: 04/04/11 | Analyzed: 04/05/11 | | | | |
| Total Kjeldahl Nitrogen | 2.70 | 0.20 | 0.05 | mg/L | 2.5 | | 107 | 90-110 | | |
| **Matrix Spike (BD10415-MS1)** | | **Source: 1102831-07** | | | Prepared: 04/04/11 | Analyzed: 04/05/11 | | | | |
| Total Kjeldahl Nitrogen | 3.34 | 0.20 | 0.05 | mg/L | 2.5 | 0.695 | 104 | 80-120 | | |
| **Matrix Spike (BD10415-MS2)** | | **Source: 1102786-02** | | | Prepared: 04/04/11 | Analyzed: 04/05/11 | | | | |
| Total Kjeldahl Nitrogen | 3.68 | 0.20 | 0.05 | mg/L | 2.5 | 0.966 | 107 | 80-120 | | |
| **Matrix Spike Dup (BD10415-MSD1)** | | **Source: 1102831-07** | | | Prepared: 04/04/11 | Analyzed: 04/05/11 | | | | |
| Total Kjeldahl Nitrogen | 3.44 | 0.20 | 0.05 | mg/L | 2.5 | 0.695 | 108 | 80-120 | 3 | 20 |
| **Matrix Spike Dup (BD10415-MSD2)** | | **Source: 1102786-02** | | | Prepared: 04/04/11 | Analyzed: 04/05/11 | | | | |
| Total Kjeldahl Nitrogen | 3.65 | 0.20 | 0.05 | mg/L | 2.5 | 0.966 | 106 | 80-120 | 0.9 | 20 |
| **Batch BD10437 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BD10437-BLK1)** | | | | | Prepared: 04/04/11 | Analyzed: 04/05/11 | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BD10437-BLK2)** | | | | | Prepared: 04/04/11 | Analyzed: 04/05/11 | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BD10437-BS1)** | | | | | Prepared: 04/04/11 | Analyzed: 04/05/11 | | | | |
| Phosphorous - Total as P | 0.506 | 0.040 | 0.010 | mg/L | 0.50 | | 101 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10437 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **LCS (BD10437-BS2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.542 | 0.040 | 0.010 | mg/L | 0.50 | | 108 | 90-110 | | |
| **Matrix Spike (BD10437-MS1)** | | **Source: 1102612-12** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.966 | 0.040 | 0.010 | mg/L | 0.50 | 0.426 | 108 | 75-125 | | |
| **Matrix Spike (BD10437-MS2)** | | **Source: 1102777-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.565 | 0.040 | 0.010 | mg/L | 0.50 | 0.0811 | 97 | 75-125 | | |
| **Matrix Spike Dup (BD10437-MSD1)** | | **Source: 1102612-12** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.954 | 0.040 | 0.010 | mg/L | 0.50 | 0.426 | 106 | 75-125 | 1 | 25 |
| **Matrix Spike Dup (BD10437-MSD2)** | | **Source: 1102777-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.565 | 0.040 | 0.010 | mg/L | 0.50 | 0.0811 | 97 | 75-125 | 0.1 | 25 |
| **Batch BD10523 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BD10523-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **Blank (BD10523-BLK2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BD10523-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.778 | 0.04 | 0.01 | mg/L | 0.80 | | 97 | 90-110 | | |
| **LCS (BD10523-BS2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.810 | 0.04 | 0.01 | mg/L | 0.80 | | 101 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10523 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Matrix Spike (BD10523-MS1)** | | **Source: 1102635-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.985 | 0.04 | 0.01 | mg/L | 1.0 | ND | 99 | 77-119 | | |
| **Matrix Spike (BD10523-MS2)** | | **Source: 1102750-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.958 | 0.04 | 0.01 | mg/L | 1.0 | ND | 96 | 77-119 | | |
| **Matrix Spike Dup (BD10523-MSD1)** | | **Source: 1102635-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 1.01 | 0.04 | 0.01 | mg/L | 1.0 | ND | 101 | 77-119 | 2 | 20 |
| **Matrix Spike Dup (BD10523-MSD2)** | | **Source: 1102750-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.956 | 0.04 | 0.01 | mg/L | 1.0 | ND | 96 | 77-119 | 0.3 | 20 |
| **Batch BD10605 - COD prep** | | | | | | | | | | |
| **Blank (BD10605-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BD10605-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | | 110 | 90-110 | | |
| **Matrix Spike (BD10605-MS1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Chemical Oxygen Demand | 61 | 25 | 10 | mg/L | 50 | 14 | 94 | 85-115 | | |
| **Matrix Spike Dup (BD10605-MSD1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Chemical Oxygen Demand | 65 | 25 | 10 | mg/L | 50 | 14 | 102 | 85-115 | 6 | 32 |
| **Batch BD10624 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BD10624-BLK1)** | | | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10624 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BD10624-BLK2)** | | | | | Prepared: 04/06/11 | Analyzed: 04/07/11 | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BD10624-BS1)** | | | | | Prepared: 04/06/11 | Analyzed: 04/07/11 | | | | |
| Total Kjeldahl Nitrogen | 2.64 | 0.20 | 0.05 | mg/L | 2.5 | | 104 | 90-110 | | |
| **LCS (BD10624-BS2)** | | | | | Prepared: 04/06/11 | Analyzed: 04/07/11 | | | | |
| Total Kjeldahl Nitrogen | 2.52 | 0.20 | 0.05 | mg/L | 2.5 | | 99 | 90-110 | | |
| **Matrix Spike (BD10624-MS1)** | | **Source: 1102635-02** | | | Prepared: 04/06/11 | Analyzed: 04/07/11 | | | | |
| Total Kjeldahl Nitrogen | 2.57 | 0.20 | 0.05 | mg/L | 2.5 | ND | 101 | 80-120 | | |
| **Matrix Spike (BD10624-MS2)** | | **Source: 1102750-01** | | | Prepared: 04/06/11 | Analyzed: 04/07/11 | | | | |
| Total Kjeldahl Nitrogen | 2.52 | 0.20 | 0.05 | mg/L | 2.5 | ND | 100 | 80-120 | | |
| **Matrix Spike Dup (BD10624-MSD1)** | | **Source: 1102635-02** | | | Prepared: 04/06/11 | Analyzed: 04/07/11 | | | | |
| Total Kjeldahl Nitrogen | 2.45 | 0.20 | 0.05 | mg/L | 2.5 | ND | 97 | 80-120 | 5 | 20 |
| **Matrix Spike Dup (BD10624-MSD2)** | | **Source: 1102750-01** | | | Prepared: 04/06/11 | Analyzed: 04/07/11 | | | | |
| Total Kjeldahl Nitrogen | 2.68 | 0.20 | 0.05 | mg/L | 2.5 | ND | 106 | 80-120 | 6 | 20 |
| **Batch BD10626 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10626-BLK1)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BD10626-BLK2)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10626 - Ammonia by SEAL** | | | | | | | | | | |
| **LCS (BD10626-BS1)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | | 106 | 90-110 | | |
| **LCS (BD10626-BS2)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | | 106 | 90-110 | | |
| **Matrix Spike (BD10626-MS1)** | | **Source: 1102777-07** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.56 | 0.010 | 0.005 | mg/L | 0.50 | 0.042 | 104 | 90-110 | | |
| **Matrix Spike (BD10626-MS2)** | | **Source: 1102831-07** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | 0.032 | 102 | 90-110 | | |
| **Matrix Spike Dup (BD10626-MSD1)** | | **Source: 1102777-07** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.042 | 96 | 90-110 | 7 | 10 |
| **Matrix Spike Dup (BD10626-MSD2)** | | **Source: 1102831-07** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Ammonia as N | 0.55 | 0.010 | 0.005 | mg/L | 0.50 | 0.032 | 103 | 90-110 | 0.7 | 10 |
| **Batch BD10725 - alkalinity** | | | | | | | | | | |
| **Blank (BD10725-BLK1)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BD10725-BLK2)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10725 - alkalinity** | | | | | | | | | | |
| **LCS (BD10725-BS1)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BD10725-BS2)** | | | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BD10725-MS1)** | | **Source: 1102625-15** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 98 | 80-120 | | 26 |
| **Matrix Spike (BD10725-MS2)** | | **Source: 1102630-11** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 8.9 | 94 | 80-120 | | 26 |
| **Matrix Spike Dup (BD10725-MSD1)** | | **Source: 1102625-15** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 98 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BD10725-MSD2)** | | **Source: 1102630-11** | | | Prepared & Analyzed: 04/07/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 8.9 | 94 | 80-120 | 0 | 26 |

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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10638 - DOC prep** | | | | | | | | | | |
| **Blank (BD10638-BLK1)** | | | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BD10638-BS1)** | | | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 10.4 | 1.0 | 0.50 | mg/L | 10 | | 104 | 90-110 | | |
| **Matrix Spike (BD10638-MS1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 11.2 | 1.0 | 0.50 | mg/L | 10 | 1.06 | 102 | 85-125 | | |
| **Matrix Spike Dup (BD10638-MSD1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 11.3 | 1.0 | 0.50 | mg/L | 10 | 1.06 | 103 | 85-125 | 0.8 | 25 |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10407 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BD10407-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Iron | 0.020 U | 0.10 | 0.020 | mg/L | | | | | | |
| Calcium | 0.016 I | 0.050 | 0.010 | mg/L | | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Sodium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Potassium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Magnesium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| **LCS (BD10407-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Magnesium | 21 | 0.050 | 0.010 | mg/L | 20 | | 107 | 85-115 | | |
| Manganese | 0.43 | 0.010 | 0.0010 | mg/L | 0.40 | | 107 | 85-115 | | |
| Calcium | 21 | 0.050 | 0.010 | mg/L | 20 | | 105 | 85-115 | | |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | | 106 | 85-115 | | |
| Sodium | 21 | 0.050 | 0.010 | mg/L | 20 | | 105 | 85-115 | | |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | | 104 | 85-115 | | |
| Boron | 0.41 | 0.10 | 0.050 | mg/L | 0.40 | | 102 | 85-115 | | |
| **Matrix Spike (BD10407-MS1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Sodium | 23 | 0.050 | 0.010 | mg/L | 20 | 2.9 | 99 | 70-130 | | |
| Calcium | 35 | 0.050 | 0.010 | mg/L | 20 | 16 | 93 | 70-130 | | |
| Boron | 0.42 | 0.10 | 0.050 | mg/L | 0.40 | ND | 104 | 70-130 | | |
| Potassium | 23 | 0.050 | 0.010 | mg/L | 20 | 3.8 | 97 | 70-130 | | |
| Manganese | 0.55 | 0.010 | 0.0010 | mg/L | 0.40 | 0.15 | 99 | 70-130 | | |
| Magnesium | 25 | 0.050 | 0.010 | mg/L | 20 | 4.2 | 102 | 70-130 | | |
| Iron | 8.3 | 0.10 | 0.020 | mg/L | 8.0 | 0.039 | 103 | 70-130 | | |
| **Matrix Spike (BD10407-MS2)** | | **Source: 1102803-04** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Magnesium | 23 | 0.050 | 0.010 | mg/L | 20 | 3.4 | 99 | 70-130 | | |
| Boron | 0.42 | 0.10 | 0.050 | mg/L | 0.40 | ND | 105 | 70-130 | | |
| Calcium | 66 +O | 0.050 | 0.010 | mg/L | 20 | 54 | 65 | 70-130 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0027 | 102 | 70-130 | | |
| Sodium | 34 | 0.050 | 0.010 | mg/L | 20 | 16 | 91 | 70-130 | | |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | 1.2 | 98 | 70-130 | | |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | 0.51 | 99 | 70-130 | | |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10407 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Matrix Spike Dup (BD10407-MSD1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Boron | 0.44 | 0.10 | 0.050 | mg/L | 0.40 | ND | 109 | 70-130 | 5 | 30 |
| Potassium | 24 | 0.050 | 0.010 | mg/L | 20 | 3.8 | 103 | 70-130 | 5 | 30 |
| Sodium | 24 | 0.050 | 0.010 | mg/L | 20 | 2.9 | 105 | 70-130 | 5 | 30 |
| Manganese | 0.57 | 0.010 | 0.0010 | mg/L | 0.40 | 0.15 | 104 | 70-130 | 3 | 30 |
| Magnesium | 26 | 0.050 | 0.010 | mg/L | 20 | 4.2 | 107 | 70-130 | 3 | 30 |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | 0.039 | 106 | 70-130 | 3 | 30 |
| Calcium | 38 | 0.050 | 0.010 | mg/L | 20 | 16 | 106 | 70-130 | 7 | 30 |
| **Matrix Spike Dup (BD10407-MSD2)** | | **Source: 1102803-04** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Iron | 8.7 | 0.10 | 0.020 | mg/L | 8.0 | 0.51 | 103 | 70-130 | 3 | 30 |
| Calcium | 70 +O | 0.050 | 0.010 | mg/L | 20 | 54 | 81 | 70-130 | 5 | 30 |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0027 | 103 | 70-130 | 1 | 30 |
| Magnesium | 24 | 0.050 | 0.010 | mg/L | 20 | 3.4 | 103 | 70-130 | 3 | 30 |
| Boron | 0.43 | 0.10 | 0.050 | mg/L | 0.40 | ND | 109 | 70-130 | 3 | 30 |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | 1.2 | 100 | 70-130 | 3 | 30 |
| Sodium | 35 | 0.050 | 0.010 | mg/L | 20 | 16 | 98 | 70-130 | 4 | 30 |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 12, 2011**
**Work Order: 1102630**

## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below.
Questions regarding this report should be directed to Client Services at 813-855-1844.

| | |
|---|---|
| J5 | Matrix spike of this sample was outside typical range. All other QC criteria were acceptable. |
| +O | Matrix spike source sample was over the reccommended range for the method. |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1102630

Client Name: Hazan and Sawyer

Contact / Phone: Josephin Edeback-Hirst 813-630-4498

Project Name / Location: GCREC Mound Groundwater Analyses

jedeback@hazanandsawyer.com

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 250ml P, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 250ml aG, Cool DOC | Field pH | Field DO | Field Cond | Field Temp | 250 ml P, $HNO_3$ B, Fe, Ca, Na, K, Mn, Mg No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-J12-13 | 4/01/11 | 1150 | GW | | X | 1 | 1 | | | 4.9 | 1.54 | 238 | 22.9 | |
| 02 | DP-J12-15 | | 1200 | GW | | X | 1 | 1 | | | 5.1 | 1.13 | 281 | 23.3 | |
| 03 | DP-J12-20 | | 1250 | GW | | X | 1** | 1* | | 1 | 5.6 | 1.20 | 354 | 23.4 | 1 |
| 04 | DP-J12-27 | | 1311 | GW | | X | 1 | 1 | | | 5.1 | 0.92 | 303 | 23.6 | |
| 05 | DP-K10-7 | 04/01/11 | 1125 | GW | | X | 1 | 1 | | | 6.0 | 3.79 | 163.8 | 24.2 | |
| 06 | DP-K11-13 | | 1030 | GW | | X | 1 | 1 | | | 4.9 | 1.84 | 168.3 | 22.1 | |
| 07 | DP-K12-5 | | 1005 | GW | | X | 1** | 1* | | 1 | 5.6 | 1.40 | 59.3 | 22.3 | 1 |
| 08 | DP-M07-15 | | 1410 | GW | | X | 1 | 1 | | | 5.2 | 0.71 | 267 | 23.0 | |
| 09 | DP-M07-21 | | 1415 | GW | | X | 1 | 1 | | | 4.9 | 0.88 | 362 | 24.0 | |
| 10 | DP-M07-27 | | 1420 | GW | | X | 1 | 1 | | | 5.2 | 1.08 | 293 | 23.8 | |
| 11 | DP-M12-10 | | 1210 | GW | | X | 1 | 1 | | | 5.7 | 1.83 | 161.6 | 24.0 | |
| 12 | DP-M12-14 | | 1240 | GW | | X | 1 | 1 | | | 4.8 | 0.91 | 178.6 | 22.9 | |

| Containers Prepared/ Relinquished: | Date/Time: 1530 03-22-11 | Received: | Date/Time: 1500 032911 |
|---|---|---|---|
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

| | |
|---|---|
| Seal intact? | Y N N/A |
| Samples intact upon arrival? | Y N N/A |
| Received on ice? Temp_____ | Y N N/A |
| Proper preservatives indicated? | Y N N/A |
| Rec'd within holding time? | Y N N/A |
| Volatiles rec'd w/out headspace | Y N N/A |
| Proper containers used? | Y N N/A |

**Instructions / Remarks**

* COD, TP

** Cl, F, $SO_4$, OP, NOx 300

1102630

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1102630

| | |
|---|---|
| Client Name: Hazan and Sawyer | Contact / Phone: Josephin Edeback-Hirst 813-630-4498 |
| Project Name / Location: GCREC Mound Groundwater Analyses | jedeback@hazanandsawyer.com |
| Samplers: (Signature) | |

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| | SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 250ml P, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 250ml aG, Cool DOC | Field pH | Field DO | Field Cond | Field Temp | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 13 | DP-N12-18 | 4/1/11 | 1300 | GW | | X | 1 | 1 | | | 5.1 | 1.11 | 250 | 23.2 | |
| | 14 | DP-N12-21 | 4/1/11 | 1320 | GW | | X | 1 | 1 | | | 5.2 | 1.04 | 279 | 23.3 | |
| ~~SMH~~ | 15 | DP-N12-24 | ~~3/31/11~~ | ~~1035~~ 1340 | GW | | X | 1 | 1 | | | 5.2 | 0.78 | 348 | 24.1 | |
| | 16 | DP-N12-27 | | 1355 | GW | | X | 1 | 1 | | | 5.1 | 0.68 | 342 | 23.9 | |
| ~~SH SMH~~ | 17 | DP-O10-12 | ~~3/31/11~~ | ~~1035~~ 1330 | GW | | X | 1 | 1 | | | 4.3 | 1.13 | 1859 | 22.9 | |
| | 18 | DP-O10-18 | | 1350 | GW | | X | 1 | 1 | | | 5.3 | 1.04 | 294 | 23.5 | |
| | 19 | DP-O10-24 | | 1400 | GW | | X | 1 | 1 | | | 5.1 | 0.95 | 361 | 24.2 | |
| | 20 | DP-Q15-15 | 4/4/11 | 0915 | GW | | X | 1 | 1 | | | 4.8 | 0.61 | 285 | 22.7 | |
| | 21 | DP-Q15-21 | 4/4/11 | 0940 | GW | | X | 1 | 1 | | | 5.2 | 0.73 | 319 | 23.5 | |
| | 22 | DP-Q15-26 | 4/4/11 | 1010 | GW | | X | 1 | 1 | | | 5.2 | 1.33 | 333 | 23.2 | |
| SH | 23 | PZ18-R12-26 | 3/31/11 | 1103 | GW | | X | 1 | 1 | | | 5.0 | 0.89 | 328.1 | 23.4 | |
| | 24 | PZ02-P02-9 | 033011 | 1535 | GW | | X | 1 | 1 | | | 4.7 | 5.63 | 73.6 | 24.4 | |

| | | | |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 1530 03-27-11 | Received: | Date/Time: 0500 032911 |
| 24 Relinquished: | Date/Time: 1830 033011 | Received: | Date/Time: |
| 23 Relinquished: | Date/Time: 1430 3/31/11 | Received: | Date/Time: |
| 20, 21, 22 Relinquished: courier | Date/Time: 1315 4/4/11 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

| | |
|---|---|
| Seal intact? | Y N N/A |
| Samples intact upon arrival? | Y N N/A |
| Received on ice? Temp_____ | Y N N/A |
| Proper preservatives indicated? | Y N N/A |
| Rec'd within holding time? | Y N N/A |
| Volatiles rec'd w/out headspace | Y N N/A |
| Proper containers used? | Y N N/A |

**Instructions / Remarks**

1102630

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033111 | SAL Project # | 1102630 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ18-R12-26 | Sample ID | 23 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 2.09 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 25.5 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.46 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 1.38 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 1053 | PURGE TIME END | 1102 | TOTAL PURGED | 1.80 |
| INST. ID | X | X | X | X | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1056 | 0.60 | 0.60 | 0.20 | 8.93 | 5.0 ~~4.8~~ | 23.4 | 327.3 | 1.20 | 693 | Brown | None |
| 1059 | 0.60 | 1.20 | 0.20 | 8.93 | 5.0 ~~4.8~~ | 23.4 | 325.8 | 0.99 | — | | |
| 1102 | 0.60 | 1.80 | 0.20 | 8.93 | 5.0 ~~4.8~~ | 23.4 | 328.1 | 0.89 | — | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | SAMPLE TUBING LEGNTH IN WELL (FEET) | | 25.5 | SAMPLE PUMP FLOW RATE (mL/min) | 0.20 | |
| SAMPLING INITIATED | 1103 | SAMPLING ENDED | 1103 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | Rain Past 24 hrs - wind | | | | | | |
| COMMENTS | Turbidity was above readable limit — | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033011 | SAL Project # | 1102630 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ02-P02-9 | Sample ID | 24 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 5.93 | PURGE PUMP CODE (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 10.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.24 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.73 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 10.0 | FINAL TUBING LEGNTH IN WELL (FEET) | 10.0 | PURGE TIME START | 1525 | PURGE TIME END | 1534 | TOTAL PURGED | 0.90 |

| INST. ID | | | | | SAL-SAM-63-03 | SAL-SAM-~~65~~-03 | SAL-SAM-63-63 | SAL-SAM-55-03 | SAL-SAM-02 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1528 | 0.30 | 0.30 | 0.10 | 6.81 | 4.7 | 24.5 | 72.1 | 4.50 | 20.6 | clear | none |
| 1531 | 0.30 | 0.60 | 0.10 | 6.81 | 4.7 | 24.5 | 73.1 | 5.51 | 18.2 | | |
| 1534 | 0.30 | 0.90 | 0.10 | 6.81 | 4.7 | 24.4 | 73.6 | 5.63 | 16.1 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | SAMPLER(S) SIGNATURES: | | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | 10.0 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.10 | |
| SAMPLING INITIATED | 1535 | SAMPLING ENDED | 1535 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | Very windy | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

Revision Date 09/25/09

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 15, 2011**
**Work Order: 1102633**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ01-BKG-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-01** | | | | | | |
| Date/Time Collected | | **03/31/11 09:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.6 | | | | | | |
| Temperature | | 22.8 °C | | | | | | |
| Conductivity | | 146.8 umhos | | | | | | |
| Dissolved Oxygen | | 6.78 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.11 | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.36 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.01 U | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ05-BKG-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-02** | | | | | | |
| Date/Time Collected | | **03/31/11 10:14** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 21.8 °C | | | | | | |
| Conductivity | | 98.8 umhos | | | | | | |
| Dissolved Oxygen | | 4.38 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.034 | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 3.6 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 15, 2011**
**Work Order: 1102633**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ06-BKG-12** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-03** | | | | | | |
| Date/Time Collected | | **03/31/11 10:03** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.7 | | | | | | |
| Temperature | | 23.1 °C | | | | | | |
| Conductivity | | 59.4 umhos | | | | | | |
| Dissolved Oxygen | | 5.41 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.041 | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.25 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.01 U | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D07-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-04** | | | | | | |
| Date/Time Collected | | **03/30/11 11:20** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.0 | | | | | | |
| Temperature | | 24.1 °C | | | | | | |
| Conductivity | | 326 umhos | | | | | | |
| Dissolved Oxygen | | 4.86 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 14 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.0 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Bicarbonate Alkalinity | mg/L | 14 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 11 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 15, 2011**
**Work Order: 1102633**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ23-D09-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-05** | | | | | | |
| Date/Time Collected | | **03/30/11 13:06** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.4 | | | | | | |
| Temperature | | 24.4 °C | | | | | | |
| Conductivity | | 306.2 umhos | | | | | | |
| Dissolved Oxygen | | 0.18 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Bicarbonate Alkalinity | mg/L | 5.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 7.3 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E02-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-06** | | | | | | |
| Date/Time Collected | | **03/29/11 08:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.5 | | | | | | |
| Temperature | | 21.3 °C | | | | | | |
| Conductivity | | 98.5 umhos | | | | | | |
| Dissolved Oxygen | | 2.41 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.022 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.42 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 1.6 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**April 15, 2011**
**Work Order: 1102633**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E11-12** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-07** | | | | | | |
| Date/Time Collected | | **03/29/11 13:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 23.0 °C | | | | | | |
| Conductivity | | 441 umhos | | | | | | |
| Dissolved Oxygen | | 0.99 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.018 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.6 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 13 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ09-I08-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-08** | | | | | | |
| Date/Time Collected | | **03/30/11 14:38** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 21.9 °C | | | | | | |
| Conductivity | | 94.2 umhos | | | | | | |
| Dissolved Oxygen | | 6.03 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.4 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.59 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**Hazen and Sawyer**
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**April 15, 2011**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D07-9** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1102633-09** | | | | | | | |
| Date/Time Collected | | **03/30/11 12:05** | | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | | |
| **Client Provided Field Data** | | | | | | | | | |
| pH | | 4.5 | | | | | | | |
| Temperature | | 24.0 °C | | | | | | | |
| Conductivity | | 392 umhos | | | | | | | |
| Dissolved Oxygen | | 4.5 mg/L | | | | | | | |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 0.007 | I | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.8 | | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 22 | | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D09-6** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1102633-10** | | | | | | | |
| Date/Time Collected | | **03/30/11 09:50** | | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | | |
| **Client Provided Field Data** | | | | | | | | | |
| pH | | 4.5 | | | | | | | |
| Temperature | | 22.6 °C | | | | | | | |
| Conductivity | | 456 umhos | | | | | | | |
| Dissolved Oxygen | | 4.5 mg/L | | | | | | | |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 0.008 | I | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.84 | | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Bicarbonate Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 21 | | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 | U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**April 15, 2011**
**Work Order: 1102633**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E04-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-11** | | | | | | |
| Date/Time Collected | | **03/29/11 10:15** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.9 | | | | | | |
| Temperature | | 22.0 °C | | | | | | |
| Conductivity | | 171.1 umhos | | | | | | |
| Dissolved Oxygen | | 1.43 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.024 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.0 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 2.8 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E06-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-12** | | | | | | |
| Date/Time Collected | | **03/29/11 11:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.4 | | | | | | |
| Temperature | | 22.8 °C | | | | | | |
| Conductivity | | 162.8 umhos | | | | | | |
| Dissolved Oxygen | | 1.89 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.013 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 1.9 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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**April 15, 2011**
**Work Order: 1102633**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E08-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-13** | | | | | | |
| Date/Time Collected | | **03/29/11 12:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.0 | | | | | | |
| Temperature | | 22.4 °C | | | | | | |
| Conductivity | | 326 umhos | | | | | | |
| Dissolved Oxygen | | 1.83 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.014 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.1 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 9.9 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F03-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-14** | | | | | | |
| Date/Time Collected | | **03/29/11 10:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.2 | | | | | | |
| Temperature | | 21.7 °C | | | | | | |
| Conductivity | | 145.6 umhos | | | | | | |
| Dissolved Oxygen | | 1.22 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.39 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 18 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.6 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 18 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 1.7 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 15, 2011**
**Work Order: 1102633**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G06-7** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-16** | | | | | | |
| Date/Time Collected | | **03/30/11 14:45** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.2 | | | | | | |
| Temperature | | 28.9 °C | | | | | | |
| Conductivity | | 184 umhos | | | | | | |
| Dissolved Oxygen | | 2.36 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.27 | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 34 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.55 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Bicarbonate Alkalinity | mg/L | 34 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.13 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-H05-7** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-17** | | | | | | |
| Date/Time Collected | | **04/04/11 10:40** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/04/11 13:15** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.3 | | | | | | |
| Temperature | | 25.6 °C | | | | | | |
| Conductivity | | 136.7 umhos | | | | | | |
| Dissolved Oxygen | | 6.73 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 1.6 | EPA 350.1 | 0.010 | 0.005 | | 04/08/11 10:37 | SMD |
| Total Alkalinity | mg/L | 15 | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.7 | EPA 351.2 | 0.20 | 0.05 | 04/06/11 12:10 | 04/07/11 10:03 | SMB |
| Bicarbonate Alkalinity | mg/L | 15 | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.05 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 12:17 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |

**Hazen and Sawyer**
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**April 15, 2011**
**Work Order: 1102633**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-H07-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-18** | | | | | | |
| Date/Time Collected | | **04/01/11 07:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 20.2 °C | | | | | | |
| Conductivity | | 151.3 umhos | | | | | | |
| Dissolved Oxygen | | 1.57 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.051 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.71 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.98 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

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|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-H09-12** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-19** | | | | | | |
| Date/Time Collected | | **03/31/11 10:25** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.7 | | | | | | |
| Temperature | | 21.9 °C | | | | | | |
| Conductivity | | 249 umhos | | | | | | |
| Dissolved Oxygen | | 3.40 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 7.4 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

**Hazen and Sawyer**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ03-H11-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-20** | | | | | | |
| Date/Time Collected | | **03/30/11 12:14** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 4.8 | | | | | | |
| Temperature | | 25.9 °C | | | | | | |
| Conductivity | | 138.4 umhos | | | | | | |
| Dissolved Oxygen | | 3.68 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.006 I | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.3 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 1.5 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I08-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-21** | | | | | | |
| Date/Time Collected | | **03/31/11 11:05** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.5 | | | | | | |
| Temperature | | 23.0 °C | | | | | | |
| Conductivity | | 191.5 umhos | | | | | | |
| Dissolved Oxygen | | 4.69 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 1.2 | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 15 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.1 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 15 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.34 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

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**April 15, 2011**
**Work Order: 1102633**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I10-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-22** | | | | | | |
| Date/Time Collected | | **04/01/11 08:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.2 | | | | | | |
| Temperature | | 20.2 °C | | | | | | |
| Conductivity | | 173.4 umhos | | | | | | |
| Dissolved Oxygen | | 5.10 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.66 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 27 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.4 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 27 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.35 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I12-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-23** | | | | | | |
| Date/Time Collected | | **04/01/11 09:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.6 | | | | | | |
| Temperature | | 21.9 °C | | | | | | |
| Conductivity | | 127.6 umhos | | | | | | |
| Dissolved Oxygen | | 1.87 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 11 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.67 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 11 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 7.1 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

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**April 15, 2011**
**Work Order: 1102633**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F04-32** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102633-24** | | | | | | |
| Date/Time Collected | | **03/29/11 11:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.9 | | | | | | |
| Temperature | | 23.1 °C | | | | | | |
| Conductivity | | 345.6 umhos | | | | | | |
| Dissolved Oxygen | | 1.04 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.042 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 69 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.25 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 69 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.71 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13009 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BC13009-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BC13009-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BC13009-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | | 107 | 90-110 | | |
| **LCS (BC13009-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.50 | 0.010 | 0.005 | mg/L | 0.50 | | 99 | 90-110 | | |
| **Matrix Spike (BC13009-MS1)** | | **Source: 1102727-07** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.060 | 103 | 90-110 | | |
| **Matrix Spike (BC13009-MS2)** | | **Source: 1102740-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | 0.034 | 102 | 90-110 | | |
| **Matrix Spike Dup (BC13009-MSD1)** | | **Source: 1102727-07** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.060 | 103 | 90-110 | 0.1 | 10 |
| **Matrix Spike Dup (BC13009-MSD2)** | | **Source: 1102740-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.034 | 107 | 90-110 | 5 | 10 |
| **Batch BC13012 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BC13012-BLK1)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13012 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BC13012-BLK2)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BC13012-BS1)** | | | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.74 | 0.20 | 0.05 | mg/L | 2.5 | | 108 | 90-110 | | |
| **LCS (BC13012-BS2)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.61 | 0.20 | 0.05 | mg/L | 2.5 | | 103 | 90-110 | | |
| **Matrix Spike (BC13012-MS1)** | | **Source: 1102731-01** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.99 | 0.20 | 0.05 | mg/L | 2.5 | 0.519 | 97 | 80-120 | | |
| **Matrix Spike (BC13012-MS2)** | | **Source: 1102697-02** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.48 J5 | 0.20 | 0.05 | mg/L | 2.5 | 0.808 | 106 | 80-120 | | |
| **Matrix Spike Dup (BC13012-MSD1)** | | **Source: 1102731-01** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.92 | 0.20 | 0.05 | mg/L | 2.5 | 0.519 | 95 | 80-120 | 2 | 20 |
| **Matrix Spike Dup (BC13012-MSD2)** | | **Source: 1102697-02** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.57 J5 | 0.20 | 0.05 | mg/L | 2.5 | 0.808 | 109 | 80-120 | 2 | 20 |
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **Blank (BC13102-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**April 15, 2011**
**Work Order: 1102633**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **Blank (BC13102-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK3)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK4)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BC13102-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS3)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **LCS (BC13102-BS4)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BC13102-MS1)** | | **Source: 1102633-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | ND | 101 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS2)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.9 | 97 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS3)** | | **Source: 1102597-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS4)** | | **Source: 1102612-21** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 107 | 80-120 | | 26 |
| **Matrix Spike Dup (BC13102-MSD1)** | | **Source: 1102633-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | ND | 101 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD2)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.9 | 97 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD3)** | | **Source: 1102597-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD4)** | | **Source: 1102612-21** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | 9 | 26 |
| **Batch BC13106 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BC13106-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13106 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BC13106-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BC13106-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.800 | 0.04 | 0.01 | mg/L | 0.80 | | 100 | 90-110 | | |
| **LCS (BC13106-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.827 | 0.04 | 0.01 | mg/L | 0.80 | | 103 | 90-110 | | |
| **Matrix Spike (BC13106-MS1)** | | **Source: 1102727-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.05 | 0.04 | 0.01 | mg/L | 1.0 | ND | 105 | 77-119 | | |
| **Matrix Spike (BC13106-MS2)** | | **Source: 1102742-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.00 | 0.04 | 0.01 | mg/L | 1.0 | ND | 100 | 77-119 | | |
| **Matrix Spike Dup (BC13106-MSD1)** | | **Source: 1102727-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.08 | 0.04 | 0.01 | mg/L | 1.0 | ND | 108 | 77-119 | 3 | 20 |
| **Matrix Spike Dup (BC13106-MSD2)** | | **Source: 1102742-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.02 | 0.04 | 0.01 | mg/L | 1.0 | ND | 102 | 77-119 | 2 | 20 |
| **Batch BC13118 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BC13118-BLK1)** | | | | | Prepared: 03/31/11 Analyzed: 04/02/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BC13118-BS1)** | | | | | Prepared: 03/31/11 Analyzed: 04/02/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.57 | 0.20 | 0.05 | mg/L | 2.5 | | 101 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13123 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BC13123-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **Blank (BC13123-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BC13123-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.815 | 0.04 | 0.01 | mg/L | 0.80 | | 102 | 90-110 | | |
| **LCS (BC13123-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.832 | 0.04 | 0.01 | mg/L | 0.80 | | 104 | 90-110 | | |
| **Matrix Spike (BC13123-MS1)** | | **Source: 1102741-01** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.09 | 0.04 | 0.01 | mg/L | 1.0 | 0.0832 | 101 | 77-119 | | |
| **Matrix Spike (BC13123-MS2)** | | **Source: 1102588-04** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 8.89 | 0.04 | 0.01 | mg/L | 1.0 | 7.92 | 97 | 77-119 | | |
| **Matrix Spike Dup (BC13123-MSD1)** | | **Source: 1102741-01** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.12 | 0.04 | 0.01 | mg/L | 1.0 | 0.0832 | 103 | 77-119 | 2 | 20 |
| **Matrix Spike Dup (BC13123-MSD2)** | | **Source: 1102588-04** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 9.02 | 0.04 | 0.01 | mg/L | 1.0 | 7.92 | 111 | 77-119 | 2 | 20 |
| **Batch BD10106 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BD10106-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10106 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BD10106-BLK2)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BD10106-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 0.749 | 0.04 | 0.01 | mg/L | 0.80 | | 94 | 90-110 | | |
| **LCS (BD10106-BS2)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 0.765 | 0.04 | 0.01 | mg/L | 0.80 | | 96 | 90-110 | | |
| **Matrix Spike (BD10106-MS1)** | | **Source: 1102727-07** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 1.40 | 0.04 | 0.01 | mg/L | 1.0 | 0.370 | 103 | 77-119 | | |
| **Matrix Spike (BD10106-MS2)** | | **Source: 1102740-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 0.976 | 0.04 | 0.01 | mg/L | 1.0 | ND | 98 | 77-119 | | |
| **Matrix Spike Dup (BD10106-MSD1)** | | **Source: 1102727-07** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 1.38 | 0.04 | 0.01 | mg/L | 1.0 | 0.370 | 102 | 77-119 | 1 | 20 |
| **Matrix Spike Dup (BD10106-MSD2)** | | **Source: 1102740-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 0.976 | 0.04 | 0.01 | mg/L | 1.0 | ND | 98 | 77-119 | 0.01 | 20 |
| **Batch BD10114 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BD10114-BLK1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BD10114-BLK2)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10114 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **LCS (BD10114-BS1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.69 | 0.20 | 0.05 | mg/L | 2.5 | | 106 | 90-110 | | |
| **LCS (BD10114-BS2)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.49 | 0.20 | 0.05 | mg/L | 2.5 | | 98 | 90-110 | | |
| **Matrix Spike (BD10114-MS1)** | | **Source: 1102777-07** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.48 | 0.20 | 0.05 | mg/L | 2.5 | 0.772 | 107 | 80-120 | | |
| **Matrix Spike (BD10114-MS2)** | | **Source: 1102765-02** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.84 | 0.20 | 0.05 | mg/L | 2.5 | 0.364 | 98 | 80-120 | | |
| **Matrix Spike Dup (BD10114-MSD1)** | | **Source: 1102777-07** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.45 | 0.20 | 0.05 | mg/L | 2.5 | 0.772 | 106 | 80-120 | 1 | 20 |
| **Matrix Spike Dup (BD10114-MSD2)** | | **Source: 1102765-02** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.82 | 0.20 | 0.05 | mg/L | 2.5 | 0.364 | 97 | 80-120 | 0.7 | 20 |
| **Batch BD10201 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10201-BLK1)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BD10201-BLK2)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BD10201-BS1)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.51 | 0.010 | 0.005 | mg/L | 0.50 | | 103 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10201 - Ammonia by SEAL** | | | | | | | | | | |
| **LCS (BD10201-BS2)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.49 | 0.010 | 0.005 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BD10201-MS1)** | | **Source: 1102705-02** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.55 | 0.010 | 0.005 | mg/L | 0.50 | 0.062 | 98 | 90-110 | | |
| **Matrix Spike (BD10201-MS2)** | | **Source: 1102742-07** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.068 | 100 | 90-110 | | |
| **Matrix Spike Dup (BD10201-MSD1)** | | **Source: 1102705-02** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | 0.062 | 94 | 90-110 | 3 | 10 |
| **Matrix Spike Dup (BD10201-MSD2)** | | **Source: 1102742-07** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.55 | 0.010 | 0.005 | mg/L | 0.50 | 0.068 | 96 | 90-110 | 3 | 10 |
| **Batch BD10203 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10203-BLK1)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BD10203-BLK2)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BD10203-BS1)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.49 | 0.010 | 0.005 | mg/L | 0.50 | | 98 | 90-110 | | |
| **LCS (BD10203-BS2)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.48 | 0.010 | 0.005 | mg/L | 0.50 | | 96 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10203 - Ammonia by SEAL** | | | | | | | | | | |
| **Matrix Spike (BD10203-MS1)** | | **Source: 1102633-18** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.051 | 94 | 90-110 | | |
| **Matrix Spike (BD10203-MS2)** | | **Source: 1102625-10** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.047 | 94 | 90-110 | | |
| **Matrix Spike Dup (BD10203-MSD1)** | | **Source: 1102633-18** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | 0.051 | 98 | 90-110 | 4 | 10 |
| **Matrix Spike Dup (BD10203-MSD2)** | | **Source: 1102625-10** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | 0.047 | 99 | 90-110 | 5 | 10 |
| **Batch BD10204 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BD10204-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **Blank (BD10204-BLK2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BD10204-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.766 | 0.04 | 0.01 | mg/L | 0.80 | | 96 | 90-110 | | |
| **LCS (BD10204-BS2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.742 | 0.04 | 0.01 | mg/L | 0.80 | | 93 | 90-110 | | |
| **Matrix Spike (BD10204-MS1)** | | **Source: 1102740-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.986 | 0.04 | 0.01 | mg/L | 1.0 | 0.0331 | 95 | 77-119 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10204 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Matrix Spike (BD10204-MS2)** | | **Source: 1102740-03** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 10.0 J5 | 0.04 | 0.01 | mg/L | 1.0 | ND | 1000 | 77-119 | | |
| **Matrix Spike Dup (BD10204-MSD1)** | | **Source: 1102740-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.982 | 0.04 | 0.01 | mg/L | 1.0 | 0.0331 | 95 | 77-119 | 0.4 | 20 |
| **Matrix Spike Dup (BD10204-MSD2)** | | **Source: 1102740-03** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 12.7 J5 | 0.04 | 0.01 | mg/L | 1.0 | ND | NR | 77-119 | 24 | 20 |
| **Batch BD10415 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BD10415-BLK1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BD10415-BLK2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BD10415-BS1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.69 | 0.20 | 0.05 | mg/L | 2.5 | | 106 | 90-110 | | |
| **LCS (BD10415-BS2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.70 | 0.20 | 0.05 | mg/L | 2.5 | | 107 | 90-110 | | |
| **Matrix Spike (BD10415-MS1)** | | **Source: 1102831-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.34 | 0.20 | 0.05 | mg/L | 2.5 | 0.695 | 104 | 80-120 | | |
| **Matrix Spike (BD10415-MS2)** | | **Source: 1102786-02** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.68 | 0.20 | 0.05 | mg/L | 2.5 | 0.966 | 107 | 80-120 | | |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 15, 2011**
**Work Order: 1102633**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10415 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Matrix Spike Dup (BD10415-MSD1)** | | **Source: 1102831-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.44 | 0.20 | 0.05 | mg/L | 2.5 | 0.695 | 108 | 80-120 | 3 | 20 |
| **Matrix Spike Dup (BD10415-MSD2)** | | **Source: 1102786-02** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.65 | 0.20 | 0.05 | mg/L | 2.5 | 0.966 | 106 | 80-120 | 0.9 | 20 |
| **Batch BD10518 - alkalinity** | | | | | | | | | | |
| **Blank (BD10518-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BD10518-BLK2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BD10518-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BD10518-BS2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |

**Hazen and Sawyer**
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**Tampa, FL 33619**

**April 15, 2011**
**Work Order: 1102633**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10518 - alkalinity** | | | | | | | | | | |
| **Matrix Spike (BD10518-MS1)** | | **Source: 1102588-01** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 6.9 | 92 | 80-120 | | 26 |
| **Matrix Spike (BD10518-MS2)** | | **Source: 1102612-10** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 150 | 8.0 | 2.0 | mg/L | 120 | 12 | 109 | 80-120 | | 26 |
| **Matrix Spike Dup (BD10518-MSD1)** | | **Source: 1102588-01** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 6.9 | 93 | 80-120 | 0.8 | 26 |
| **Matrix Spike Dup (BD10518-MSD2)** | | **Source: 1102612-10** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 12 | 100 | 80-120 | 8 | 26 |
| **Batch BD10523 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BD10523-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **Blank (BD10523-BLK2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BD10523-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.778 | 0.04 | 0.01 | mg/L | 0.80 | | 97 | 90-110 | | |
| **LCS (BD10523-BS2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.810 | 0.04 | 0.01 | mg/L | 0.80 | | 101 | 90-110 | | |
| **Matrix Spike (BD10523-MS1)** | | **Source: 1102635-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.985 | 0.04 | 0.01 | mg/L | 1.0 | ND | 99 | 77-119 | | |

**Hazen and Sawyer**
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**Tampa, FL 33619**

**April 15, 2011**
**Work Order: 1102633**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10523 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Matrix Spike (BD10523-MS2)** | | **Source: 1102750-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.958 | 0.04 | 0.01 | mg/L | 1.0 | ND | 96 | 77-119 | | |
| **Matrix Spike Dup (BD10523-MSD1)** | | **Source: 1102635-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 1.01 | 0.04 | 0.01 | mg/L | 1.0 | ND | 101 | 77-119 | 2 | 20 |
| **Matrix Spike Dup (BD10523-MSD2)** | | **Source: 1102750-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.956 | 0.04 | 0.01 | mg/L | 1.0 | ND | 96 | 77-119 | 0.3 | 20 |
| **Batch BD10624 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BD10624-BLK1)** | | | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BD10624-BLK2)** | | | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BD10624-BS1)** | | | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.64 | 0.20 | 0.05 | mg/L | 2.5 | | 104 | 90-110 | | |
| **LCS (BD10624-BS2)** | | | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.52 | 0.20 | 0.05 | mg/L | 2.5 | | 99 | 90-110 | | |
| **Matrix Spike (BD10624-MS1)** | | **Source: 1102635-02** | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.57 | 0.20 | 0.05 | mg/L | 2.5 | ND | 101 | 80-120 | | |
| **Matrix Spike (BD10624-MS2)** | | **Source: 1102750-01** | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.52 | 0.20 | 0.05 | mg/L | 2.5 | ND | 100 | 80-120 | | |

**Hazen and Sawyer**
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**April 15, 2011**
**Work Order: 1102633**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10624 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Matrix Spike Dup (BD10624-MSD1)** | | **Source: 1102635-02** | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.45 | 0.20 | 0.05 | mg/L | 2.5 | ND | 97 | 80-120 | 5 | 20 |
| **Matrix Spike Dup (BD10624-MSD2)** | | **Source: 1102750-01** | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.68 | 0.20 | 0.05 | mg/L | 2.5 | ND | 106 | 80-120 | 6 | 20 |
| **Batch BD10901 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10901-BLK1)** | | | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BD10901-BLK2)** | | | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BD10901-BS1)** | | | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.50 | 0.010 | 0.005 | mg/L | 0.50 | | 101 | 90-110 | | |
| **LCS (BD10901-BS2)** | | | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | | 103 | 90-110 | | |
| **Matrix Spike (BD10901-MS1)** | | **Source: 1102750-01** | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.51 | 0.010 | 0.005 | mg/L | 0.50 | ND | 102 | 90-110 | | |
| **Matrix Spike (BD10901-MS2)** | | **Source: 1102903-01** | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | ND | 109 | 90-110 | | |
| **Matrix Spike Dup (BD10901-MSD1)** | | **Source: 1102750-01** | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.50 | 0.010 | 0.005 | mg/L | 0.50 | ND | 100 | 90-110 | 2 | 10 |

**Hazen and Sawyer**
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**Tampa, FL 33619**

**April 15, 2011**
**Work Order: 1102633**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10901 - Ammonia by SEAL** | | | | | | | | | | |
| **Matrix Spike Dup (BD10901-MSD2)** | | **Source: 1102903-01** | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | ND | 107 | 90-110 | 2 | 10 |
| **Batch BD11133 - alkalinity** | | | | | | | | | | |
| **Blank (BD11133-BLK1)** | | | | | Prepared & Analyzed: 04/11/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BD11133-BS1)** | | | | | Prepared & Analyzed: 04/11/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BD11133-MS1)** | | **Source: 1102567-01** | | | Prepared & Analyzed: 04/11/11 | | | | | |
| Total Alkalinity | 210 | 8.0 | 2.0 | mg/L | 120 | 80 | 101 | 80-120 | | 26 |
| **Matrix Spike Dup (BD11133-MSD1)** | | **Source: 1102567-01** | | | Prepared & Analyzed: 04/11/11 | | | | | |
| Total Alkalinity | 210 | 8.0 | 2.0 | mg/L | 120 | 80 | 101 | 80-120 | 0 | 26 |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 15, 2011**
**Work Order: 1102633**

## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

J5 Matrix spike of this sample was outside typical range. All other QC criteria were acceptable.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1102633

| Client Name | Contact / Phone: |
|---|---|
| Hazan and Sawyer | Josephin Edeback-Hirst 813-630-4498 |
| Project Name / Location | jedeback@hazanandsawyer.com |
| GCREC Mound Groundwater Analyses | |
| Samplers: (Signature) | |

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 250ml P, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 250ml aG, Cool DOC | Field pH | Field DO | Field Cond | Field Temp | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | PZ01-BKG-9 | 3/31/11 | 0930 | GW | | X | 1 | 1 | | | 4.6 | 6.78 | 146.8 | 22.8 | |
| 02 | PZ05-BKG-9 | 3/31/11 | 1014 | GW | | X | 1 | 1 | | | 5.1 | 4.38 | 98.8 | 21.8 | |
| 03 | PZ06-BKG-12 | 3/31/11 | 1003 | GW | | X | 1 | 1 | | | 4.7 | 5.41 | 59.4 | 23.1 | |
| 04 | DP-D07-5 | 3/30/11 | 1120 | GW | | X | 1 | 1 | | | 6.0 | 4.86 | 326 | 24.1 | |
| 05 | PZ23-D09-27 | 033011 | 1306 | GW | | X | 1 | 1 | | | 5.4 | 0.18 | 306.2 | 24.4 | |
| 06 | DP-E02-6 | 032911 | 0835 | GW | | X | 1 | 1 | | | 5.5 | 2.41 | 985 | 21.3 | 2 |
| 07 | DP-E11-12 | 032911 | 1300 | GW | | X | 1 | 1 | | | 5.1 | 0.99 | 441 | 23.0 | |
| 08 | PZ09-I08-5 | 033011 | 1438 | GW | | X | 1 | 1 | | | 5.2 | 6.03 | 94.2 | 21.9 | |
| 09 | DP-D07-9 | 3/30/11 | 1205 | GW | | X | 1 | 1 | | | 4.5 | 0.97 | 392 | 24.0 | |
| 10 | DP-D09-6 | 3/30/11 | 0950 | GW | | X | 1 | 1 | | | 4.5 | 2.05 | 456 | 22.6 | |
| 11 | DP-E04-8 | 032911 | 1015 | GW | | X | 1 | 1 | | | 4.9 | 1.43 | 171.1 | 22.0 | |
| 12 | DP-E06-6 | 032911 | 1100 | GW | | X | 1 | 1 | | | 4.4 | 1.89 | 162.8 | 22.8 | |

| Containers Prepared/ Relinquished: | Date/Time: 1515 03-27-11 | Received: | Date/Time: 0500 032911 |
|---|---|---|---|
| Relinquished: | Date/Time: 1600 032911 | Received: | Date/Time: 3/29/11 1600 |
| Relinquished: | Date/Time: 1830 033011 | Received: | Date/Time: |
| Relinquished: | Date/Time: 1430 3/31/11 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

6, 7, 11, 12, 13-15, 24, 4, 5, 8-10, 16, 20, 1-3, 19, 21

Seal intact? Y N (N/A)
Samples intact upon arrival? (Y) N N/A
Received on ice? Temp_____ (Y) N N/A
Proper preservatives indicated? (Y) N N/A
Rec'd within holding time? (Y) N N/A
Volatiles rec'd w/out headspace Y N (N/A)
Proper containers used? (Y) N N/A

**Instructions / Remarks**

1102633

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1102633

Client Name: Hazan and Sawyer

Contact / Phone: Josephin Edeback-Hirst 813-630-4498

Project Name / Location: GCREC Mound Groundwater Analyses

jedeback@hazanandsawyer.com

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| | SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 250ml P, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 250ml aG, Cool DOC | Field pH | Field DO | Field Cond | Field Temp | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 13 | DP-E08-6 | 03291 | 1200 | GW | | X | 1 | 1 | | | 5.0 | 1.83 | 326 | 22.4 | |
| | 14 | DP-F03-8 | 032911 | 1000 | GW | | X | 1 | 1 | | | 6.2 | 1.22 | 145.6 | 21.7 | 2 |
| | 15 | ~~DP-F07-6~~ 032911 | 0329 | Dry | GW | | X | 1 | 1 | | | Dry | — | — | — | — |
| | 16 | DP-G06-7 | 3/30/11 | 1445 | GW | | X | 1 | 1 | | | 6.2 | 2.36 | 184 | 28.9 | |
| | 17 | DP-H05-7 | 4/4/11 | 1040 | GW | | X | 1 | 1 | | | 6.3 | 6.73 | 136.7 | 25.6 | |
| | 18 | DP-H07-8 | 04/01/11 | 0730 | GW | | X | 1 | 1 | | | 5.1 | 1.57 | 151.3 | 20.2 | |
| JMH | 19 | DP-H09-12 | 3/31/11 | 1025 | GW | | X | 1 | 1 | | | 5.7 | 3.40 | 249 | 21.9 | |
| | 20 | PZ03-H11-6 | 033011 | 1214 | GW | | X | 1 | 1 | | | 4.8 | 3.68 | 138.4 | 25.9 | |
| JMH | 21 | DP-I08-5 | 3/31/11 | 1105 | GW | | X | 1 | 1 | | | 6.5 | 4.69 | 191.5 | 23.0 | |
| | 22 | DP-I10-6 | 04/01/11 | 0855 | GW | | X | 1 | 1 | | | 6.2 | 5.10 | 173.4 | 20.2 | |
| | 23 | DP-I12-6 | 04/01/11 | 0940 | GW | | X | 1 | 1 | | | 5.6 | 1.87 | 127.6 | 21.9 | |
| | 24 | DP-F04-32 | 032911 | 1100 | GW | | X | 1 | 1 | | | 6.9 | 1.04 | 345.6 | 23.1 | |

| | Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|---|
| | Containers Prepared/ Relinquished: | 1515 03-27-11 | | 0500 032911 |
| 13-15, 24 | | 1600 032911 | | 3/29/11 1600 |
| 16,20 | | 1830 033011 | | |
| 19,21 | Courier | 1430 3/31/11 | | |
| 17 | Courier | 1315 4/4/11 | | |

Seal intact? Y N (N/A)

Samples intact upon arrival? (Y) N N/A

Received on ice? Temp_____ (Y) N N/A

Proper preservatives indicated? (Y) N N/A

Rec'd within holding time? (Y) N N/A

Volatiles rec'd w/out headspace Y N (N/A)

Proper containers used? (Y) N N/A

**Instructions / Remarks**

DP-F07-6 switch with water tank 1210 032911
Ph 7.5
DO 7.55
CON 427
Temp 22.8
1102633

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033111 | SAL Project # | 1102633 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ01-BKG-9 | Sample ID | 01 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 7.13 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.28 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | |
| ONE WELL VOLUME | 0.129 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.387 | | 5 WELL VOLUMES | | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | |
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | 9.28 | FINAL TUBING LEGNTH IN WELL (FEET) | 9.28 | PURGE TIME START | 0920 | PURGE TIME END | 0929 | TOTAL PURGED | 0.90 | |
| INST. ID | X | X | X | X | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | X |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0923 | 0.30 | 0.30 | 0.10 | 8.61 | 4.6 | 22.8 | 153.4 | 6.74 | 11.4 | cloudy | None |
| 0926 | 0.30 | 0.60 | 0.10 | 8.61 | 4.6 | 22.8 | 147.3 | 6.76 | 8.81 | Clear | \| |
| 0929 | 0.30 | 0.90 | 0.10 | 8.61 | 4.6 | 22.8 | 146.8 | 6.78 | 6.15 | \| | \| |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | 9.28 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.10 | |
| SAMPLING INITIATED | 0930 | SAMPLING ENDED | 0930 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | windy Rain Past 24 hrs | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033111 | SAL Project # | PdA ~~1102588~~ 1102633 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PdA PZ06-BKG-9 | Sample ID | 02 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 7.68 | PURGE PUMP CODE (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.16 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.08 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.26 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 9.16 | FINAL TUBING LEGNTH IN WELL (FEET) | 9.16 | PURGE TIME START | 1005 | PURGE TIME END | 1014 | TOTAL PURGED | 0.90 |
| INST. ID | | | | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1008 | 0.30 | 0.30 | 0.10 | 8.67 | 5.1 | 21.8 | 99.9 | 4.62 | 11.9 | clear | none |
| 1011 | 0.30 | 0.60 | 0.10 | 8.67 | 5.1 | 21.8 | 98.4 | 4.40 | 8.86 | | |
| 1014 | 0.30 | 0.90 | 0.10 | 8.67 | 5.1 | 21.8 | 98.8 | 4.38 | 4.58 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | 9.16 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.10 |
| SAMPLING INITIATED | 1015 | SAMPLING ENDED | 1015 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | Windy – Rain Past 24 hrs | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033111 | SAL Project # | 1102633 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ06-BKG-12 | Sample ID | 03 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | 9.98 |
| PURGE PUMP CODE | (PP) GP IBP | TOTAL WELL DEPTH (Feet) | 12.09 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | TUBING DIAMETER (Inches) | |
| TUBING CAPACITY (gal/ft) | | | | | | | | | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.1266 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.3798 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 12.09 | FINAL TUBING LEGNTH IN WELL (FEET) | 12.09 | PURGE TIME START | 0943 | PURGE TIME END | 1002 | TOTAL PURGED | 0.90 |
| INST. ID | | | | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0946 | 0.30 | 0.30 | 0.10 | 11.87 | 4.7 | 23.1 | 60.6 | 5.38 | 22.9 | clear | None |
| 0949 | 0.30 | 0.60 | 0.10 | 11.87 | 4.7 | 23.1 | 59.6 | 5.48 | 17.8 | | |
| 1002 | 0.30 | 0.90 | 0.10 | 11.87 | 4.7 | 23.1 | 59.4 | 5.41 | 12.7 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | SAMPLE TUBING LEGNTH IN WELL (FEET) | | 12.09 | SAMPLE PUMP FLOW RATE (mL/min) | 0.10 | |
| SAMPLING INITIATED | 1003 | SAMPLING ENDED | 1008 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | windy / Drizzle Rain Past 24 hrs | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033011 | SAL Project # | 1102633 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ23-D09-27 | Sample ID | 05 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 2.0 | WELL CAPACITY (gal/ft) | 0.1632 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 7.23 | PURGE PUMP CODE (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 30.30 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 3.76 | 1/4 WELL VOLUME | 0.94 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 15.0 | FINAL TUBING LEGNTH IN WELL (FEET) | 15.0 | PURGE TIME START | 1240 | PURGE TIME END | 1305 | TOTAL PURGED | 5.00 |

| INST. ID | | | | | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1259 | 3.80 | 3.80 | 0.20 | | 5.5 | 24.4 | 306.4 | 0.48 | 16.6 | clear | none |
| 1302 | 0.60 | 4.40 | 0.20 | | 5.5 | 24.4 | 305.3 | 0.25 | 15.4 | | |
| 1305 | 0.60 | 5.00 | 0.20 | | 5.4 | 24.4 | 306.2 | 0.18 | 14.7 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | 15.0 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.20 |
| SAMPLING INITIATED | 1306 | SAMPLING ENDED | 1306 | FIELD CLEANED | (N) | CLEANING STEPS | DI |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | windy | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033011 | SAL Project # | 1102633 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ09-I08-5 | Sample ID | 08 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 4.55 | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | 6.10 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.093 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.27 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 1428 | PURGE TIME END | 1437 | TOTAL PURGED | 0.90 |
| INST. ID | X | X | X | X | SAL-SAM-63-02 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | X | X |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1431 | 0.30 | 0.30 | 0.10 | 5.91 | 5.2 | 21.9 | 95.6 | 5.89 | 91.7 | Cloudy | None |
| 1434 | 0.10 | 0.60 | 0.10 | 5.91 | 5.2 | 21.9 | 95.2 | 5.88 | 21.3 | Clear | " |
| 1437 | 0.10 | 0.90 | 0.10 | 5.91 | 5.2 | 21.9 | 94.2 | 6.03 | 14.5 | " | " |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | 6.0 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.10 |
| SAMPLING INITIATED | 1438 | SAMPLING ENDED | 1438 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | very windy | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033011 | SAL Project # | 1102633 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ03-H11-6 | Sample ID | 20 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 6.85 | PURGE PUMP CODE (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.1 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.135 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.405 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 9.0 | FINAL TUBING LEGNTH IN WELL (FEET) | 9.0 | PURGE TIME START | 1204 | PURGE TIME END | 1213 | TOTAL PURGED | 0.90 |
| INST. ID | | | | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1207 | 0.30 | 0.30 | 0.10 | 7.21 | 4.9 | 26.0 | 141.2 | 4.08 | 18.0 | clear | none |
| 1210 | 0.30 | 0.60 | 0.10 | 7.21 | 4.9 | 25.9 | 141.4 | 4.23 | 10.2 | | |
| 1213 | 0.30 | 0.90 | 0.10 | 7.21 | 4.8 | 25.9 | 138.4 | 3.68 | 5.57 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | 9.0 | SAMPLE PUMP FLOW RATE (mL/min) | 0.10 | |
| SAMPLING INITIATED | 1214 | SAMPLING ENDED | 1214 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | windy | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

Revision Date 09/25/09

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102635**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **STE-EX Pump Tank** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-01** | | | | | | |
| Date/Time Collected | | **04/04/11 11:40** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/04/11 13:15** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.8 | | | | | | |
| Temperature | | 26.4 °C | | | | | | |
| Conductivity | | 830 umhos | | | | | | |
| Dissolved Oxygen | | 0.30 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 33 | EPA 350.1 | 0.010 | 0.005 | | 04/08/11 10:37 | SMD |
| Carbonaceous BOD | mg/L | 83 | SM 5210B | 2 | 2 | 04/04/11 13:18 | 04/09/11 17:12 | KTC |
| Chloride | mg/L | 47 | EPA 300.0 | 0.20 | 0.050 | | 04/06/11 14:23 | MEJ |
| Fluoride | mg/L | 4.6 | EPA 300.0 | 0.040 | 0.010 | | 04/05/11 08:39 | MEJ |
| Nitrate (as N) | mg/L | 0.03 I | EPA 300.0 | 0.04 | 0.01 | | 04/05/11 08:39 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 04/05/11 08:39 | MEJ |
| Orthophosphate as P | mg/L | 3.2 | EPA 300.0 | 0.040 | 0.010 | | 04/05/11 08:39 | MEJ |
| Phosphorous - Total as P | mg/L | 5.9 | SM 4500P-E | 0.040 | 0.010 | 04/05/11 11:52 | 04/06/11 14:50 | SMB |
| Sulfate | mg/L | 21 | EPA 300.0 | 0.60 | 0.20 | | 04/05/11 08:39 | MEJ |
| Total Alkalinity | mg/L | 270 | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 41 | EPA 351.2 | 0.20 | 0.05 | 04/06/11 12:10 | 04/07/11 10:03 | SMB |
| Total Solids | % by wt | 0.03 | EPA 160.3 | 0.01 | 0.01 | 04/04/11 16:12 | 04/06/11 10:05 | MMF |
| Total Suspended Solids | mg/L | 18 | SM 2540D | 1 | 1 | 04/06/11 10:07 | 04/06/11 12:16 | MMF |
| Bicarbonate Alkalinity | mg/L | 270 | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.03 I | EPA 300.0 | 0.08 | 0.02 | | 04/05/11 08:39 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.15 | EPA 200.7 | 0.10 | 0.050 | 04/05/11 11:45 | 04/05/11 17:56 | LCB |
| Calcium | mg/L | 58 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:56 | LCB |
| Iron | mg/L | 7.0 | EPA 200.7 | 0.10 | 0.020 | 04/05/11 11:45 | 04/05/11 17:56 | LCB |
| Magnesium | mg/L | 18 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:56 | LCB |
| Manganese | mg/L | 0.081 | EPA 200.7 | 0.010 | 0.0010 | 04/05/11 11:45 | 04/05/11 17:56 | LCB |
| Potassium | mg/L | 15 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:56 | LCB |
| Sodium | mg/L | 43 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:56 | LCB |
| **Microbiology** | | | | | | | | |
| Total Coliform | CFU/100 ml | 200 Z | m-Coliblue24 | 1 | 1 | 04/04/11 14:30 | 04/05/11 14:30 | JAA |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**April 21, 2011**
**Work Order: 1102635**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **Field Blank DI** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-02** | | | | | | |
| Date/Time Collected | | **04/04/11 09:00** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/04/11 13:15** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.1 | | | | | | |
| Temperature | | 21.5 °C | | | | | | |
| Conductivity | | 1.19 umhos | | | | | | |
| Dissolved Oxygen | | 8.55 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/08/11 10:37 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.05 U | EPA 351.2 | 0.20 | 0.05 | 04/06/11 12:10 | 04/07/11 10:03 | SMB |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.01 U | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 12:17 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **Field Blank Tap** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-03** | | | | | | |
| Date/Time Collected | | **04/04/11 10:30** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/04/11 13:15** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 7.7 | | | | | | |
| Temperature | | 23.6 °C | | | | | | |
| Conductivity | | 432 umhos | | | | | | |
| Dissolved Oxygen | | 8.13 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/08/11 10:37 | SMD |
| Total Alkalinity | mg/L | 140 | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.05 U | EPA 351.2 | 0.20 | 0.05 | 04/06/11 12:10 | 04/07/11 10:03 | SMB |
| Bicarbonate Alkalinity | mg/L | 140 | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.05 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 12:17 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |

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**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102635**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **Equipment Rinsate** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-04** | | | | | | |
| Date/Time Collected | | **04/04/11 10:50** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/04/11 13:15** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.0 | | | | | | |
| Temperature | | 27.5 °C | | | | | | |
| Conductivity | | 1.38 umhos | | | | | | |
| Dissolved Oxygen | | 7.90 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.026 | EPA 350.1 | 0.010 | 0.005 | | 04/08/11 10:37 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.05 U | EPA 351.2 | 0.20 | 0.05 | 04/06/11 12:10 | 04/07/11 10:03 | SMB |
| Bicarbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.03 I | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 12:17 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Sample Description | | **PZ04-BKG-9-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-05** | | | | | | |
| Date/Time Collected | | **03/31/11 08:44** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.4 | | | | | | |
| Temperature | | 21.7 °C | | | | | | |
| Conductivity | | 78.2 umhos | | | | | | |
| Dissolved Oxygen | | 3.84 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 I | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Chemical Oxygen Demand | mg/L | 16 I | EPA 410.4 | 25 | 10 | | 04/01/11 14:59 | MMF |
| Chloride | mg/L | 1.8 | EPA 300.0 | 0.20 | 0.050 | | 04/01/11 11:52 | MEJ |
| Fluoride | mg/L | 0.11 | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 11:52 | MEJ |
| Nitrate (as N) | mg/L | 0.30 | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 11:52 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 11:52 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 11:52 | MEJ |
| Phosphorous - Total as P | mg/L | 0.021 I | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 12 | EPA 300.0 | 0.60 | 0.20 | | 04/01/11 11:52 | MEJ |
| Total Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.30 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |

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**Hazen and Sawyer**
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**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102635**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ04-BKG-9-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-05** | | | | | | |
| Date/Time Collected | | **03/31/11 08:44** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.4 | | | | | | |
| Temperature | | 21.7 °C | | | | | | |
| Conductivity | | 78.2 umhos | | | | | | |
| Dissolved Oxygen | | 3.84 mg/L | | | | | | |
| Bicarbonate Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.30 | EPA 300.0 | 0.08 | 0.02 | | 04/01/11 11:52 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.6 | SM 5310B | 1.0 | 0.50 | | 04/06/11 14:55 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 04/05/11 11:45 | 04/05/11 17:59 | LCB |
| Calcium | mg/L | 6.2 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:59 | LCB |
| Iron | mg/L | 0.020 U | EPA 200.7 | 0.10 | 0.020 | 04/05/11 11:45 | 04/05/11 17:59 | LCB |
| Magnesium | mg/L | 1.8 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:59 | LCB |
| Manganese | mg/L | 0.077 | EPA 200.7 | 0.010 | 0.0010 | 04/05/11 11:45 | 04/05/11 17:59 | LCB |
| Potassium | mg/L | 0.95 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:59 | LCB |
| Sodium | mg/L | 1.8 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 17:59 | LCB |
| Sample Description | | **PZ24-BKG-26-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-06** | | | | | | |
| Date/Time Collected | | **03/31/11 08:19** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.0 | | | | | | |
| Temperature | | 23.1 °C | | | | | | |
| Conductivity | | 270.9 umhos | | | | | | |
| Dissolved Oxygen | | 0.50 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.008 I | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Chemical Oxygen Demand | mg/L | 18 I | EPA 410.4 | 25 | 10 | | 04/01/11 14:59 | MMF |
| Chloride | mg/L | 16 | EPA 300.0 | 0.20 | 0.050 | | 04/01/11 11:52 | MEJ |
| Fluoride | mg/L | 0.027 I | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 11:52 | MEJ |
| Nitrate (as N) | mg/L | 9.5 | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 11:52 | MEJ |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**April 21, 2011**
**Work Order: 1102635**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ24-BKG-26-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-06** | | | | | | |
| Date/Time Collected | | **03/31/11 08:19** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.0 | | | | | | |
| Temperature | | 23.1 °C | | | | | | |
| Conductivity | | 270.9 umhos | | | | | | |
| Dissolved Oxygen | | 0.50 mg/L | | | | | | |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 11:52 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 11:52 | MEJ |
| Phosphorous - Total as P | mg/L | 0.43 | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 45 | EPA 300.0 | 0.60 | 0.20 | | 04/01/11 11:52 | MEJ |
| Total Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.9 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Total Organic Carbon | mg/L | 2.9 | SM 5310B | 1.0 | 0.50 | | 04/04/11 13:41 | MEJ |
| Bicarbonate Alkalinity | mg/L | 4.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 9.5 | EPA 300.0 | 0.08 | 0.02 | | 04/01/11 11:52 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.7 | SM 5310B | 1.0 | 0.50 | | 04/06/11 14:55 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 04/05/11 11:45 | 04/05/11 18:03 | LCB |
| Calcium | mg/L | 20 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:03 | LCB |
| Iron | mg/L | 0.042 I | EPA 200.7 | 0.10 | 0.020 | 04/05/11 11:45 | 04/05/11 18:03 | LCB |
| Magnesium | mg/L | 10 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:03 | LCB |
| Manganese | mg/L | 0.18 | EPA 200.7 | 0.010 | 0.0010 | 04/05/11 11:45 | 04/05/11 18:03 | LCB |
| Potassium | mg/L | 9.1 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:03 | LCB |
| Sodium | mg/L | 8.0 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:03 | LCB |
| Sample Description | | **DP-AA9-27-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-07** | | | | | | |
| Date/Time Collected | | **03/30/11 09:35** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 23.9 °C | | | | | | |
| Conductivity | | 288 umhos | | | | | | |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102635**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-AA9-27-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-07** | | | | | | |
| Date/Time Collected | | **03/30/11 09:35** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 23.9 °C | | | | | | |
| Conductivity | | 288 umhos | | | | | | |
| Dissolved Oxygen | | 0.82 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.46 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 10 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D07-5-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-08** | | | | | | |
| Date/Time Collected | | **03/30/11 11:15** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.0 | | | | | | |
| Temperature | | 24.1 °C | | | | | | |
| Conductivity | | 326 umhos | | | | | | |
| Dissolved Oxygen | | 4.86 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 11 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.6 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |
| Bicarbonate Alkalinity | mg/L | 11 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 11 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102635**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E13-10-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-09** | | | | | | |
| Date/Time Collected | | **03/29/11 09:20** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 21.3 °C | | | | | | |
| Conductivity | | 211.3 umhos | | | | | | |
| Dissolved Oxygen | | 2.21 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.029 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Total Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.70 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 1.9 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 12:08 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Sample Description | | **DP-E12-15-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-10** | | | | | | |
| Date/Time Collected | | **03/30/11 07:55** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.0 | | | | | | |
| Temperature | | 21.9 °C | | | | | | |
| Conductivity | | 460 umhos | | | | | | |
| Dissolved Oxygen | | 0.60 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | | 04/01/11 14:59 | MMF |
| Chloride | mg/L | 38 | EPA 300.0 | 0.20 | 0.050 | | 04/01/11 11:52 | MEJ |
| Fluoride | mg/L | 0.035 I | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Nitrate (as N) | mg/L | 17 | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 03/31/11 12:58 | MEJ |
| Orthophosphate as P | mg/L | 0.088 | EPA 300.0 | 0.040 | 0.010 | | 03/31/11 12:58 | MEJ |
| Phosphorous - Total as P | mg/L | 0.12 | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 54 | EPA 300.0 | 0.60 | 0.20 | | 03/31/11 12:58 | MEJ |
| Total Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 13:56 | 04/02/11 10:01 | SMB |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102635**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E12-15-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-10** | | | | | | |
| Date/Time Collected | | **03/30/11 07:55** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.0 | | | | | | |
| Temperature | | 21.9 °C | | | | | | |
| Conductivity | | 460 umhos | | | | | | |
| Dissolved Oxygen | | 0.60 mg/L | | | | | | |
| Bicarbonate Alkalinity | mg/L | 8.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 17 | EPA 300.0 | 0.08 | 0.02 | | 03/31/11 12:58 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.50 U | SM 5310B | 1.0 | 0.50 | | 03/31/11 12:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.10 | EPA 200.7 | 0.10 | 0.050 | 04/05/11 11:45 | 04/05/11 18:06 | LCB |
| Calcium | mg/L | 35 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:06 | LCB |
| Iron | mg/L | 0.063 I | EPA 200.7 | 0.10 | 0.020 | 04/05/11 11:45 | 04/05/11 18:06 | LCB |
| Magnesium | mg/L | 7.5 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:06 | LCB |
| Manganese | mg/L | 0.047 | EPA 200.7 | 0.010 | 0.0010 | 04/05/11 11:45 | 04/05/11 18:06 | LCB |
| Potassium | mg/L | 11 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:06 | LCB |
| Sodium | mg/L | 33 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:06 | LCB |
| Sample Description | | **DP-F09-5-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-11** | | | | | | |
| Date/Time Collected | | **03/29/11 13:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.6 | | | | | | |
| Temperature | | 24.8 °C | | | | | | |
| Conductivity | | 141.1 umhos | | | | | | |
| Dissolved Oxygen | | 1.15 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.22 | EPA 350.1 | 0.010 | 0.005 | | 03/31/11 09:27 | SMD |
| Chemical Oxygen Demand | mg/L | 32 | EPA 410.4 | 25 | 10 | 03/30/11 14:21 | 03/31/11 16:29 | MMF |
| Chloride | mg/L | 10 | EPA 300.0 | 0.20 | 0.050 | | 03/30/11 13:32 | MEJ |
| Fluoride | mg/L | 0.11 | EPA 300.0 | 0.040 | 0.010 | | 03/30/11 13:32 | MEJ |
| Nitrate (as N) | mg/L | 2.0 | EPA 300.0 | 0.04 | 0.01 | | 03/30/11 13:32 | MEJ |

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**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102635**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F09-5-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-11** | | | | | | |
| Date/Time Collected | | **03/29/11 13:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/29/11 16:00** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.6 | | | | | | |
| Temperature | | 24.8 °C | | | | | | |
| Conductivity | | 141.1 umhos | | | | | | |
| Dissolved Oxygen | | 1.15 mg/L | | | | | | |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 03/30/11 13:32 | MEJ |
| Orthophosphate as P | mg/L | 0.026 I | EPA 300.0 | 0.040 | 0.010 | | 03/30/11 13:32 | MEJ |
| Phosphorous - Total as P | mg/L | 0.33 | SM 4500P-E | 0.040 | 0.010 | 03/30/11 12:59 | 03/31/11 15:45 | SMB |
| Sulfate | mg/L | 27 | EPA 300.0 | 0.60 | 0.20 | | 03/30/11 13:32 | MEJ |
| Total Alkalinity | mg/L | 22 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 03/30/11 12:12 | 04/01/11 07:46 | SMB |
| Bicarbonate Alkalinity | mg/L | 22 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 2.0 | EPA 300.0 | 0.08 | 0.02 | | 03/30/11 13:32 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 7.7 | SM 5310B | 1.0 | 0.50 | | 03/31/11 12:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 03/30/11 10:19 | 03/30/11 16:25 | LCB |
| Calcium | mg/L | 14 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 16:25 | LCB |
| Iron | mg/L | 5.7 | EPA 200.7 | 0.10 | 0.020 | 03/30/11 10:19 | 03/30/11 16:25 | LCB |
| Magnesium | mg/L | 3.5 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 16:25 | LCB |
| Manganese | mg/L | 0.35 | EPA 200.7 | 0.010 | 0.0010 | 03/30/11 10:19 | 03/30/11 16:25 | LCB |
| Potassium | mg/L | 4.7 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 16:25 | LCB |
| Sodium | mg/L | 11 | EPA 200.7 | 0.050 | 0.010 | 03/30/11 10:19 | 03/30/11 16:25 | LCB |
| Sample Description | | **DP-F11-11-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-12** | | | | | | |
| Date/Time Collected | | **03/30/11 08:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 21.4 °C | | | | | | |
| Conductivity | | 412.7 umhos | | | | | | |
| Dissolved Oxygen | | 0.90 mg/L | | | | | | |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**April 21, 2011**
**Work Order: 1102635**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F11-11-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-12** | | | | | | |
| Date/Time Collected | | **03/30/11 08:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/30/11 18:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.3 | | | | | | |
| Temperature | | 21.4 °C | | | | | | |
| Conductivity | | 412.7 umhos | | | | | | |
| Dissolved Oxygen | | 0.90 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.43 | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 9.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.9 | EPA 351.2 | 0.20 | 0.05 | 03/31/11 12:30 | 04/04/11 13:54 | SMD |
| Bicarbonate Alkalinity | mg/L | 9.9 | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Nitrate+Nitrite (N) | mg/L | 21 | EPA 353.2 | 0.04 | 0.01 | | 03/31/11 13:45 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 03/31/11 08:00 | 03/31/11 15:20 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F15-20-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-13** | | | | | | |
| Date/Time Collected | | **03/31/11 09:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.4 | | | | | | |
| Temperature | | 22.3 °C | | | | | | |
| Conductivity | | 383 umhos | | | | | | |
| Dissolved Oxygen | | 0.78 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.012 | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 9.9 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.7 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 9.9 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 18 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102635**

## Laboratory Report

**Project Name** GCREC Mound Groundwater Analyses

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-18-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-14** | | | | | | |
| Date/Time Collected | | **03/31/11 09:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.2 | | | | | | |
| Temperature | | 22.2 °C | | | | | | |
| Conductivity | | 494 umhos | | | | | | |
| Dissolved Oxygen | | 1.40 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.013 | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.0 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 29 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-H12-5-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-15** | | | | | | |
| Date/Time Collected | | **03/31/11 09:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.6 | | | | | | |
| Temperature | | 21.9 °C | | | | | | |
| Conductivity | | 188.5 umhos | | | | | | |
| Dissolved Oxygen | | 0.94 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.016 | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 0.93 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |
| Bicarbonate Alkalinity | mg/L | 7.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 2.2 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**April 21, 2011**
**Work Order: 1102635**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-K12-5-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-16** | | | | | | |
| Date/Time Collected | | **04/01/11 10:10** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.6 | | | | | | |
| Temperature | | 22.3 °C | | | | | | |
| Conductivity | | 59.3 umhos | | | | | | |
| Dissolved Oxygen | | 1.40 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.071 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 43 | EPA 410.4 | 25 | 10 | | 04/05/11 13:00 | MMF |
| Chloride | mg/L | 1.6 | EPA 300.0 | 0.20 | 0.050 | | 04/01/11 16:00 | MEJ |
| Fluoride | mg/L | 0.058 | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 16:00 | MEJ |
| Nitrate (as N) | mg/L | 0.03 I | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 16:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 04/01/11 16:00 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 04/01/11 16:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.32 | SM 4500P-E | 0.040 | 0.010 | 04/04/11 16:50 | 04/05/11 14:13 | SMB |
| Sulfate | mg/L | 9.2 | EPA 300.0 | 0.60 | 0.20 | | 04/01/11 16:00 | MEJ |
| Total Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.7 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 6.9 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.03 I | EPA 300.0 | 0.08 | 0.02 | | 04/01/11 16:00 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 7.0 | SM 5310B | 1.0 | 0.50 | | 04/06/11 14:55 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 04/05/11 11:45 | 04/05/11 18:10 | LCB |
| Calcium | mg/L | 5.4 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:10 | LCB |
| Iron | mg/L | 2.5 | EPA 200.7 | 0.10 | 0.020 | 04/05/11 11:45 | 04/05/11 18:10 | LCB |
| Magnesium | mg/L | 0.92 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:10 | LCB |
| Manganese | mg/L | 0.20 | EPA 200.7 | 0.010 | 0.0010 | 04/05/11 11:45 | 04/05/11 18:10 | LCB |
| Potassium | mg/L | 0.44 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:10 | LCB |
| Sodium | mg/L | 1.9 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:10 | LCB |

**Hazen and Sawyer**
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**April 21, 2011**
**Work Order: 1102635**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-O10-24-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-17** | | | | | | |
| Date/Time Collected | | **04/01/11 14:02** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **04/01/11 15:45** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 5.1 | | | | | | |
| Temperature | | 24.2 °C | | | | | | |
| Conductivity | | 361 umhos | | | | | | |
| Dissolved Oxygen | | 0.95 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.082 | EPA 350.1 | 0.010 | 0.005 | | 04/04/11 11:13 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 04/04/11 11:51 | 04/05/11 14:41 | SMB |
| Bicarbonate Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 16 | EPA 353.2 | 0.04 | 0.01 | | 04/05/11 09:16 | SMD |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **STE-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-18** | | | | | | |
| Date/Time Collected | | **04/04/11 11:50** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/04/11 13:15** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.8 | | | | | | |
| Temperature | | 26.4 °C | | | | | | |
| Conductivity | | 830 umhos | | | | | | |
| Dissolved Oxygen | | 0.30 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 36 | EPA 350.1 | 0.010 | 0.005 | | 04/08/11 10:37 | SMD |
| Carbonaceous BOD | mg/L | 87 | SM 5210B | 2 | 2 | 04/04/11 13:18 | 04/09/11 17:12 | KTC |
| Chloride | mg/L | 48 | EPA 300.0 | 0.20 | 0.050 | | 04/06/11 14:23 | MEJ |
| Fluoride | mg/L | 4.4 | EPA 300.0 | 0.040 | 0.010 | | 04/05/11 08:39 | MEJ |
| Nitrate (as N) | mg/L | 0.03 I | EPA 300.0 | 0.04 | 0.01 | | 04/05/11 08:39 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 04/05/11 08:39 | MEJ |
| Orthophosphate as P | mg/L | 3.2 | EPA 300.0 | 0.040 | 0.010 | | 04/05/11 08:39 | MEJ |
| Phosphorous - Total as P | mg/L | 5.1 | SM 4500P-E | 0.040 | 0.010 | 04/07/11 14:00 | 04/08/11 16:12 | SMD |
| Sulfate | mg/L | 22 | EPA 300.0 | 0.60 | 0.20 | | 04/05/11 08:39 | MEJ |
| Total Alkalinity | mg/L | 290 | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 43 | EPA 351.2 | 0.20 | 0.05 | 04/06/11 12:10 | 04/07/11 10:03 | SMB |

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**April 21, 2011**
**Work Order: 1102635**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **STE-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-18** | | | | | | |
| Date/Time Collected | | **04/04/11 11:50** | | | | | | |
| Collected by | | **Josephine Edeback-Hirst** | | | | | | |
| Date/Time Received | | **04/04/11 13:15** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.8 | | | | | | |
| Temperature | | 26.4 °C | | | | | | |
| Conductivity | | 830 umhos | | | | | | |
| Dissolved Oxygen | | 0.30 mg/L | | | | | | |
| Total Solids | % by wt | 0.04 | EPA 160.3 | 0.01 | 0.01 | 04/04/11 16:12 | 04/06/11 10:05 | MMF |
| Total Suspended Solids | mg/L | 18 | SM 2540D | 1 | 1 | 04/06/11 10:07 | 04/06/11 12:16 | MMF |
| Bicarbonate Alkalinity | mg/L | 290 | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Nitrate+Nitrite (N) | mg/L | 0.03 I | EPA 300.0 | 0.08 | 0.02 | | 04/05/11 08:39 | MEJ |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/11/11 13:03 | JMK |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.15 | EPA 200.7 | 0.10 | 0.050 | 04/05/11 11:45 | 04/05/11 18:13 | LCB |
| Calcium | mg/L | 53 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:13 | LCB |
| Iron | mg/L | 1.2 | EPA 200.7 | 0.10 | 0.020 | 04/05/11 11:45 | 04/05/11 18:13 | LCB |
| Magnesium | mg/L | 16 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:13 | LCB |
| Manganese | mg/L | 0.070 | EPA 200.7 | 0.010 | 0.0010 | 04/05/11 11:45 | 04/05/11 18:13 | LCB |
| Potassium | mg/L | 14 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:13 | LCB |
| Sodium | mg/L | 39 | EPA 200.7 | 0.050 | 0.010 | 04/05/11 11:45 | 04/05/11 18:13 | LCB |
| **Microbiology** | | | | | | | | |
| Total Coliform | CFU/100 ml | 200 Z | m-Coliblue24 | 1 | 1 | 04/04/11 14:30 | 04/05/11 14:30 | JAA |
| Sample Description | | **PZ-25** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-19** | | | | | | |
| Date/Time Collected | | **03/31/11 11:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.0 | | | | | | |
| Temperature | | 22.0 °C | | | | | | |
| Conductivity | | 770 umhos | | | | | | |
| Dissolved Oxygen | | 5.65 mg/L | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.022 | EPA 350.1 | 0.010 | 0.005 | | 04/02/11 07:11 | SMB |
| Total Alkalinity | mg/L | 48 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Total Kjeldahl Nitrogen | mg/L | 2.3 | EPA 351.2 | 0.20 | 0.05 | 04/01/11 12:21 | 04/05/11 09:19 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102635**

## Laboratory Report

| **Project Name** | | **GCREC Mound Groundwater Analyses** | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Parameters** | **Units** | **Results *** | **Method** | **PQL** | **MDL** | **Prepared** | **Analyzed** | **By** |
| Sample Description | | **PZ-25** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1102635-19** | | | | | | |
| Date/Time Collected | | **03/31/11 11:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **03/31/11 14:30** | | | | | | |
| **Client Provided Field Data** | | | | | | | | |
| pH | | 6.0 | | | | | | |
| Temperature | | 22.0 °C | | | | | | |
| Conductivity | | 770 umhos | | | | | | |
| Dissolved Oxygen | | 5.65 mg/L | | | | | | |
| Bicarbonate Alkalinity | mg/L | 48 | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Nitrate+Nitrite (N) | mg/L | 20 | EPA 353.2 | 0.04 | 0.01 | | 04/01/11 10:00 | SMB |
| Carbonate Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Hydroxide Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |
| Phenolphthalein Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 04/05/11 14:30 | JMK |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13009 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BC13009-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BC13009-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BC13009-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | | 107 | 90-110 | | |
| **LCS (BC13009-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.50 | 0.010 | 0.005 | mg/L | 0.50 | | 99 | 90-110 | | |
| **Matrix Spike (BC13009-MS1)** | | **Source: 1102727-07** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.060 | 103 | 90-110 | | |
| **Matrix Spike (BC13009-MS2)** | | **Source: 1102740-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | 0.034 | 102 | 90-110 | | |
| **Matrix Spike Dup (BC13009-MSD1)** | | **Source: 1102727-07** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.060 | 103 | 90-110 | 0.1 | 10 |
| **Matrix Spike Dup (BC13009-MSD2)** | | **Source: 1102740-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.034 | 107 | 90-110 | 5 | 10 |
| **Batch BC13012 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BC13012-BLK1)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13012 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BC13012-BLK2)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BC13012-BS1)** | | | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.74 | 0.20 | 0.05 | mg/L | 2.5 | | 108 | 90-110 | | |
| **LCS (BC13012-BS2)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.61 | 0.20 | 0.05 | mg/L | 2.5 | | 103 | 90-110 | | |
| **Matrix Spike (BC13012-MS1)** | | **Source: 1102731-01** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.99 | 0.20 | 0.05 | mg/L | 2.5 | 0.519 | 97 | 80-120 | | |
| **Matrix Spike (BC13012-MS2)** | | **Source: 1102697-02** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.48 J5 | 0.20 | 0.05 | mg/L | 2.5 | 0.808 | 106 | 80-120 | | |
| **Matrix Spike Dup (BC13012-MSD1)** | | **Source: 1102731-01** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.92 | 0.20 | 0.05 | mg/L | 2.5 | 0.519 | 95 | 80-120 | 2 | 20 |
| **Matrix Spike Dup (BC13012-MSD2)** | | **Source: 1102697-02** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.57 J5 | 0.20 | 0.05 | mg/L | 2.5 | 0.808 | 109 | 80-120 | 2 | 20 |
| **Batch BC13014 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BC13014-BLK1)** | | | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BC13014-BLK2)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

**Hazen and Sawyer**
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**April 21, 2011**
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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13014 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **LCS (BC13014-BS1)** | | | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Phosphorous - Total as P | 0.471 | 0.040 | 0.010 | mg/L | 0.50 | | 94 | 90-110 | | |
| **LCS (BC13014-BS2)** | | | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Phosphorous - Total as P | 0.539 | 0.040 | 0.010 | mg/L | 0.50 | | 108 | 90-110 | | |
| **Matrix Spike (BC13014-MS1)** | | **Source: 1102466-02** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Phosphorous - Total as P | 0.514 | 0.040 | 0.010 | mg/L | 0.50 | 0.0553 | 92 | 75-125 | | |
| **Matrix Spike (BC13014-MS2)** | | **Source: 1102697-02** | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Phosphorous - Total as P | 0.520 | 0.040 | 0.010 | mg/L | 0.50 | 0.0758 | 89 | 75-125 | | |
| **Matrix Spike Dup (BC13014-MSD1)** | | **Source: 1102466-02** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Phosphorous - Total as P | 0.516 | 0.040 | 0.010 | mg/L | 0.50 | 0.0553 | 92 | 75-125 | 0.3 | 25 |
| **Matrix Spike Dup (BC13014-MSD2)** | | **Source: 1102697-02** | | | Prepared: 03/30/11 Analyzed: 04/01/11 | | | | | |
| Phosphorous - Total as P | 0.482 | 0.040 | 0.010 | mg/L | 0.50 | 0.0758 | 81 | 75-125 | 8 | 25 |
| **Batch BC13015 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BC13015-BLK1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13015 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS (BC13015-BS1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Sulfate | 8.46 | 0.60 | 0.20 | mg/L | 9.0 | | 94 | 85-115 | | |
| Fluoride | 0.869 | 0.040 | 0.010 | mg/L | 0.90 | | 97 | 85-115 | | |
| Orthophosphate as P | 0.862 | 0.040 | 0.010 | mg/L | 0.90 | | 96 | 85-115 | | |
| Nitrate (as N) | 1.61 | 0.04 | 0.01 | mg/L | 1.7 | | 95 | 85-115 | | |
| Chloride | 2.97 | 0.20 | 0.050 | mg/L | 3.0 | | 99 | 85-115 | | |
| Nitrite (as N) | 1.36 | 0.04 | 0.01 | mg/L | 1.4 | | 97 | 85-115 | | |
| **LCS Dup (BC13015-BSD1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Orthophosphate as P | 0.876 | 0.040 | 0.010 | mg/L | 0.90 | | 97 | 85-115 | 2 | 200 |
| Fluoride | 0.859 | 0.040 | 0.010 | mg/L | 0.90 | | 95 | 85-115 | 1 | 200 |
| Sulfate | 8.51 | 0.60 | 0.20 | mg/L | 9.0 | | 95 | 85-115 | 0.6 | 200 |
| Chloride | 2.90 | 0.20 | 0.050 | mg/L | 3.0 | | 97 | 85-115 | 2 | 200 |
| Nitrite (as N) | 1.35 | 0.04 | 0.01 | mg/L | 1.4 | | 96 | 85-115 | 0.7 | 200 |
| Nitrate (as N) | 1.61 | 0.04 | 0.01 | mg/L | 1.7 | | 95 | 85-115 | 0 | 200 |
| **Matrix Spike (BC13015-MS1)** | | **Source: 1102705-02** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Sulfate | 95.8 | 0.60 | 0.20 | mg/L | 9.0 | 86.2 | 107 | 85-115 | | |
| Fluoride | 1.38 | 0.040 | 0.010 | mg/L | 0.90 | 0.531 | 94 | 85-115 | | |
| Chloride | 48.3 +O | 0.20 | 0.050 | mg/L | 3.0 | 48.1 | 7 | 80-120 | | |
| Orthophosphate as P | 1.33 | 0.040 | 0.010 | mg/L | 0.90 | 0.496 | 93 | 85-115 | | |
| Nitrite (as N) | 1.48 | 0.04 | 0.01 | mg/L | 1.4 | ND | 106 | 85-115 | | |
| Nitrate (as N) | 2.81 | 0.04 | 0.01 | mg/L | 1.7 | 1.21 | 94 | 85-115 | | |
| **Matrix Spike (BC13015-MS2)** | | **Source: 1102754-01** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Nitrate (as N) | 3.97 +O | 0.04 | 0.01 | mg/L | 1.7 | 1.52 | 144 | 85-115 | | |
| Nitrite (as N) | 0.350 +O | 0.04 | 0.01 | mg/L | 1.4 | ND | 25 | 85-115 | | |
| Fluoride | 1.07 | 0.040 | 0.010 | mg/L | 0.90 | 0.109 | 107 | 85-115 | | |
| Sulfate | 45.9 | 0.60 | 0.20 | mg/L | 9.0 | 38.2 | 86 | 85-115 | | |
| Chloride | 42.0 +O | 0.20 | 0.050 | mg/L | 3.0 | 42.8 | NR | 80-120 | | |
| Orthophosphate as P | 2.26 +O | 0.040 | 0.010 | mg/L | 0.90 | 2.19 | 8 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13016 - COD prep** | | | | | | | | | | |
| **Blank (BC13016-BLK1)** | | | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BC13016-BS1)** | | | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Chemical Oxygen Demand | 53 | 25 | 10 | mg/L | 50 | | 106 | 90-110 | | |
| **Matrix Spike (BC13016-MS1)** | | **Source: 1102664-01** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Chemical Oxygen Demand | 2,100 | 25 | 10 | mg/L | 1000 | 1300 | 87 | 85-115 | | |
| **Matrix Spike Dup (BC13016-MSD1)** | | **Source: 1102664-01** | | | Prepared: 03/30/11 Analyzed: 03/31/11 | | | | | |
| Chemical Oxygen Demand | 2,200 | 25 | 10 | mg/L | 1000 | 1300 | 91 | 85-115 | 2 | 32 |
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **Blank (BC13102-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **Blank (BC13102-BLK3)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BC13102-BLK4)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BC13102-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS3)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BC13102-BS4)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BC13102-MS1)** | | **Source: 1102633-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | ND | 101 | 80-120 | | 26 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13102 - alkalinity** | | | | | | | | | | |
| **Matrix Spike (BC13102-MS2)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.9 | 97 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS3)** | | **Source: 1102597-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | | 26 |
| **Matrix Spike (BC13102-MS4)** | | **Source: 1102612-21** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 107 | 80-120 | | 26 |
| **Matrix Spike Dup (BC13102-MSD1)** | | **Source: 1102633-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | ND | 101 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD2)** | | **Source: 1102588-03** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.9 | 97 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD3)** | | **Source: 1102597-08** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BC13102-MSD4)** | | **Source: 1102612-21** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | 4.0 | 98 | 80-120 | 9 | 26 |
| **Batch BC13106 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BC13106-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **Blank (BC13106-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13106 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **LCS (BC13106-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.800 | 0.04 | 0.01 | mg/L | 0.80 | | 100 | 90-110 | | |
| **LCS (BC13106-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.827 | 0.04 | 0.01 | mg/L | 0.80 | | 103 | 90-110 | | |
| **Matrix Spike (BC13106-MS1)** | | **Source: 1102727-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.05 | 0.04 | 0.01 | mg/L | 1.0 | ND | 105 | 77-119 | | |
| **Matrix Spike (BC13106-MS2)** | | **Source: 1102742-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.00 | 0.04 | 0.01 | mg/L | 1.0 | ND | 100 | 77-119 | | |
| **Matrix Spike Dup (BC13106-MSD1)** | | **Source: 1102727-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.08 | 0.04 | 0.01 | mg/L | 1.0 | ND | 108 | 77-119 | 3 | 20 |
| **Matrix Spike Dup (BC13106-MSD2)** | | **Source: 1102742-06** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.02 | 0.04 | 0.01 | mg/L | 1.0 | ND | 102 | 77-119 | 2 | 20 |
| **Batch BC13111 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BC13111-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BC13111-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Orthophosphate as P | 0.853 | 0.040 | 0.010 | mg/L | 0.90 | | 95 | 85-115 | | |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | | |
| Fluoride | 0.840 | 0.040 | 0.010 | mg/L | 0.90 | | 93 | 85-115 | | |
| Nitrite (as N) | 1.27 | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | | |
| Sulfate | 8.41 | 0.60 | 0.20 | mg/L | 9.0 | | 93 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13111 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS Dup (BC13111-BSD1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Sulfate | 8.41 | 0.60 | 0.20 | mg/L | 9.0 | | 93 | 85-115 | 0 | 200 |
| Fluoride | 0.890 | 0.040 | 0.010 | mg/L | 0.90 | | 99 | 85-115 | 6 | 200 |
| Orthophosphate as P | 0.864 | 0.040 | 0.010 | mg/L | 0.90 | | 96 | 85-115 | 1 | 200 |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | 0 | 200 |
| Nitrite (as N) | 1.28 | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | 0.8 | 200 |
| **Matrix Spike (BC13111-MS1)** | | **Source: 1102612-12** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | 0.140 | 89 | 85-115 | | |
| Sulfate | 39.5 | 0.60 | 0.20 | mg/L | 9.0 | 30.3 | 102 | 85-115 | | |
| Nitrite (as N) | 1.26 | 0.04 | 0.01 | mg/L | 1.4 | ND | 90 | 85-115 | | |
| Orthophosphate as P | 1.04 | 0.040 | 0.010 | mg/L | 0.90 | 0.176 | 96 | 85-115 | | |
| Fluoride | 0.903 | 0.040 | 0.010 | mg/L | 0.90 | 0.0752 | 92 | 85-115 | | |
| **Matrix Spike (BC13111-MS2)** | | **Source: 1102765-02** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Orthophosphate as P | 1,010 | 0.040 | 0.010 | mg/L | 900 | 62.6 | 105 | 85-115 | | |
| Sulfate | 9,850 | 0.60 | 0.20 | mg/L | 9000 | 1420 | 94 | 85-115 | | |
| Nitrite (as N) | 1,270 | 0.04 | 0.01 | mg/L | 1400 | ND | 91 | 85-115 | | |
| Fluoride | 872 | 0.040 | 0.010 | mg/L | 900 | 34.8 | 93 | 85-115 | | |
| Nitrate (as N) | 1,600 | 0.04 | 0.01 | mg/L | 1700 | 14.5 | 93 | 85-115 | | |
| **Batch BC13117 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BC13117-BLK1)** | | | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BC13117-BLK2)** | | | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13117 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **LCS (BC13117-BS1)** | | | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.30 | 0.20 | 0.05 | mg/L | 2.5 | | 91 | 90-110 | | |
| **LCS (BC13117-BS2)** | | | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.30 | 0.20 | 0.05 | mg/L | 2.5 | | 91 | 90-110 | | |
| **Matrix Spike (BC13117-MS1)** | | **Source: 1102745-02** | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 5.20 J5 | 0.20 | 0.05 | mg/L | 2.5 | 3.92 | 50 | 80-120 | | |
| **Matrix Spike (BC13117-MS2)** | | **Source: 1102742-07** | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.18 | 0.20 | 0.05 | mg/L | 2.5 | 0.747 | 96 | 80-120 | | |
| **Matrix Spike Dup (BC13117-MSD1)** | | **Source: 1102745-02** | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 5.61 J5 | 0.20 | 0.05 | mg/L | 2.5 | 3.92 | 66 | 80-120 | 8 | 20 |
| **Matrix Spike Dup (BC13117-MSD2)** | | **Source: 1102742-07** | | | Prepared: 03/31/11 Analyzed: 04/04/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.16 | 0.20 | 0.05 | mg/L | 2.5 | 0.747 | 95 | 80-120 | 0.6 | 20 |
| **Batch BC13118 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BC13118-BLK1)** | | | | | Prepared: 03/31/11 Analyzed: 04/02/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BC13118-BS1)** | | | | | Prepared: 03/31/11 Analyzed: 04/02/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.57 | 0.20 | 0.05 | mg/L | 2.5 | | 101 | 90-110 | | |
| **Batch BC13123 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BC13123-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13123 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BC13123-BLK2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BC13123-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.815 | 0.04 | 0.01 | mg/L | 0.80 | | 102 | 90-110 | | |
| **LCS (BC13123-BS2)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 0.832 | 0.04 | 0.01 | mg/L | 0.80 | | 104 | 90-110 | | |
| **Matrix Spike (BC13123-MS1)** | | **Source: 1102741-01** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.09 | 0.04 | 0.01 | mg/L | 1.0 | 0.0832 | 101 | 77-119 | | |
| **Matrix Spike (BC13123-MS2)** | | **Source: 1102588-04** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 8.89 | 0.04 | 0.01 | mg/L | 1.0 | 7.92 | 97 | 77-119 | | |
| **Matrix Spike Dup (BC13123-MSD1)** | | **Source: 1102741-01** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 1.12 | 0.04 | 0.01 | mg/L | 1.0 | 0.0832 | 103 | 77-119 | 2 | 20 |
| **Matrix Spike Dup (BC13123-MSD2)** | | **Source: 1102588-04** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Nitrate+Nitrite (N) | 9.02 | 0.04 | 0.01 | mg/L | 1.0 | 7.92 | 111 | 77-119 | 2 | 20 |
| **Batch BD10106 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BD10106-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **Blank (BD10106-BLK2)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10106 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **LCS (BD10106-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 0.749 | 0.04 | 0.01 | mg/L | 0.80 | | 94 | 90-110 | | |
| **LCS (BD10106-BS2)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 0.765 | 0.04 | 0.01 | mg/L | 0.80 | | 96 | 90-110 | | |
| **Matrix Spike (BD10106-MS1)** | | **Source: 1102727-07** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 1.40 | 0.04 | 0.01 | mg/L | 1.0 | 0.370 | 103 | 77-119 | | |
| **Matrix Spike (BD10106-MS2)** | | **Source: 1102740-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 0.976 | 0.04 | 0.01 | mg/L | 1.0 | ND | 98 | 77-119 | | |
| **Matrix Spike Dup (BD10106-MSD1)** | | **Source: 1102727-07** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 1.38 | 0.04 | 0.01 | mg/L | 1.0 | 0.370 | 102 | 77-119 | 1 | 20 |
| **Matrix Spike Dup (BD10106-MSD2)** | | **Source: 1102740-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrate+Nitrite (N) | 0.976 | 0.04 | 0.01 | mg/L | 1.0 | ND | 98 | 77-119 | 0.01 | 20 |
| **Batch BD10110 - COD prep** | | | | | | | | | | |
| **Blank (BD10110-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BD10110-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 51 | 25 | 10 | mg/L | 50 | | 102 | 90-110 | | |
| **Matrix Spike (BD10110-MS1)** | | **Source: 1102635-10** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10110 - COD prep** | | | | | | | | | | |
| **Matrix Spike Dup (BD10110-MSD1)** | | **Source: 1102635-10** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | 0 | 32 |
| **Batch BD10113 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BD10113-BLK1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BD10113-BS1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Sulfate | 8.42 | 0.60 | 0.20 | mg/L | 9.0 | | 94 | 85-115 | | |
| Nitrite (as N) | 1.27 | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | | |
| Chloride | 2.98 | 0.20 | 0.050 | mg/L | 3.0 | | 99 | 85-115 | | |
| Orthophosphate as P | 0.860 | 0.040 | 0.010 | mg/L | 0.90 | | 96 | 85-115 | | |
| Nitrate (as N) | 1.63 | 0.04 | 0.01 | mg/L | 1.7 | | 96 | 85-115 | | |
| Fluoride | 0.888 | 0.040 | 0.010 | mg/L | 0.90 | | 99 | 85-115 | | |
| **LCS Dup (BD10113-BSD1)** | | | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Orthophosphate as P | 0.864 | 0.040 | 0.010 | mg/L | 0.90 | | 96 | 85-115 | 0.5 | 200 |
| Nitrite (as N) | 1.28 | 0.04 | 0.01 | mg/L | 1.4 | | 91 | 85-115 | 0.8 | 200 |
| Fluoride | 0.894 | 0.040 | 0.010 | mg/L | 0.90 | | 99 | 85-115 | 0.7 | 200 |
| Sulfate | 8.43 | 0.60 | 0.20 | mg/L | 9.0 | | 94 | 85-115 | 0.1 | 200 |
| Nitrate (as N) | 1.65 | 0.04 | 0.01 | mg/L | 1.7 | | 97 | 85-115 | 1 | 200 |
| Chloride | 2.95 | 0.20 | 0.050 | mg/L | 3.0 | | 98 | 85-115 | 1 | 200 |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10113 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BD10113-MS1)** | | **Source: 1102764-01** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Chloride | 875 | 0.20 | 0.050 | mg/L | 300 | 584 | 97 | 80-120 | | |
| Sulfate | 946 | 0.60 | 0.20 | mg/L | 900 | 131 | 91 | 85-115 | | |
| Nitrate (as N) | 170 | 0.04 | 0.01 | mg/L | 170 | 12.4 | 93 | 85-115 | | |
| Fluoride | 86.6 | 0.040 | 0.010 | mg/L | 90 | | 96 | 85-115 | | |
| Orthophosphate as P | 90.5 | 0.040 | 0.010 | mg/L | 90 | | 101 | 85-115 | | |
| Nitrite (as N) | 126 | 0.04 | 0.01 | mg/L | 140 | ND | 90 | 85-115 | | |
| **Matrix Spike (BD10113-MS2)** | | **Source: 1102635-16** | | | Prepared & Analyzed: 04/01/11 | | | | | |
| Nitrite (as N) | 1.27 | 0.04 | 0.01 | mg/L | 1.4 | ND | 91 | 85-115 | | |
| Nitrate (as N) | 1.62 | 0.04 | 0.01 | mg/L | 1.7 | 0.0324 | 93 | 85-115 | | |
| Chloride | 4.65 | 0.20 | 0.050 | mg/L | 3.0 | 1.64 | 100 | 80-120 | | |
| Fluoride | 0.922 | 0.040 | 0.010 | mg/L | 0.90 | 0.0579 | 96 | 85-115 | | |
| Orthophosphate as P | 0.909 | 0.040 | 0.010 | mg/L | 0.90 | ND | 101 | 85-115 | | |
| Sulfate | 18.2 | 0.60 | 0.20 | mg/L | 9.0 | 9.20 | 100 | 85-115 | | |
| **Batch BD10114 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BD10114-BLK1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BD10114-BLK2)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BD10114-BS1)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.69 | 0.20 | 0.05 | mg/L | 2.5 | | 106 | 90-110 | | |
| **LCS (BD10114-BS2)** | | | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.49 | 0.20 | 0.05 | mg/L | 2.5 | | 98 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10114 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Matrix Spike (BD10114-MS1)** | | **Source: 1102777-07** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.48 | 0.20 | 0.05 | mg/L | 2.5 | 0.772 | 107 | 80-120 | | |
| **Matrix Spike (BD10114-MS2)** | | **Source: 1102765-02** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.84 | 0.20 | 0.05 | mg/L | 2.5 | 0.364 | 98 | 80-120 | | |
| **Matrix Spike Dup (BD10114-MSD1)** | | **Source: 1102777-07** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.45 | 0.20 | 0.05 | mg/L | 2.5 | 0.772 | 106 | 80-120 | 1 | 20 |
| **Matrix Spike Dup (BD10114-MSD2)** | | **Source: 1102765-02** | | | Prepared: 04/01/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.82 | 0.20 | 0.05 | mg/L | 2.5 | 0.364 | 97 | 80-120 | 0.7 | 20 |
| **Batch BD10201 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10201-BLK1)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BD10201-BLK2)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BD10201-BS1)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.51 | 0.010 | 0.005 | mg/L | 0.50 | | 103 | 90-110 | | |
| **LCS (BD10201-BS2)** | | | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.49 | 0.010 | 0.005 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BD10201-MS1)** | | **Source: 1102705-02** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.55 | 0.010 | 0.005 | mg/L | 0.50 | 0.062 | 98 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10201 - Ammonia by SEAL** | | | | | | | | | | |
| **Matrix Spike (BD10201-MS2)** | | **Source: 1102742-07** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.57 | 0.010 | 0.005 | mg/L | 0.50 | 0.068 | 100 | 90-110 | | |
| **Matrix Spike Dup (BD10201-MSD1)** | | **Source: 1102705-02** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | 0.062 | 94 | 90-110 | 3 | 10 |
| **Matrix Spike Dup (BD10201-MSD2)** | | **Source: 1102742-07** | | | Prepared & Analyzed: 04/02/11 | | | | | |
| Ammonia as N | 0.55 | 0.010 | 0.005 | mg/L | 0.50 | 0.068 | 96 | 90-110 | 3 | 10 |
| **Batch BD10203 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10203-BLK1)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BD10203-BLK2)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BD10203-BS1)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.49 | 0.010 | 0.005 | mg/L | 0.50 | | 98 | 90-110 | | |
| **LCS (BD10203-BS2)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.48 | 0.010 | 0.005 | mg/L | 0.50 | | 96 | 90-110 | | |
| **Matrix Spike (BD10203-MS1)** | | **Source: 1102633-18** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.051 | 94 | 90-110 | | |
| **Matrix Spike (BD10203-MS2)** | | **Source: 1102625-10** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | 0.047 | 94 | 90-110 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10203 - Ammonia by SEAL** | | | | | | | | | | |
| **Matrix Spike Dup (BD10203-MSD1)** | | **Source: 1102633-18** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | 0.051 | 98 | 90-110 | 4 | 10 |
| **Matrix Spike Dup (BD10203-MSD2)** | | **Source: 1102625-10** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | 0.047 | 99 | 90-110 | 5 | 10 |
| **Batch BD10204 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BD10204-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **Blank (BD10204-BLK2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BD10204-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.766 | 0.04 | 0.01 | mg/L | 0.80 | | 96 | 90-110 | | |
| **LCS (BD10204-BS2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.742 | 0.04 | 0.01 | mg/L | 0.80 | | 93 | 90-110 | | |
| **Matrix Spike (BD10204-MS1)** | | **Source: 1102740-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.986 | 0.04 | 0.01 | mg/L | 1.0 | 0.0331 | 95 | 77-119 | | |
| **Matrix Spike (BD10204-MS2)** | | **Source: 1102740-03** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 10.0 J5 | 0.04 | 0.01 | mg/L | 1.0 | ND | 1000 | 77-119 | | |
| **Matrix Spike Dup (BD10204-MSD1)** | | **Source: 1102740-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.982 | 0.04 | 0.01 | mg/L | 1.0 | 0.0331 | 95 | 77-119 | 0.4 | 20 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10204 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Matrix Spike Dup (BD10204-MSD2)** | | **Source: 1102740-03** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 12.7 J5 | 0.04 | 0.01 | mg/L | 1.0 | ND | NR | 77-119 | 24 | 20 |
| **Batch BD10415 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BD10415-BLK1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BD10415-BLK2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BD10415-BS1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.69 | 0.20 | 0.05 | mg/L | 2.5 | | 106 | 90-110 | | |
| **LCS (BD10415-BS2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.70 | 0.20 | 0.05 | mg/L | 2.5 | | 107 | 90-110 | | |
| **Matrix Spike (BD10415-MS1)** | | **Source: 1102831-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.34 | 0.20 | 0.05 | mg/L | 2.5 | 0.695 | 104 | 80-120 | | |
| **Matrix Spike (BD10415-MS2)** | | **Source: 1102786-02** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.68 | 0.20 | 0.05 | mg/L | 2.5 | 0.966 | 107 | 80-120 | | |
| **Matrix Spike Dup (BD10415-MSD1)** | | **Source: 1102831-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.44 | 0.20 | 0.05 | mg/L | 2.5 | 0.695 | 108 | 80-120 | 3 | 20 |
| **Matrix Spike Dup (BD10415-MSD2)** | | **Source: 1102786-02** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.65 | 0.20 | 0.05 | mg/L | 2.5 | 0.966 | 106 | 80-120 | 0.9 | 20 |

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**April 21, 2011**
**Work Order: 1102635**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10419 - BOD** | | | | | | | | | | |
| **Blank (BD10419-BLK1)** | | | | | Prepared: 04/04/11 Analyzed: 04/09/11 | | | | | |
| Carbonaceous BOD | 2 U | 2 | 2 | mg/L | | | | | | |
| **LCS (BD10419-BS1)** | | | | | Prepared: 04/04/11 Analyzed: 04/09/11 | | | | | |
| Carbonaceous BOD | 207 | 2 | 2 | mg/L | 200 | | 104 | 85-115 | | |
| **LCS (BD10419-BS2)** | | | | | Prepared: 04/04/11 Analyzed: 04/09/11 | | | | | |
| Carbonaceous BOD | 207 | 2 | 2 | mg/L | 200 | | 103 | 85-115 | | |
| **LCS (BD10419-BS3)** | | | | | Prepared: 04/04/11 Analyzed: 04/09/11 | | | | | |
| Carbonaceous BOD | 206 | 2 | 2 | mg/L | 200 | | 103 | 85-115 | | |
| **LCS (BD10419-BS4)** | | | | | Prepared: 04/04/11 Analyzed: 04/09/11 | | | | | |
| Carbonaceous BOD | 213 | 2 | 2 | mg/L | 200 | | 106 | 85-115 | | |
| **LCS (BD10419-BS5)** | | | | | Prepared: 04/04/11 Analyzed: 04/09/11 | | | | | |
| Carbonaceous BOD | 221 | 2 | 2 | mg/L | 200 | | 111 | 85-115 | | |
| **LCS Dup (BD10419-BSD1)** | | | | | Prepared: 04/04/11 Analyzed: 04/09/11 | | | | | |
| Carbonaceous BOD | 206 | 2 | 2 | mg/L | 200 | | 103 | 85-115 | 0.5 | 10 |
| **Duplicate (BD10419-DUP1)** | | **Source: 1102868-03** | | | Prepared: 04/04/11 Analyzed: 04/09/11 | | | | | |
| Carbonaceous BOD | 2 U | 2 | 2 | mg/L | | ND | | | | 25 |
| **Batch BD10421 - TOC prep** | | | | | | | | | | |
| **Blank (BD10421-BLK1)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10421 - TOC prep** | | | | | | | | | | |
| **LCS (BD10421-BS1)** | | | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Total Organic Carbon | 10.1 | 1.0 | 0.50 | mg/L | 10 | | 101 | 90-110 | | |
| **Matrix Spike (BD10421-MS1)** | | **Source: 1102588-02** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Total Organic Carbon | 13.0 | 1.0 | 0.50 | mg/L | 10 | 3.62 | 94 | 85-115 | | |
| **Matrix Spike Dup (BD10421-MSD1)** | | **Source: 1102588-02** | | | Prepared & Analyzed: 04/04/11 | | | | | |
| Total Organic Carbon | 12.8 | 1.0 | 0.50 | mg/L | 10 | 3.62 | 92 | 85-115 | 2 | 10 |
| **Batch BD10424 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BD10424-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BD10424-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Sulfate | 8.11 | 0.60 | 0.20 | mg/L | 9.0 | | 90 | 85-115 | | |
| Orthophosphate as P | 0.869 | 0.040 | 0.010 | mg/L | 0.90 | | 97 | 85-115 | | |
| Fluoride | 0.832 | 0.040 | 0.010 | mg/L | 0.90 | | 92 | 85-115 | | |
| Nitrite (as N) | 1.26 | 0.04 | 0.01 | mg/L | 1.4 | | 90 | 85-115 | | |
| Nitrate (as N) | 1.59 | 0.04 | 0.01 | mg/L | 1.7 | | 94 | 85-115 | | |
| **LCS Dup (BD10424-BSD1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Orthophosphate as P | 0.935 | 0.040 | 0.010 | mg/L | 0.90 | | 104 | 85-115 | 7 | 200 |
| Sulfate | 8.22 | 0.60 | 0.20 | mg/L | 9.0 | | 91 | 85-115 | 1 | 200 |
| Nitrate (as N) | 1.62 | 0.04 | 0.01 | mg/L | 1.7 | | 95 | 85-115 | 2 | 10 |
| Nitrite (as N) | 1.26 | 0.04 | 0.01 | mg/L | 1.4 | | 90 | 85-115 | 0 | 200 |
| Fluoride | 0.838 | 0.040 | 0.010 | mg/L | 0.90 | | 93 | 85-115 | 0.7 | 200 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10424 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BD10424-MS1)** | | **Source: 1102567-07** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Orthophosphate as P | 0.873 | 0.040 | 0.010 | mg/L | 0.90 | 0.0311 | 94 | 85-115 | | |
| Sulfate | 12.6 | 0.60 | 0.20 | mg/L | 9.0 | 3.42 | 102 | 85-115 | | |
| Fluoride | 1.69 | 0.040 | 0.010 | mg/L | 0.90 | 0.722 | 108 | 85-115 | | |
| Nitrate (as N) | 1.82 | 0.04 | 0.01 | mg/L | 1.7 | 0.0688 | 103 | 85-115 | | |
| Nitrite (as N) | 1.43 | 0.04 | 0.01 | mg/L | 1.4 | ND | 102 | 85-115 | | |
| **Matrix Spike (BD10424-MS2)** | | **Source: 1102846-03** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Sulfate | 85.8 +O | 0.60 | 0.20 | mg/L | 9.0 | 79.4 | 71 | 85-115 | | |
| Fluoride | 1.33 | 0.040 | 0.010 | mg/L | 0.90 | 0.515 | 91 | 85-115 | | |
| Orthophosphate as P | 0.937 | 0.040 | 0.010 | mg/L | 0.90 | ND | 104 | 85-115 | | |
| Nitrite (as N) | 1.41 | 0.04 | 0.01 | mg/L | 1.4 | ND | 101 | 85-115 | | |
| Nitrate (as N) | 2.78 | 0.04 | 0.01 | mg/L | 1.7 | 0.869 | 112 | 85-115 | | |
| **Batch BD10434 - TS prep** | | | | | | | | | | |
| **Blank (BD10434-BLK1)** | | | | | Prepared: 04/04/11 Analyzed: 04/06/11 | | | | | |
| Total Solids | 0.01 U | 0.01 | 0.01 | % by wt | | | | | | |
| **Duplicate (BD10434-DUP1)** | | **Source: 1102873-05** | | | Prepared: 04/04/11 Analyzed: 04/06/11 | | | | | |
| Total Solids | 87.3 | 0.01 | 0.01 | % by wt | | 87.9 | | | 0.7 | 10 |
| **Batch BD10437 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BD10437-BLK1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10437 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BD10437-BLK2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BD10437-BS1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.506 | 0.040 | 0.010 | mg/L | 0.50 | | 101 | 90-110 | | |
| **LCS (BD10437-BS2)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.542 | 0.040 | 0.010 | mg/L | 0.50 | | 108 | 90-110 | | |
| **Matrix Spike (BD10437-MS1)** | | **Source: 1102612-12** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.966 | 0.040 | 0.010 | mg/L | 0.50 | 0.426 | 108 | 75-125 | | |
| **Matrix Spike (BD10437-MS2)** | | **Source: 1102777-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.565 | 0.040 | 0.010 | mg/L | 0.50 | 0.0811 | 97 | 75-125 | | |
| **Matrix Spike Dup (BD10437-MSD1)** | | **Source: 1102612-12** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.954 | 0.040 | 0.010 | mg/L | 0.50 | 0.426 | 106 | 75-125 | 1 | 25 |
| **Matrix Spike Dup (BD10437-MSD2)** | | **Source: 1102777-07** | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Phosphorous - Total as P | 0.565 | 0.040 | 0.010 | mg/L | 0.50 | 0.0811 | 97 | 75-125 | 0.1 | 25 |
| **Batch BD10511 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BD10511-BLK1)** | | | | | Prepared: 04/05/11 Analyzed: 04/06/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BD10511-BLK2)** | | | | | Prepared: 04/05/11 Analyzed: 04/06/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10511 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **LCS (BD10511-BS1)** | | | | | Prepared: 04/05/11 | Analyzed: 04/06/11 | | | | |
| Phosphorous - Total as P | 0.455 | 0.040 | 0.010 | mg/L | 0.50 | | 91 | 90-110 | | |
| **LCS (BD10511-BS2)** | | | | | Prepared: 04/05/11 | Analyzed: 04/06/11 | | | | |
| Phosphorous - Total as P | 0.465 | 0.040 | 0.010 | mg/L | 0.50 | | 93 | 90-110 | | |
| **Matrix Spike (BD10511-MS1)** | | **Source: 1102750-01** | | | Prepared: 04/05/11 | Analyzed: 04/06/11 | | | | |
| Phosphorous - Total as P | 0.608 | 0.040 | 0.010 | mg/L | 0.50 | ND | 122 | 75-125 | | |
| **Matrix Spike (BD10511-MS2)** | | **Source: 1102750-02** | | | Prepared: 04/05/11 | Analyzed: 04/06/11 | | | | |
| Phosphorous - Total as P | 0.477 | 0.040 | 0.010 | mg/L | 0.50 | ND | 95 | 75-125 | | |
| **Matrix Spike Dup (BD10511-MSD1)** | | **Source: 1102750-01** | | | Prepared: 04/05/11 | Analyzed: 04/06/11 | | | | |
| Phosphorous - Total as P | 0.596 | 0.040 | 0.010 | mg/L | 0.50 | ND | 119 | 75-125 | 2 | 25 |
| **Matrix Spike Dup (BD10511-MSD2)** | | **Source: 1102750-02** | | | Prepared: 04/05/11 | Analyzed: 04/06/11 | | | | |
| Phosphorous - Total as P | 0.515 | 0.040 | 0.010 | mg/L | 0.50 | ND | 103 | 75-125 | 8 | 25 |
| **Batch BD10518 - alkalinity** | | | | | | | | | | |
| **Blank (BD10518-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BD10518-BLK2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10518 - alkalinity** | | | | | | | | | | |
| **LCS (BD10518-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **LCS (BD10518-BS2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BD10518-MS1)** | | **Source: 1102588-01** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 6.9 | 92 | 80-120 | | 26 |
| **Matrix Spike (BD10518-MS2)** | | **Source: 1102612-10** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 150 | 8.0 | 2.0 | mg/L | 120 | 12 | 109 | 80-120 | | 26 |
| **Matrix Spike Dup (BD10518-MSD1)** | | **Source: 1102588-01** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 6.9 | 93 | 80-120 | 0.8 | 26 |
| **Matrix Spike Dup (BD10518-MSD2)** | | **Source: 1102612-10** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 12 | 100 | 80-120 | 8 | 26 |
| **Batch BD10523 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **Blank (BD10523-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **Blank (BD10523-BLK2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BD10523-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.778 | 0.04 | 0.01 | mg/L | 0.80 | | 97 | 90-110 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10523 - Nitrate 353.2 by seal** | | | | | | | | | | |
| **LCS (BD10523-BS2)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.810 | 0.04 | 0.01 | mg/L | 0.80 | | 101 | 90-110 | | |
| **Matrix Spike (BD10523-MS1)** | | **Source: 1102635-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.985 | 0.04 | 0.01 | mg/L | 1.0 | ND | 99 | 77-119 | | |
| **Matrix Spike (BD10523-MS2)** | | **Source: 1102750-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.958 | 0.04 | 0.01 | mg/L | 1.0 | ND | 96 | 77-119 | | |
| **Matrix Spike Dup (BD10523-MSD1)** | | **Source: 1102635-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 1.01 | 0.04 | 0.01 | mg/L | 1.0 | ND | 101 | 77-119 | 2 | 20 |
| **Matrix Spike Dup (BD10523-MSD2)** | | **Source: 1102750-02** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Nitrate+Nitrite (N) | 0.956 | 0.04 | 0.01 | mg/L | 1.0 | ND | 96 | 77-119 | 0.3 | 20 |
| **Batch BD10605 - COD prep** | | | | | | | | | | |
| **Blank (BD10605-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BD10605-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | | 110 | 90-110 | | |
| **Matrix Spike (BD10605-MS1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Chemical Oxygen Demand | 61 | 25 | 10 | mg/L | 50 | 14 | 94 | 85-115 | | |
| **Matrix Spike Dup (BD10605-MSD1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Chemical Oxygen Demand | 65 | 25 | 10 | mg/L | 50 | 14 | 102 | 85-115 | 6 | 32 |

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|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10607 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BD10607-BLK1)** | | | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BD10607-BS1)** | | | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Chloride | 2.76 | 0.20 | 0.050 | mg/L | 3.0 | | 92 | 85-115 | | |
| **LCS Dup (BD10607-BSD1)** | | | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Chloride | 2.75 | 0.20 | 0.050 | mg/L | 3.0 | | 92 | 85-115 | 0.4 | 200 |
| **Matrix Spike (BD10607-MS1)** | | **Source: 1102635-18** | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Sulfate | 113 | 0.60 | 0.20 | mg/L | 90 | 28.5 | 94 | 85-115 | | |
| Nitrite (as N) | 13.2 | 0.04 | 0.01 | mg/L | 14 | ND | 94 | 85-115 | | |
| Nitrate (as N) | 16.9 | 0.04 | 0.01 | mg/L | 17 | 0.840 | 94 | 85-115 | | |
| Fluoride | 13.0 | 0.040 | 0.010 | mg/L | 9.0 | 4.90 | 90 | 85-115 | | |
| Chloride | 75.6 | 0.20 | 0.050 | mg/L | 30 | 47.7 | 93 | 80-120 | | |
| **Matrix Spike (BD10607-MS2)** | | **Source: 1102887-02** | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Chloride | 103 | 0.20 | 0.050 | mg/L | 30 | 74.6 | 95 | 80-120 | | |
| **Batch BD10610 - TSS prep** | | | | | | | | | | |
| **Blank (BD10610-BLK1)** | | | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Total Suspended Solids | 1 U | 1 | 1 | mg/L | | | | | | |
| **LCS (BD10610-BS1)** | | | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Total Suspended Solids | 51.5 | 1 | 1 | mg/L | 50 | | 103 | 85-115 | | |
| **Duplicate (BD10610-DUP1)** | | **Source: 1102567-01** | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Total Suspended Solids | 6.00 | 1 | 1 | mg/L | | 6.50 | | | 8 | 30 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10610 - TSS prep** | | | | | | | | | | |
| **Duplicate (BD10610-DUP2)** | | **Source: 1102867-04** | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Total Suspended Solids | 47.0 | 1 | 1 | mg/L | | 45.0 | | | 4 | 30 |
| **Batch BD10624 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BD10624-BLK1)** | | | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BD10624-BLK2)** | | | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BD10624-BS1)** | | | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.64 | 0.20 | 0.05 | mg/L | 2.5 | | 104 | 90-110 | | |
| **LCS (BD10624-BS2)** | | | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.52 | 0.20 | 0.05 | mg/L | 2.5 | | 99 | 90-110 | | |
| **Matrix Spike (BD10624-MS1)** | | **Source: 1102635-02** | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.57 | 0.20 | 0.05 | mg/L | 2.5 | ND | 101 | 80-120 | | |
| **Matrix Spike (BD10624-MS2)** | | **Source: 1102750-01** | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.52 | 0.20 | 0.05 | mg/L | 2.5 | ND | 100 | 80-120 | | |
| **Matrix Spike Dup (BD10624-MSD1)** | | **Source: 1102635-02** | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.45 | 0.20 | 0.05 | mg/L | 2.5 | ND | 97 | 80-120 | 5 | 20 |
| **Matrix Spike Dup (BD10624-MSD2)** | | **Source: 1102750-01** | | | Prepared: 04/06/11 Analyzed: 04/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.68 | 0.20 | 0.05 | mg/L | 2.5 | ND | 106 | 80-120 | 6 | 20 |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102635**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10740 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BD10740-BLK1)** | | | | | Prepared: 04/07/11 Analyzed: 04/08/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BD10740-BLK2)** | | | | | Prepared: 04/07/11 Analyzed: 04/08/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BD10740-BS1)** | | | | | Prepared: 04/07/11 Analyzed: 04/08/11 | | | | | |
| Phosphorous - Total as P | 0.483 | 0.040 | 0.010 | mg/L | 0.50 | | 97 | 90-110 | | |
| **LCS (BD10740-BS2)** | | | | | Prepared: 04/07/11 Analyzed: 04/08/11 | | | | | |
| Phosphorous - Total as P | 0.474 | 0.040 | 0.010 | mg/L | 0.50 | | 95 | 90-110 | | |
| **Matrix Spike (BD10740-MS1)** | | **Source: 1102895-07** | | | Prepared: 04/07/11 Analyzed: 04/08/11 | | | | | |
| Phosphorous - Total as P | 0.486 | 0.040 | 0.010 | mg/L | 0.50 | 0.0399 | 89 | 75-125 | | |
| **Matrix Spike (BD10740-MS2)** | | **Source: 1102927-07** | | | Prepared: 04/07/11 Analyzed: 04/08/11 | | | | | |
| Phosphorous - Total as P | 0.522 | 0.040 | 0.010 | mg/L | 0.50 | ND | 104 | 75-125 | | |
| **Matrix Spike Dup (BD10740-MSD1)** | | **Source: 1102895-07** | | | Prepared: 04/07/11 Analyzed: 04/08/11 | | | | | |
| Phosphorous - Total as P | 0.496 | 0.040 | 0.010 | mg/L | 0.50 | 0.0399 | 91 | 75-125 | 2 | 25 |
| **Matrix Spike Dup (BD10740-MSD2)** | | **Source: 1102927-07** | | | Prepared: 04/07/11 Analyzed: 04/08/11 | | | | | |
| Phosphorous - Total as P | 0.530 | 0.040 | 0.010 | mg/L | 0.50 | ND | 106 | 75-125 | 2 | 25 |
| **Batch BD10901 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10901-BLK1)** | | | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |

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**April 21, 2011**
**Work Order: 1102635**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10901 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BD10901-BLK2)** | | | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BD10901-BS1)** | | | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.50 | 0.010 | 0.005 | mg/L | 0.50 | | 101 | 90-110 | | |
| **LCS (BD10901-BS2)** | | | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.52 | 0.010 | 0.005 | mg/L | 0.50 | | 103 | 90-110 | | |
| **Matrix Spike (BD10901-MS1)** | | **Source: 1102750-01** | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.51 | 0.010 | 0.005 | mg/L | 0.50 | ND | 102 | 90-110 | | |
| **Matrix Spike (BD10901-MS2)** | | **Source: 1102903-01** | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | ND | 109 | 90-110 | | |
| **Matrix Spike Dup (BD10901-MSD1)** | | **Source: 1102750-01** | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.50 | 0.010 | 0.005 | mg/L | 0.50 | ND | 100 | 90-110 | 2 | 10 |
| **Matrix Spike Dup (BD10901-MSD2)** | | **Source: 1102903-01** | | | Prepared & Analyzed: 04/08/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | ND | 107 | 90-110 | 2 | 10 |
| **Batch BD11133 - alkalinity** | | | | | | | | | | |
| **Blank (BD11133-BLK1)** | | | | | Prepared & Analyzed: 04/11/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Bicarbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Carbonate Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Hydroxide Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| Phenolphthalein Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

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**April 21, 2011**
**Work Order: 1102635**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD11133 - alkalinity** | | | | | | | | | | |
| **LCS (BD11133-BS1)** | | | | | Prepared & Analyzed: 04/11/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 101 | 90-110 | | 20 |
| **Matrix Spike (BD11133-MS1)** | | **Source: 1102567-01** | | | Prepared & Analyzed: 04/11/11 | | | | | |
| Total Alkalinity | 210 | 8.0 | 2.0 | mg/L | 120 | 80 | 101 | 80-120 | | 26 |
| **Matrix Spike Dup (BD11133-MSD1)** | | **Source: 1102567-01** | | | Prepared & Analyzed: 04/11/11 | | | | | |
| Total Alkalinity | 210 | 8.0 | 2.0 | mg/L | 120 | 80 | 101 | 80-120 | 0 | 26 |

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**April 21, 2011**
**Work Order: 1102635**

**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13112 - DOC prep** | | | | | | | | | | |
| **Blank (BC13112-BLK1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BC13112-BS1)** | | | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 9.99 | 1.0 | 0.50 | mg/L | 10 | | 100 | 90-110 | | |
| **Duplicate (BC13112-DUP1)** | | **Source: 1102597-01** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 3.21 | 1.0 | 0.50 | mg/L | | 3.17 | | | 1 | 15 |
| **Matrix Spike (BC13112-MS1)** | | **Source: 1102612-20** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 11.8 | 1.0 | 0.50 | mg/L | 10 | 1.34 | 105 | 85-125 | | |
| **Matrix Spike Dup (BC13112-MSD1)** | | **Source: 1102612-20** | | | Prepared & Analyzed: 03/31/11 | | | | | |
| Dissolved Organic Carbon | 11.9 | 1.0 | 0.50 | mg/L | 10 | 1.34 | 106 | 85-125 | 0.8 | 25 |
| **Batch BD10638 - DOC prep** | | | | | | | | | | |
| **Blank (BD10638-BLK1)** | | | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BD10638-BS1)** | | | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 10.4 | 1.0 | 0.50 | mg/L | 10 | | 104 | 90-110 | | |
| **Matrix Spike (BD10638-MS1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 11.2 | 1.0 | 0.50 | mg/L | 10 | 1.06 | 102 | 85-125 | | |
| **Matrix Spike Dup (BD10638-MSD1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/06/11 | | | | | |
| Dissolved Organic Carbon | 11.3 | 1.0 | 0.50 | mg/L | 10 | 1.06 | 103 | 85-125 | 0.8 | 25 |

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**April 21, 2011**
**Work Order: 1102635**

**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BC13002 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BC13002-BLK1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Iron | 0.036 I | 0.10 | 0.020 | mg/L | | | | | | |
| Potassium | 0.036 I | 0.050 | 0.010 | mg/L | | | | | | |
| Magnesium | 0.048 I | 0.050 | 0.010 | mg/L | | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Sodium | 0.31 | 0.050 | 0.010 | mg/L | | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| Calcium | 0.034 I | 0.050 | 0.010 | mg/L | | | | | | |
| **LCS (BC13002-BS1)** | | | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Magnesium | 22 | 0.050 | 0.010 | mg/L | 20 | | 108 | 85-115 | | |
| Potassium | 20 | 0.050 | 0.010 | mg/L | 20 | | 102 | 85-115 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | | 103 | 85-115 | | |
| Iron | 8.3 | 0.10 | 0.020 | mg/L | 8.0 | | 104 | 85-115 | | |
| Calcium | 21 | 0.050 | 0.010 | mg/L | 20 | | 106 | 85-115 | | |
| Sodium | 21 | 0.050 | 0.010 | mg/L | 20 | | 103 | 85-115 | | |
| Boron | 0.40 | 0.10 | 0.050 | mg/L | 0.40 | | 99 | 85-115 | | |
| **Matrix Spike (BC13002-MS1)** | | **Source: 1102032-01** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Potassium | 23 | 0.050 | 0.010 | mg/L | 20 | 2.2 | 102 | 70-130 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | ND | 102 | 70-130 | | |
| Sodium | 23 | 0.050 | 0.010 | mg/L | 20 | 3.0 | 102 | 70-130 | | |
| Magnesium | 22 | 0.050 | 0.010 | mg/L | 20 | 0.70 | 105 | 70-130 | | |
| Iron | 8.2 | 0.10 | 0.020 | mg/L | 8.0 | 0.034 | 101 | 70-130 | | |
| Calcium | 27 | 0.050 | 0.010 | mg/L | 20 | 5.4 | 110 | 70-130 | | |
| Boron | 0.41 | 0.10 | 0.050 | mg/L | 0.40 | ND | 104 | 70-130 | | |
| **Matrix Spike Dup (BC13002-MSD1)** | | **Source: 1102032-01** | | | Prepared & Analyzed: 03/30/11 | | | | | |
| Sodium | 24 | 0.050 | 0.010 | mg/L | 20 | 3.0 | 105 | 70-130 | 3 | 30 |
| Magnesium | 22 | 0.050 | 0.010 | mg/L | 20 | 0.70 | 106 | 70-130 | 1 | 30 |
| Potassium | 23 | 0.050 | 0.010 | mg/L | 20 | 2.2 | 106 | 70-130 | 4 | 30 |
| Calcium | 28 | 0.050 | 0.010 | mg/L | 20 | 5.4 | 114 | 70-130 | 3 | 30 |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | ND | 103 | 70-130 | 0.7 | 30 |
| Boron | 0.42 | 0.10 | 0.050 | mg/L | 0.40 | ND | 105 | 70-130 | 1 | 30 |
| Iron | 8.3 | 0.10 | 0.020 | mg/L | 8.0 | 0.034 | 103 | 70-130 | 1 | 30 |

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**April 21, 2011**
**Work Order: 1102635**

**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10407 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BD10407-BLK1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Sodium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Iron | 0.020 U | 0.10 | 0.020 | mg/L | | | | | | |
| Calcium | 0.016 I | 0.050 | 0.010 | mg/L | | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| Potassium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Magnesium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| **LCS (BD10407-BS1)** | | | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Calcium | 21 | 0.050 | 0.010 | mg/L | 20 | | 105 | 85-115 | | |
| Sodium | 21 | 0.050 | 0.010 | mg/L | 20 | | 105 | 85-115 | | |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | | 106 | 85-115 | | |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | | 104 | 85-115 | | |
| Manganese | 0.43 | 0.010 | 0.0010 | mg/L | 0.40 | | 107 | 85-115 | | |
| Boron | 0.41 | 0.10 | 0.050 | mg/L | 0.40 | | 102 | 85-115 | | |
| Magnesium | 21 | 0.050 | 0.010 | mg/L | 20 | | 107 | 85-115 | | |
| **Matrix Spike (BD10407-MS1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Sodium | 23 | 0.050 | 0.010 | mg/L | 20 | 2.9 | 99 | 70-130 | | |
| Manganese | 0.55 | 0.010 | 0.0010 | mg/L | 0.40 | 0.15 | 99 | 70-130 | | |
| Calcium | 35 | 0.050 | 0.010 | mg/L | 20 | 16 | 93 | 70-130 | | |
| Magnesium | 25 | 0.050 | 0.010 | mg/L | 20 | 4.2 | 102 | 70-130 | | |
| Boron | 0.42 | 0.10 | 0.050 | mg/L | 0.40 | ND | 104 | 70-130 | | |
| Iron | 8.3 | 0.10 | 0.020 | mg/L | 8.0 | 0.039 | 103 | 70-130 | | |
| Potassium | 23 | 0.050 | 0.010 | mg/L | 20 | 3.8 | 97 | 70-130 | | |
| **Matrix Spike (BD10407-MS2)** | | **Source: 1102803-04** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | 0.51 | 99 | 70-130 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0027 | 102 | 70-130 | | |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | 1.2 | 98 | 70-130 | | |
| Calcium | 66 +O | 0.050 | 0.010 | mg/L | 20 | 54 | 65 | 70-130 | | |
| Sodium | 34 | 0.050 | 0.010 | mg/L | 20 | 16 | 91 | 70-130 | | |
| Boron | 0.42 | 0.10 | 0.050 | mg/L | 0.40 | ND | 105 | 70-130 | | |
| Magnesium | 23 | 0.050 | 0.010 | mg/L | 20 | 3.4 | 99 | 70-130 | | |

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**April 21, 2011**
**Work Order: 1102635**

**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10407 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Matrix Spike Dup (BD10407-MSD1)** | | **Source: 1102625-24** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Calcium | 38 | 0.050 | 0.010 | mg/L | 20 | 16 | 106 | 70-130 | 7 | 30 |
| Manganese | 0.57 | 0.010 | 0.0010 | mg/L | 0.40 | 0.15 | 104 | 70-130 | 3 | 30 |
| Sodium | 24 | 0.050 | 0.010 | mg/L | 20 | 2.9 | 105 | 70-130 | 5 | 30 |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | 0.039 | 106 | 70-130 | 3 | 30 |
| Potassium | 24 | 0.050 | 0.010 | mg/L | 20 | 3.8 | 103 | 70-130 | 5 | 30 |
| Magnesium | 26 | 0.050 | 0.010 | mg/L | 20 | 4.2 | 107 | 70-130 | 3 | 30 |
| Boron | 0.44 | 0.10 | 0.050 | mg/L | 0.40 | ND | 109 | 70-130 | 5 | 30 |
| **Matrix Spike Dup (BD10407-MSD2)** | | **Source: 1102803-04** | | | Prepared & Analyzed: 04/05/11 | | | | | |
| Magnesium | 24 | 0.050 | 0.010 | mg/L | 20 | 3.4 | 103 | 70-130 | 3 | 30 |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | 1.2 | 100 | 70-130 | 3 | 30 |
| Iron | 8.7 | 0.10 | 0.020 | mg/L | 8.0 | 0.51 | 103 | 70-130 | 3 | 30 |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0027 | 103 | 70-130 | 1 | 30 |
| Sodium | 35 | 0.050 | 0.010 | mg/L | 20 | 16 | 98 | 70-130 | 4 | 30 |
| Calcium | 70 +O | 0.050 | 0.010 | mg/L | 20 | 54 | 81 | 70-130 | 5 | 30 |
| Boron | 0.43 | 0.10 | 0.050 | mg/L | 0.40 | ND | 109 | 70-130 | 3 | 30 |

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**April 21, 2011**
**Work Order: 1102635**

**Microbiology - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BD10427 - mCOLI-MF** | | | | | | | | | | |
| **Blank (BD10427-BLK1)** | | | | | Prepared: 04/04/11 Analyzed: 04/05/11 | | | | | |
| Total Coliform | 1 U | 1 | | CFU/100 ml | | | | | | |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**April 21, 2011**
**Work Order: 1102635**

## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below.
Questions regarding this report should be directed to Client Services at 813-855-1844.

| | |
|---|---|
| Z | Too many colonies were present for accurate counting. |
| J5 | Matrix spike of this sample was outside typical range. All other QC criteria were acceptable. |
| +O | Matrix spike source sample was over the reccommended range for the method. |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1102635

Client Name: Hazan and Sawyer

Contact / Phone: Josephin Edeback-Hirst 813-630-4498

Project Name / Location: GCREC Mound Groundwater Analyses

jedeback@hazanandsawyer.com

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 250ml P, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 250ml aG, Cool DOC | Field pH | Field DO | Field Cond | Field Temp | 250ml P, $HNO_3$ B, Ca, Fe, K, Na, Mn, Mg No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | STE-EX Pump Tank *** | 4/4/11 | 1140 | GW | | X | * 1 | ** 1 | | | 6.8 | 0.30 | 830 | 26.4 | 1 |
| 02 | Field Blank-DI | 4/4/11 | 0900 | GW | | X | 1 | 1 | | | 6.1 | 8.55 | 1.19 | 21.5 | |
| 03 | Field Blank-Tap | 4/4/11 | 1030 | GW | | X | 1 | 1 | | | 7.7 | 8.13 | 432 | 23.6 | |
| 04 | Equipment Rinsate | 4/4/11 | 1050 | GW | | X | 1 | 1 | | | 6.0 | 7.90 | 1.38 | 27.5 | |
| 05 | PZ04-BKG-9-D | 3/31/11 | 0844 | GW | | X | 1 | 1 | | 1 | 5.4 | 3.84 | 78.2 | 21.7 | |
| 06 | PZ24-BKG-26-D | 033111 | 0819 | GW | | X | 1 | 1 | 2 | 1 | 5.0 | 0.50 | 270.9 | 23.1 | |
| 07 | DP-AA9-27-D | 033011 | 0933 ~~0855~~ PdA | GW | | X | 1 | 1 | | | ~~5.0~~ 5.9 | 0.80 ~~0.44~~ | 228 ~~699~~ | ~~23.0~~ | 239 PdA |
| 08 | DP-D07-5-D | 3/30/11 | 1115 | GW | | X | 1 | 1 | | | 6.10 | 4.86 | 324 | 24.1 | |
| 09 | ~~DP-E02-6-D~~ DP-E[illegible]-10-D SH | 032911 | 0920 | GW | | X | 1 | 1 | | | 5.3 | 2.21 | 211.3 | 21.3 | |
| 10 | DP-E12-15-D | 033011 | 0755 SH | GW | | X | 1 | 1 | | | 5.0 | 0.60 | 460 | 21.9 | |
| 11 | DP-F09-5-D | 032911 | 1330 | GW | | X | 1 | 1 | | | 6.6 | 1.15 | 141.1 | 24.8 | |
| 12 | DP-F11-~~15~~-11-D (Dup was switched from DP-F11-15-D to DP-F11-11-D) | 033011 | 0805 | GW | | X | 1 | 1 | | | 5.3 | 0.90 | 412.7 | 21.4 | |

| Containers Prepared/ Relinquished: | Date/Time: 1630 03-27-11 | Received: | Date/Time: 0500 032911 |
|---|---|---|---|
| Relinquished: | Date/Time: 1600 03-29-11 | Received: | Date/Time: 3/29/11 1600 |
| Relinquished: | Date/Time: 1830 03-30-11 | Received: | Date/Time: |
| Relinquished: | Date/Time: 1430 3/31/11 | Received: | Date/Time: |
| Relinquished: courier | Date/Time: 1315 4/4/11 | Received: | Date/Time: |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace Y N N/A

Proper containers used? Y N N/A

**Instructions / Remarks**

* 1LP,C = Alk, CBOD, TS, TSS, Cl, F, OP, $SO_4$, NOx 300

** – TP

*** – 125 ml P, sterile, $Na_2S_2O_3$ m-Colblue 24

1102635

9,11

7,8,10,12

5,6,13,15 14

02,03 04,01

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1102635

| | |
|---|---|
| Client Name: Hazan and Sawyer | Contact / Phone: Josephin Edeback-Hirst 813-630-4498 |
| Project Name / Location: GCREC Mound Groundwater Analyses | jedeback@hazanandsawyer.com |
| Samplers: (Signature) | |

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 250ml P, Cool Alkalinity | 250 ml P, $H_2SO_4$ TKN, $NH_3$, NOx | 40 ml aV, HCl TOC | 250ml aG, Cool DOC | Field pH | Field DO | Field Cond | Field Temp | ~~No. of Containers (Total per each location)~~ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | DP-F15-20-D | 3/31/11 | 940 | GW | | X | 1 | 1 | | | 5.4 | 0.78 | 383 | 22.3 | |
| 14 | DP-G12-18-D | 3/31/11 | 900 | GW | | X | 1 | 1 | | | 5.2 | 1.40 | 494 | 22.2 | |
| 15 | DP-H12-5-D | 3/31/11 | 905 | GW | | X | 1 | 1 | | | 5.6 | 0.94 | 188.5 | 21.9 | |
| 16 | DP-K12-5-D | 4/1/11 | 1010 | GW | | X | 1 | 1 | | | 5.6 | 1.40 | 59.3 | 22.3 | |
| 17 | DP-O10-24-D | 4/1/11 | 1402 | GW | | X | 1 | 1 | | | 5.1 | 0.95 | 361 | 24.2 | |
| 18 | STE-D | 4/4/11 | 1150 | GW | | X | 1 | 1 | | | 6.8 | 0.30 | 830 | 26.4 | |
| 19 | PZ-25 | 3/31/11 | 1125 | GW | | X | 1 | 1 | | | 6.0 | 5.65 | 770 | 22.0 | |

| | Date/Time | Received | Date/Time |
|---|---|---|---|
| Containers Prepared/ Relinquished: | 1650 03-27-11 | Received: | 0500 032911 |
| 5,6,13-15,19 Relinquished: ~~Courier~~ | 1430 3/31/11 | Received: | Date/Time: |
| 18 Relinquished: Courier | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

| | |
|---|---|
| Seal intact? | Y N N/A |
| Samples intact upon arrival? | Y N N/A |
| Received on ice? Temp_____ | Y N N/A |
| Proper preservatives indicated? | Y N N/A |
| Rec'd within holding time? | Y N N/A |
| Volatiles rec'd w/out headspace | Y N N/A |
| Proper containers used? | Y N N/A |

**Instructions / Remarks**

1102635

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033111 | SAL Project # | 1102635 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ04-BKG-9-D | Sample ID | 05 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 6.85 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.11 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.13 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.40 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 9.0 | FINAL TUBING LEGNTH IN WELL (FEET) | 9.0 | PURGE TIME START | 0835 | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0838 | 0.30 | 0.30 | 0.10 | 7.01 | 5.4 | 21.7 | 81.8 | 3.64 | 6.26 | clear | none |
| 0841 | 0.30 | 0.60 | 0.10 | \| | 5.4 | 21.7 | 80.8 | 3.91 | 4.11 | \| | \| |
| 0844 | 0.30 | 0.90 | 0.10 | \| | 5.4 | 21.7 | 78.2 | 3.84 | 2.02 | \| | \| |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | 9.0 | SAMPLE PUMP FLOW RATE (mL/min) | 0.10 | |
| SAMPLING INITIATED | 0850 | SAMPLING ENDED | 0850 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | (Y) N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | Rain Past 24 hrs | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033111 | SAL Project # | 11102635 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ24-BKG-26-D | Sample ID | 06 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 2.0 | WELL CAPACITY (gal/ft) | 0.1632 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 9.74 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 30.3 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 3.35 | 1/4 WELL VOLUME | 0.83 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 15.0 | FINAL TUBING LEGNTH IN WELL (FEET) | 15.0 | PURGE TIME START | 0740 | PURGE TIME END | 0813 ~~0808~~ SH | TOTAL PURGED | 6.40 |
| INST. ID | | | | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0757 | 3.40 | 3.40 | 0.20 | 10.21 | 5.0 | 23.0 | 269.6 | 0.91 | 147 | cloudy | NONE |
| 0803 | 1.00 | 4.40 | 0.20 | 10.21 | 5.0 | 23.1 | 270.1 | 0.84 | 92.5 | \| | \| |
| 0808 | 1.00 | 5.40 | 0.20 | 10.21 | 5.0 | 23.1 | 270.3 | 0.62 | 59.6 | \| | \| |
| 0813 | 1.00 | 6.40 | 0.20 | 10.21 | 5.0 | 23.1 | 270.9 | 0.50 | 42.3 | \| | \| |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | SAMPLE TUBING LEGNTH IN WELL (FEET) | | 15.0 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.20 |
| SAMPLING INITIATED | 0819 | SAMPLING ENDED | 0819 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | (Y) N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | Windy - Drizzle / Rain Past 24 hrs | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 033111 PZ-25 | SAL Project # | 1102635 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | ~~PZ13 F04-8~~ SH | Sample ID | 19 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 11.62 | PURGE PUMP CODE (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 13.57 ~~13.62~~ | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.039 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.117 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | 13.57 | FINAL TUBING LEGNTH IN WELL (FEET) | 13.57 | PURGE TIME START | 1115 | PURGE TIME END | 1124 | TOTAL PURGED | 0.90 |
| INST. ID | X | X | X | X | SAL-SAM-63-03 | SAL-SAM-65-03 | SAL-SAM-63-03 | SAL-SAM-55-03 | SAL-SAM-02 |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1118 | 0.30 | 0.30 | 0.10 | 12.58 | 6.0 | 22.0 | 774 | 5.74 | 56.8 | cloudy | none |
| 1121 | 0.30 | 0.60 | 0.10 | 12.58 | 6.0 | 22.0 | 774 | 5.68 | 47.4 | cloudy | \| |
| 1124 | 0.30 | 0.90 | 0.10 | 12.58 | 6.0 | 22.0 | 770 | 5.65 | 19.2 | clear | \| |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | 13.57 | | SAMPLE PUMP FLOW RATE (mL/min) | 0.10 |
| SAMPLING INITIATED | 1125 | SAMPLING ENDED | 1125 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI Rinse |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N N/A |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | windy - Thunderstorm - Rain | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

FLORIDA DEPARTMENT OF HEALTH

# Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task C.22

## GCREC Mound Data Summary Report No. 3

## Progress Report

September 2011

4423-001


HAZEN AND SAWYER
Environmental Engineers & Scientists

In association with

SCHOOL OF MINES 1874 COLORADO

AET
Applied Environmental Technology

OTIS ENVIRONMENTAL CONSULTANTS, LLC

# Florida Onsite Sewage Nitrogen Reduction Strategies Study

## TASK C.22
## PROGRESS REPORT

## GCREC Mound
## Data Summary Report No. 3

**Prepared for:**

Florida Department of Health
Division of Environmental Health
Bureau of Onsite Sewage Programs
4042 Bald Cypress Way Bin #A-08
Tallahassee, FL 32399-1713

FDOH Contract CORCL

**September 2011**

**Prepared by:**

HAZEN AND SAWYER
Environmental Engineers & Scientists

In Association With:

SCHOOL OF MINES
1874
COLORADO

# GCREC Mound Monitoring
# Data Summary Report No. 3

## 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 data summary report documents data that was collected from the third GCREC mound monitoring and sampling event which was conducted June 27, 2011 through June 29, 2011. The sample event report was submitted as Sample Event Report No. 3, June 2011, as deliverable under Task C.21. 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 in 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. Wastewater from the GCREC research offices and onsite dormitories flow to an existing

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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 $ft^2$ of infiltrative area (design hydraulic loading rate of 0.65 $gpd/ft^2$) with each half of the drainfield receiving alternating doses.

## 3.2 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 A 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 B provides summary tables of the average monthly recorded meteorological data.

**Table 1**
**Meteorological Data Daily Averages Measured June 24, 2011 – June 29, 2011**

| 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) |
|---|---|---|---|---|---|---|---|---|
| June 24, 2011 | 79.04 | 78.61 | 82.00 | 73.08 | 84 | 1.05 | 6.22 | 0.17 |
| June 25, 2011 | 76.52 | 76.24 | 81.15 | 72.09 | 88 | 0.06 | 5.18 | 0.15 |
| June 26, 2011 | 77.08 | 76.95 | 80.43 | 71.39 | 84 | 0.00 | 5.30 | 0.13 |
| June 27, 2011 | 78.11 | 77.83 | 80.83 | 71.64 | 83 | 0.04 | 4.82 | 0.14 |
| June 28, 2011 | 76.42 | 76.22 | 80.49 | 71.52 | 87 | 0.23 | 4.70 | 0.12 |
| June 29, 2011 | 76.79 | 76.36 | 80.53 | 72.01 | 87 | 0.02 | 5.77 | 0.15 |

## 3.3 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

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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 ¾-in., 1¼-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 ¾-in. diameter PVC standpipe piezometer. A complete list of all installed drive points and standpipe piezometers are included in Appendix C.

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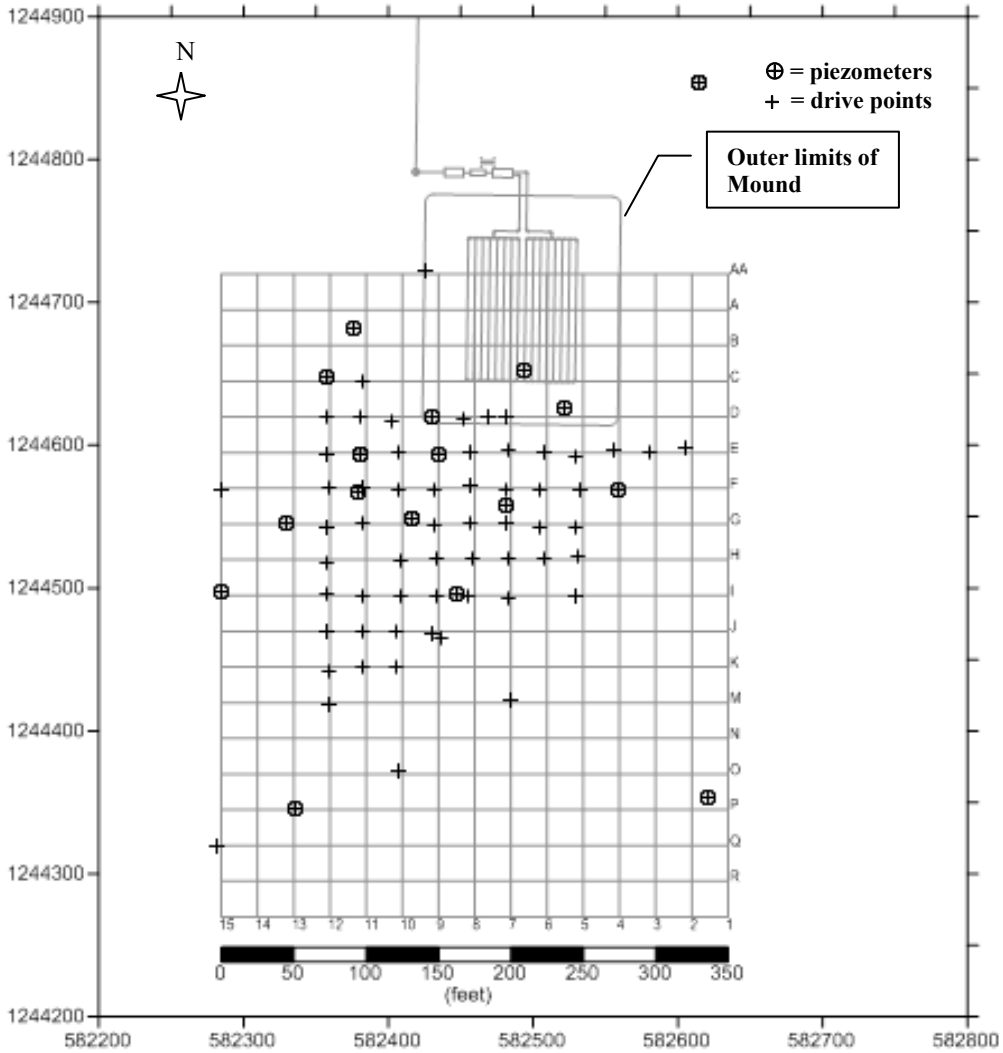


**Figure 1**
**Schematic of GCREC Monitoring Network (UTM coordinates are used)**
**⊕ denotes piezometers and + denotes drive points**

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

**Figure 3**
**Installed ¾" Diameter PVC Standpipe Piezometer**

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## 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 June 27, 2011 through June 29, 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. 181919202021212222232324242525262627272828292928□□□□□□□□□□□□□□□□□□□□□□□boratory 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 supplied by the laboratory.

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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 flow-cell device as groundwater was being pumped. All samples were analyzed by the laboratory for chloride. Some of the samples were also analyzed for. Additionally, at some of the locations, total alkalinity, chemical oxygen demand (COD), total Kjeldahl nitrogen (TKN-N), ammonia nitrogen ($NH_3$-N), and nitrate/nitrite nitrogen ($NO_X$-N), total organic carbon (TOC), dissolved organic carbon (DOC), anions and cations 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.

**Table 2**
**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) | EPA410.4 | 10 mg/L |
| | | |
| Total Kjeldahl Nitrogen (TKN-N) | EPA351.2 | 0.05 mg/L |
| Ammonia Nitrogen ($NH_3$-N) | EPA350.1 | 0.01 mg/L |
| Nitrate/Nitrite Nitrogen ($NO_X$-N) | EPA353.2 | 0.01 mg/L |
| Total Organic Carbon (TOC) | SM 5310B | 0.5 mg/L |
| Dissolved Organic Carbon (DOC) | SM 5310C | 1.0 mg/L |
| Anions | | |
| Fluoride | EPA300.0 | 0.01 mg/L |
| Chloride | EPA300.0 | 0.05 mg/L |
| Nitrate ($NO_3$-N) | EPA300.0 | 0.01 mg/L |
| Orthophosphate as P | EPA300.0 | 0.01 mg/L |
| Sulfate ($SO_4$) | EPA300.0 | 0.2 mg/L |
| Cations | | |
| Boron | EPA200.7 | 0.1 mg/L |
| Calcium | EPA200.7 | 0.05 mg/L |
| Iron | EPA200.7 | 0.1 mg/L |
| Magnesium | EPA200.7 | 0.05 mg/L |
| Manganese | EPA200.7 | 0.01 mg/L |

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| | | |
|---|---|---|
| Potassium | EPA200.7 | 0.05 mg/L |
| Sodium | EPA200.7 | 0.05 mg/L |

### 3.7 Data Management

To allow for a better visualization of the data collected at the site the mapping program **Surfer** was utilized. **Surfer** is a grid-based mapping program that interpolates irregularly spaced XYZ data into a regularly spaced grid. Although there are several methods used in **Surfer** to fill in areas where data is missing, the Kriging method was used as the output gave the most informative graphs. Of note, it is important to realize that the output is based on the program interpolation between known data points, and thus should not be assumed to illustrate reality, but instead an approximation. Furthermore, because **Surfer** cannot project a 3-dimensional view of concentrations with depth, the parameter concentrations from the different sampling locations were compiled into horizontal "slices" of similar depth and then plotted as a planar view, thus allowing the different "slices" to be compared.

## 4.0 Results

### 4.1 Soil Characteristics

During the instrumentation of the mound, continuous 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 results of the analysis are presented in Table 3. Although the four shallow soil cores (CD6.5, E9, F4, and near A9) show some variability in soil over the site, a general soil profile trend is present. The top few inches at the site are typically a darker, slightly brown or red fine, silty soil, followed by a light-colored, grey and/or pale yellow fine sand. Mottling is commonly visible 4-5 feet below the ground surface. The continuous soil core from G10 shows the spodic layer (black fine sand with a coffee-like texture). The spodic layer is approximately 3.3 feet thick at that location, and the soil below the spodic layer is a light or yellowish brown, fine to medium sand (Table 3). Similar observations were made during the November drilling event. The Hawthorne clay is considered a confining layer at the site and lies approximately 27 to 30 feet below the ground surface.

During the installation of the shallow drive points in the summer of 2010, the top elevations of the spodic layer was determined at several locations as the installation was done primarily with handheld methods. Efforts were made to determine the elevation and thickness of the spodic layer during the November drilling event; however, this proved to be quite difficult as it was near impossible for the drill operators to "feel" when

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the auger first hit the hard layer and second when it broke through it; hence the depth and thickness of the spodic layer at the new well locations was estimated at that time to be approximately 6 feet below the ground surface with a thickness of approximately 5.5 to 8.5 feet. After the November drilling event, handheld methods were used to better determine the actual elevation of the spodic layer at several additional sites. Table 4 summarizes the locations at which the top elevation of the spodic layer was determined by handheld methods. At all other locations, this elevation was estimated. Figure 4 illustrates a **Surfer** plot of the top elevation of the spodic layer at the site based on both actual and estimated elevations, while Figure 5 illustrates the same but using only elevations verified by handheld methods. Although variations are present, the general trend follows that of the ground surface and that of the groundwater.

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**Table 3**
**June 2010 Small Direct Push Rig (6620 Geoprobe™)**
**Soil Core Descriptions**

| Grid Location | Identifier | Surface Elevation (ft) | Depth bgs (ft) | Description |
|---|---|---|---|---|
| CD6.5 | PZ10-CD6-13 | 129.51 | 0-0.4’ | Grass/fill |
| | | | 0.4-0.9’ | Gray fine sand with yellow and white mottles |
| | | | 0.9-6.6’ | Uniform yellow fine grain sand |
| | | | 6.5’ | Saturation |
| | | | 6.6-6.7’ | Dark brown (10YR 3/3) fine sand |
| | | | 6.7-10.7’ | Light gray (5Y 7/2) fine sand |
| | | | 10.7-11.5’ | Dark brown (10YR 3/3) fine sand |
| | | | 11.5-12.3’ | Yellow (5Y 7/6) fine sand |
| | | | 12.3-13.45’ | Light gray (5Y 7/2) fine sand |
| | | | 13.45-16.1’ | Spodic horizon, dark brown (7.5YR 3/3) fine sand |
| | | | 16.1-17.4’ | Brown (7.5YR 4/4) fine sand |
| E9 | PZ11-E09-10 | 124.06 | 0-2.2’ | A Horizon top soil |
| | | | 2.2-2.7’ | Pale yellow (5Y 7/3) fine sand with mottles |
| | | | 2.7-5.8’ | Yellowish brown (10YR 5/4) fine sand |
| | | | 5.8-6.9’ | Very dark brown (7.5YR 2.5/3) fine sand |
| | | | 6.1’ | Saturation |
| | | | 6.9-10.3’ | Medium brown (10YR 5/3) fine sand |
| | | | 10.3-15’ | Spodic horizon, black (10YR 2/1) fine sand |
| F4 | PZ13-F04-8 | 124.42 | 0-4.2’ | A Horizon top soil |
| | | | 4.2-4.7’ | Pale yellow (5Y 8/4) fine sand with mottles |
| | | | 4.7-13.5’ | Spodic horizon, dark brown sand |
| | | | 6.3’ | Saturation |
| Westside of Mound Near A9 | | ~129 | 0-7.4’ | Mound sand with some mottles |
| | | | 7.4-8.4’ | Dark oxidized sand |
| | | | 8.4’ | Saturation |
| | | | 8.4-9.4’ | Saturated very pale brown fine sand |
| | | | 9.4-10’ | Spodic horizon, dark brown fine sand |
| | | | 10-12’ | Dark yellowish brown (10YR 4/6) fine sand |
| | | | 12-15’ | Dark brown fine sand |

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**Table 3 (cont.)**
**June 2010 Small Direct Push Rig (6620 Geoprobe™)**
**Soil Core Descriptions**

| Grid Location | Identifier | Surface Elevation (ft) | Depth bgs (ft) | Description |
|---|---|---|---|---|
| G10 | PZ12 Abandoned | 123.55 | 0-1.2’ | A Horizon top soil |
| | | | 1.2-2.8’ | White (10YR 8/2) fine sand |
| | | | 2.8-6.1’ | Spodic horizon, black fine sand |
| | | | 6.1-9’ | Brown (10YR 4/3) fine sand |
| | | | 9’ | Saturation |
| | | | 9-10.1’ | Gray (5Y 5/1) fine sand with black mottles |
| | | | 10.1-13.9’ | Black (5Y 2.5/1) fine sand |
| | | | 13.9-16.6’ | Light yellowish brown (10YR 6/4) uniform fine sand |
| | | | 16.6-19’ | Medium sand poorly sorted, well rounded (3mm diameter) with mottles |
| | | | 19-23’ | Pale brown (10YR 6/3) uniform fine sand |
| | | | 23-27.5’ | Very pale brown (10YR 7/3) very fine sand |
| | | | 27.5-27.9’ | Poorly sorted coarse sand |
| | | | 27.9-30.0’ | Greenish gray (Gley1 6/5GY) clay, Hawthorn confining layer |

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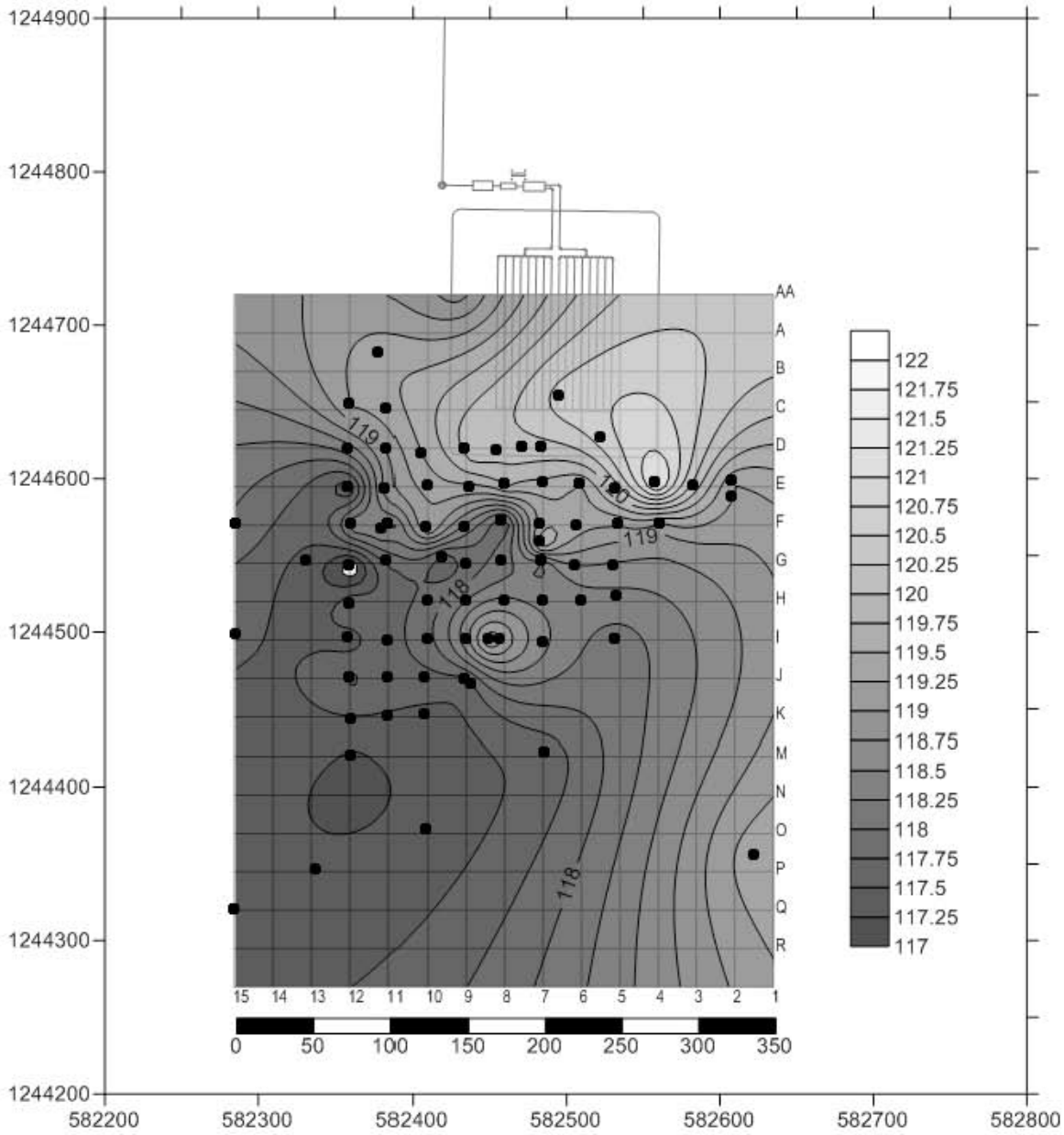


**Figure 4**

**Surfer plot illustrating the top elevation of the spodic layer based on both verified elevations and estimated elevations. The dots represent the locations used for the graph.**

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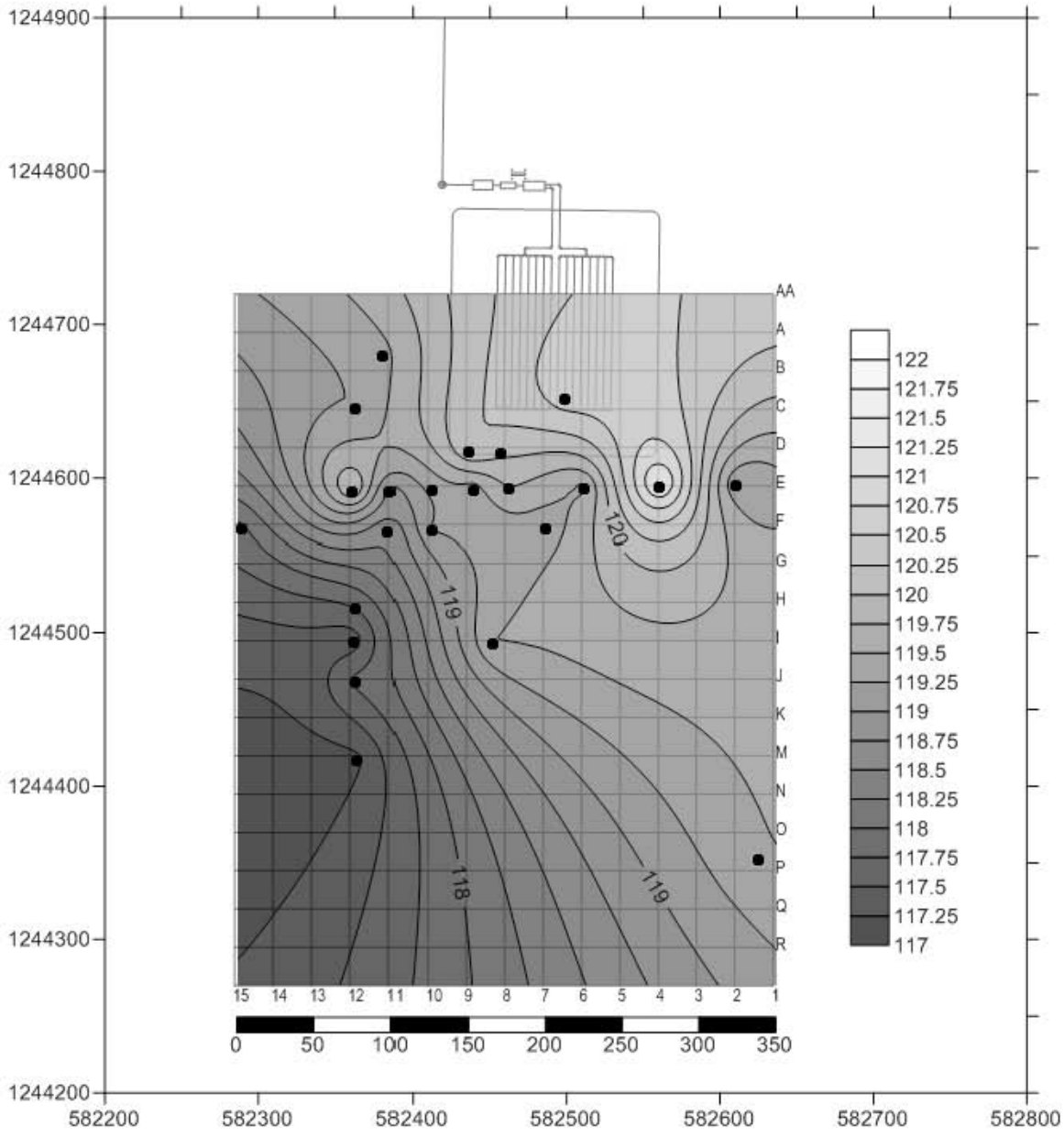


**Figure 5**

**Surfer plot illustrating the top elevation of the spodic layer as verified by hand methods. The dots represent the locations where the elevations were measured.**

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**Table 4**
**The Top Elevation of the Spodic Layer as Determined by Hand Methods**

| Location | Elevation | Location | Elevation |
|---|---|---|---|
| D8 | 120.06 | PZ01-BKG | 123.37 |
| D9 | 120.08 | PZ02-PQ1.75 | 119.46 |
| E2 | 119.26 | PZ03-H11 | 118.54 |
| E4 | 121.35 | PZ04-BKG | 120.62 |
| E6 | 119.46 | PZ05-BKG | 121.34 |
| E8 | 119.77 | PZ06-BKG | 125.50 |
| E10 | 119.34 | PZ09-I8 | 119.50 |
| F3 | 120.06 | PZ10-CD6 | 120.62 |
| F7 | 119.41 | PZ11-E9 | 119.40 |
| F10 | 119.27 | PZ15-A11 | 119.42 |
| F15 | 117.96 | PZ16-C12 | 119.26 |
| H12 | 117.77 | PZ21-E11 | 118.91 |
| I12 | 117.38 | PZ25-A6.5 | 120.13 |
| J12 | 117.80 | | |
| N12 | 117.20 | | |

The G10 continuous soil cores and soil samples from grid locations O10 and E06 were submitted to the University of Florida IFAS Analytical Services Laboratories and University of Florida SWS Mineralogy Core Laboratory for analysis. The soil samples were analyzed for pH, organic matter, cation exchange capacity (CEC), ammonia, nitrate, TKN, phosphorus, potassium, calcium, magnesium, and sodium concentrations as well as particle size distribution summarized in Table 5. The complete soil data set is included Appendix D.

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**Table 5**
**Soil Grain Size Distribution in Percent (%)**

| Grid ID | Depth Bgs (ft) | Sand Fractions (%) | | | | | Total (%) | | | | Texture Class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Very Fine | Fine | Medium | Coarse | Very Coarse | Sand | Silt | Clay | Other | |
| | | 0.05-0.1 mm | 0.25-0.1 mm | 0.25-0.5 mm | 0.5-1.0 mm | 1.0-2.0 mm | 0.05-2 mm | 0.002-0.05 mm | <0.002 mm | >2 mm | |
| 010 | 0-1.57 | 9.9 | 48.0 | 29.4 | 6.7 | 1.4 | 95.2 | * | * | 0.4 | sand |
| | 1.57-2.49 | 10.6 | 50.8 | 26.8 | 6.9 | 2.0 | 98.1 | * | * | 0.2 | sand |
| | 2.49-3.58 | 12.3 | 49.5 | 25.8 | 6.3 | 1.3 | 95.6 | 2.6 | 1.8 | 0.1 | Sand |
| | 3.58-5.1 | 12.0 | 49.1 | 24.9 | 6.7 | 1.8 | 95.0 | 4.3 | 0.7 | 0.2 | sand |
| | 5.1-5.6 | 7.3 | 42.4 | 25.1 | 7.4 | 2.4 | 84.1 | 3.4 | 12.5 | 0.6 | loamy sand |
| | 5.6-6.2 | 5.8 | 39.9 | 25.1 | 7.8 | 3.2 | 81.8 | 2.2 | 16.1 | 0.9 | sandy loam |
| E06 | 0-2.4 | 11.0 | 48.7 | 28.3 | 5.5 | 1.1 | 94.6 | 3.9 | 1.5 | 0.2 | sand |
| | 2.4-2.9 | 12.4 | 47.0 | 22.7 | 4.9 | 1.3 | 88.1 | 11.4 | 0.5 | 0.2 | sand |
| | 2.8-3.9 | 11.6 | 49.5 | 27.4 | 7.2 | 2.0 | 97.5 | 2.5 | 0.0 | 0.2 | sand |
| | 2.9-4 | 12.7 | 50.5 | 24.8 | 5.3 | 1.0 | 94.3 | 4.3 | 1.4 | 0.2 | sand |
| | 4-4.35 | 12.8 | 50.3 | 25.7 | 6.6 | 1.3 | 96.9 | 2.8 | 0.3 | 0.3 | sand |
| | 4.35-4.85 | 9.4 | 47.0 | 26.9 | 7.3 | 2.6 | 93.1 | 5.2 | 1.7 | 1.3 | sand |
| | 4.85-5.35 | 5.8 | 46.6 | 26.9 | 6.1 | 2.4 | 88.3 | 6.2 | 5.5 | 1.4 | sand |
| | 6-8 | 5.2 | 48.0 | 32.2 | 6.2 | 1.0 | 93.0 | 4.1 | 2.9 | 0.2 | sand |
| G10 | 0-1.2 | 11.9 | 47.6 | 27.8 | 5.9 | 1.1 | 94.7 | 3.2 | 2.1 | 0.2 | sand |
| | 1.2-2.8 | 10.0 | 46.7 | 27.2 | 6.9 | 1.5 | 92.3 | 3.6 | 4.1 | 0.6 | sand |
| | 2.8-6.1 | 11.7 | 46.6 | 27.4 | 7.0 | 1.4 | 94.0 | 4.3 | 1.6 | 0.3 | sand |
| | 6.1-9 | 8.9 | 49.8 | 26.2 | 3.9 | 1.1 | 90.1 | 8.8 | 1.1 | 0.8 | sand |
| | 9-10.1 | 7.2 | 44.1 | 34.4 | 6.0 | 0.8 | 92.6 | 6.5 | 0.9 | 0.1 | sand |
| | 10.1-13.9 | 3.1 | 37.5 | 45.9 | 5.6 | 0.7 | 92.4 | 6.2 | 1.4 | 0.0 | sand |
| | 13.9-16.6 | 2.5 | 33.7 | 48.3 | 7.1 | 1.0 | 92.8 | 3.2 | 3.9 | 0.3 | sand |
| | 16.6-19 | 2.3 | 14.2 | 54.3 | 19.3 | 2.2 | 92.0 | 5.4 | 2.6 | 1.3 | sand |
| | 19-23 | 1.7 | 40.4 | 46.8 | 5.3 | 0.4 | 94.7 | 1.9 | 3.4 | 0.5 | sand |
| | 23-27.5 | 4.2 | 76.2 | 6.4 | 0.4 | 0.1 | 87.5 | 8.2 | 4.2 | 0.2 | sand |
| | 27.5-27.9 | 4.5 | 44.7 | 11.2 | 7.1 | 10.9 | 79.5 | 3.5 | 17.0 | 41.2 | sandy loam |
| | 27.9-30 | | | | | | | | | n/a | n/a |

* Clay and silt values were not within acceptable limits.

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## 4.2 Groundwater Levels

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. Figures 6 through 9 illustrate the surficial groundwater contours as measured within the standpipe piezometers on four dates (April 13, 2011, May 13, 2011, June 17, 2011, and June 28, 2011). The groundwater level measured within PZ18-R12 was omitted from the plots (Figures 6 through 9) as the high water level reading significantly skews the contours produced by **Surfer.** It is unclear why the water level

appears slightly higher at this piezometer, however it may be influenced by the nearby drainage ditch. Table 5 shows the actual measured water levels. Based on the output illustrated in these plots the direction of flow is estimated at 220 degrees to true north, and the gradient is estimated to range from 0.0066 to 0.0094. Clearly variations in gradient are apparent in Figure 6 through 9; however it is not clear if those variations are due to an anomaly in measurement or an artifact of using **Surfer**. A summary of all recorded groundwater elevations taken at the standpipe piezometers within the grid is presented in Appendix E.

**Table 5**
**Standpipe Piezometer Groundwater Level Measured**

| Identification | Location | Water Table Elevation (ft) | | | |
|---|---|---|---|---|---|
| | | April 13, 2011 | May 13, 2011 | June 17, 2011 | June 28, 2011 |
| PZ01-BKG-9 | PZ-1 | 124.32 | 122.67 | 121.56 | 121.73 |
| PZ02-PQ1.75-9 | PZ-2 | 119.22 | 118.59 | 118.26 | 118.80 |
| PZ03-H11-6 | PZ-3 | 120.18 | 119.49 | 119.20 | 119.74 |
| PZ04-BKG-9 | PZ-4 | 123.10 | 121.72 | 120.85 | 121.11 |
| PZ05-BKG-9 | PZ-5 | 122.41 | 120.80 | | |
| PZ06-BKG-12 | PZ-6 | | | | 121.92 |
| PZ07-D5-7 | PZ-7 | 121.40 | 120.25 | 119.72 | 120.26 |
| PZ08-FG7-6 | PZ-8 | 120.71 | 119.75 | 119.33 | 119.93 |
| PZ09-I8-5 | PZ-9 | 120.12 | 119.40 | 119.06 | 119.63 |
| PZ10-CD6-13 | PZ-10 | 121.61 | 120.46 | 119.90 | 120.40 |
| PZ11-E9-10 | PZ-11 | 120.76 | 119.79 | 119.36 | 119.96 |
| PZ12-G10 | abandoned | | | | |
| PZ13-F4-8 | PZ-13 | 121.23 | 120.09 | 119.68 | 120.15 |
| PZ14-G13-7 | PZ-14 | 119.66 | 118.94 | 118.71 | 119.26 |
| PZ15-A11-6 | PZ-15 | 120.89 | 119.87 | 119.36 | 119.88 |
| PZ16-C12-28 | PZ-16 | 120.43 | 119.49 | 119.07 | 119.63 |
| PZ17-I15-26 | PZ-17 | 119.22 | 118.57 | 118.42 | 118.93 |
| PZ18-R12-26 | PZ-18 | 119.13* | 119.28* | 119.01* | 119.28* |
| PZ19-G10-26 | PZ-19 | 120.20 | 119.37 | 119.02 | 119.60 |
| PZ20-G10-15 | PZ-20 | 120.21 | 119.38 | 119.03 | 119.62 |
| PZ21-E11-26 | PZ-21 | 120.28 | 119.39 | 119.01 | 119.58 |
| PZ22-E11-15 | PZ-22 | 120.26 | 119.37 | 119.00 | 119.57 |
| PZ23-D9-27 | PZ-23 | 120.77 | 119.76 | 119.31 | 119.85 |

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**Table 5**
**Standpipe Piezometer Groundwater Level Measured**

| Identification | Location | Water Table Elevation (ft) | | | |
|---|---|---|---|---|---|
| | | April 13, 2011 | May 13, 2011 | June 17, 2011 | June 28, 2011 |
| PZ24-BKG-26 | PZ-24 | 122.80 | 121.43 | 120.52 | 120.80 |
| PZ25-A6.5 | PZ-25 | 121.88 | 120.68 | 120.12 | 120.58 |
| PZ26-EF2 | PZ-26 | 121.93 | 120.77 | 120.25 | 120.78 |
| PZ27 | PZ-27 | | | 119.45 | 120.01 |
| PZ28 | PZ-28 | | | 119.34 | |
| PZ29 | PZ-29 | | | 120.51 | |
| PZ30 | PZ-30 | | | 120.52 | 120.91 |

Note: If blank – no data was collected, * indicates that data was eliminated from data set due to noted high reading likely influenced by neighboring drainage ditch.

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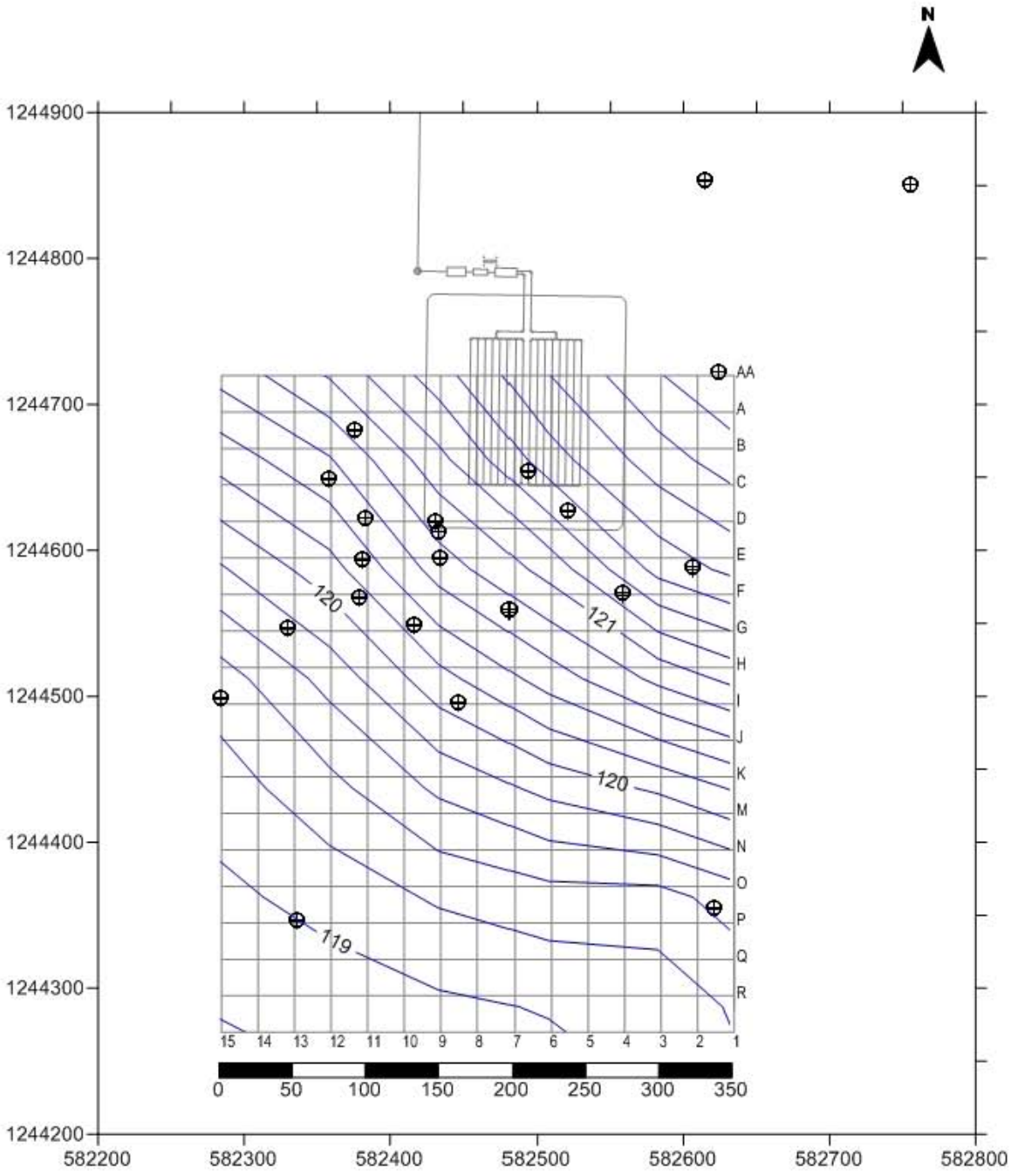


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**Figure 6**
**Surficial Groundwater Contours on April 13, 2011**

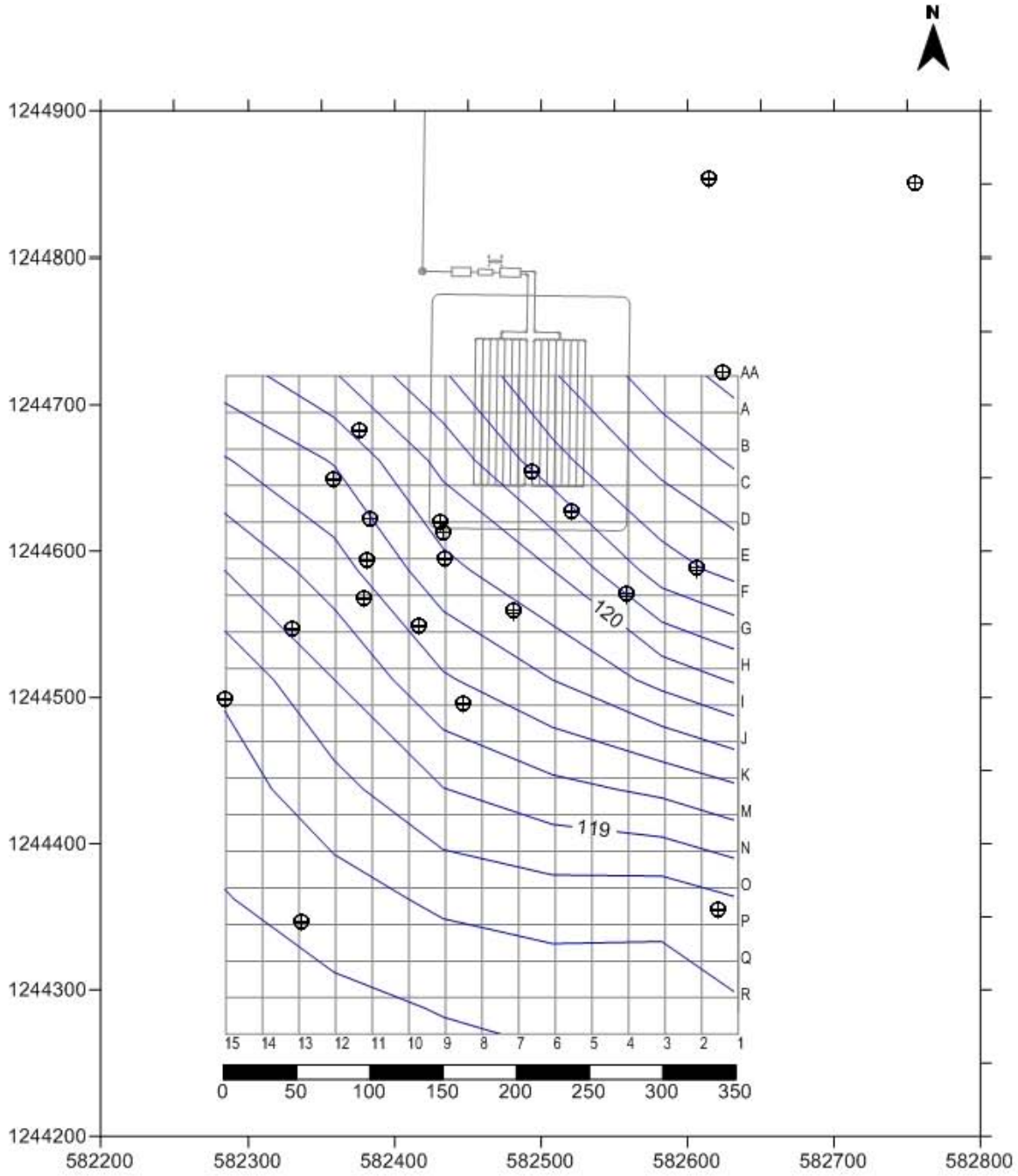


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**Figure 7**

**Surficial Groundwater Contours on May 13, 2011**

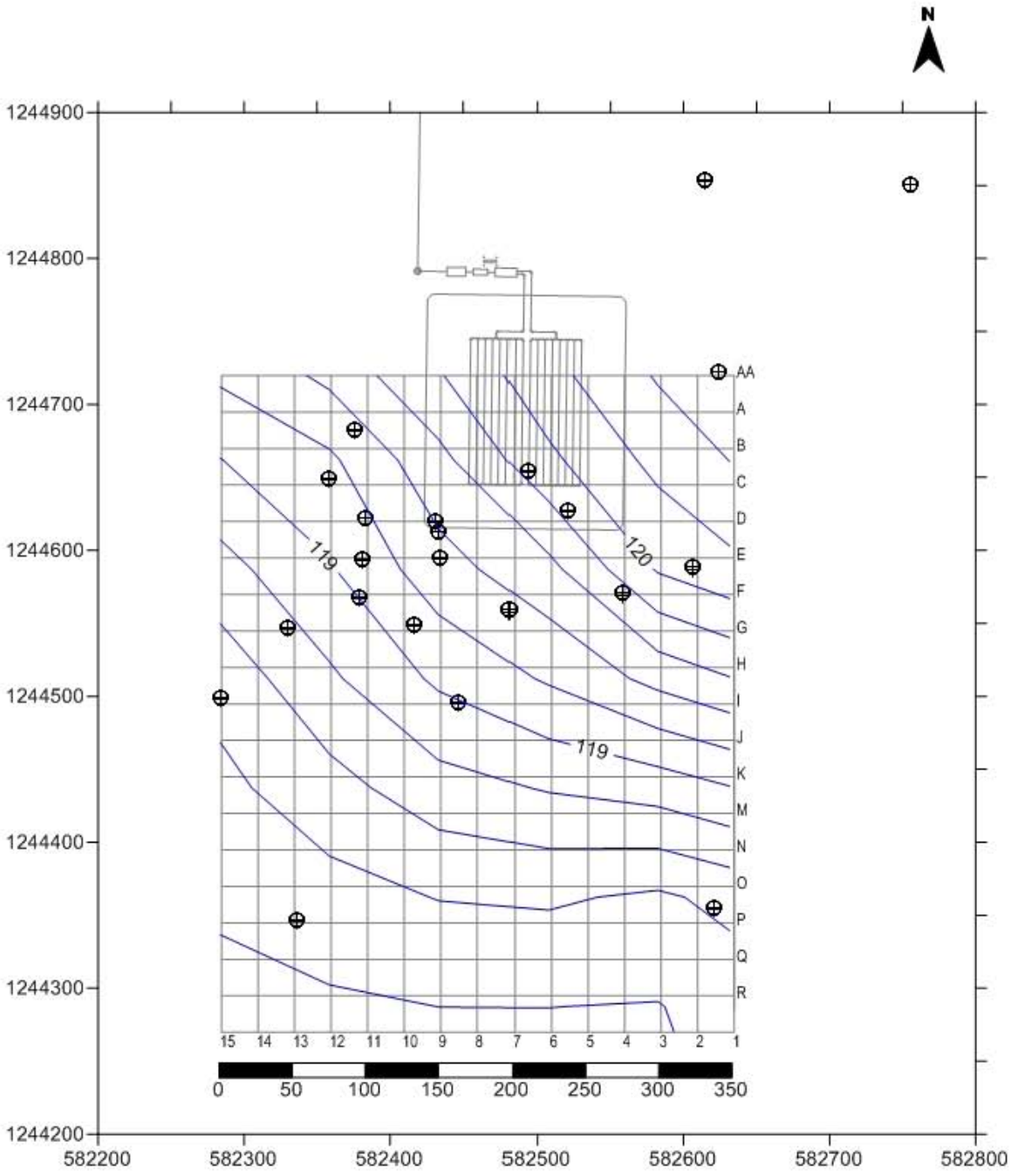


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**Figure 8**
**Surficial Groundwater Contours on June 17, 2011**

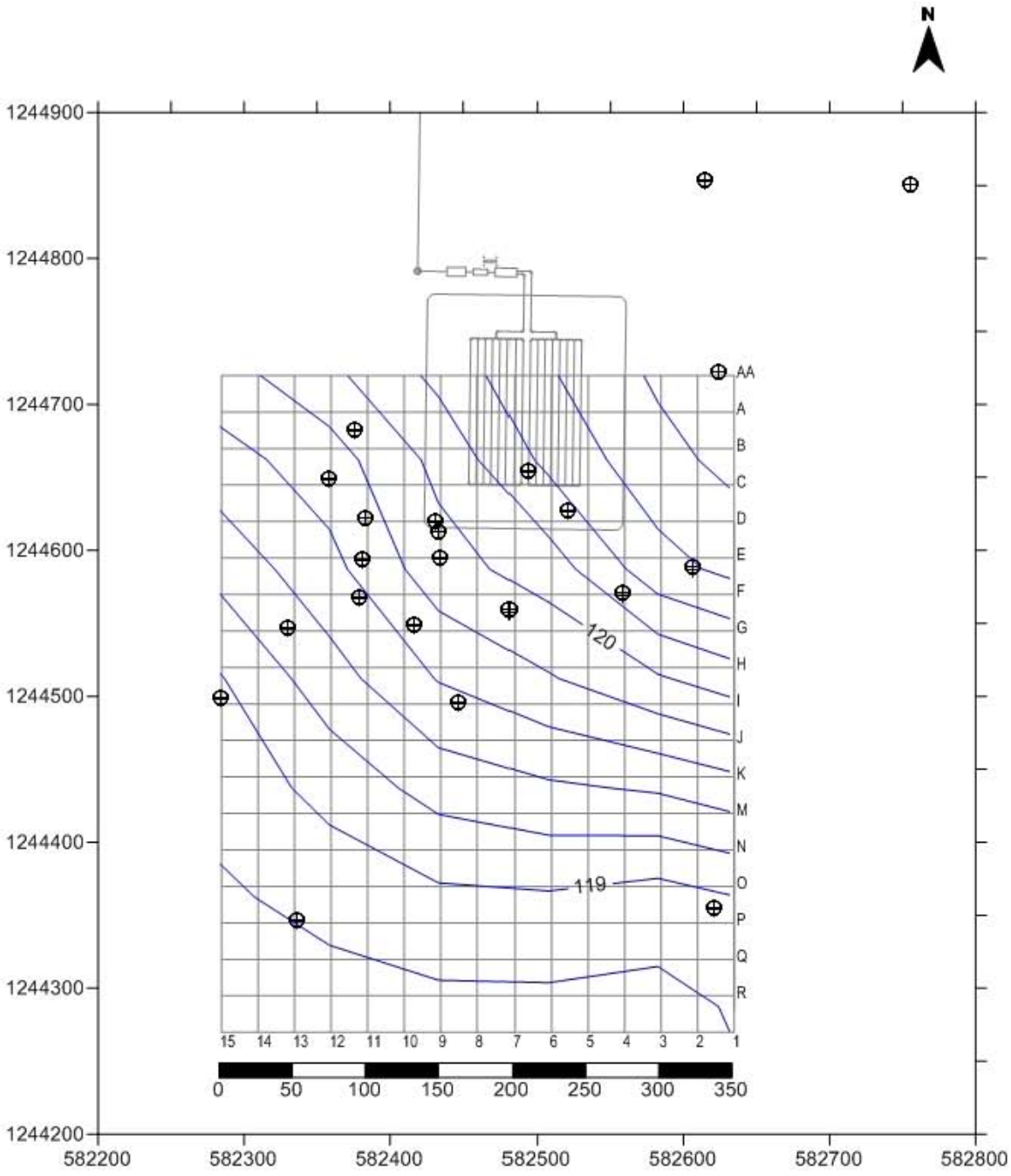


**Figure 9**
**Surficial Groundwater Contours on June 28, 2011**

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## 4.3 Water Quality Analyses

### 4.3.1 Field Parameters

Field parameters (temperature, pH, dissolved oxygen (DO), and specific conductivity) were measured at all the sampling locations during the June 2011 sampling event. Clearly variations were expected as the chemical composition of the groundwater varies due to the discharge of STE. However, similar to the results from the December and March sampling events, these variations were not large. In fact the temperature was found to range from 23.9 to 30.2 but the inter-quartile range (IQR) was between 24.5 to 26.0, pH varied from 4.0 to 6.1 with an IQR from 4.7 to 5.1, DO varied from 0.1 to 5.1 with an IQR from 0.3 to 1.0, and finally the conductivity varied from 80 to 752 with an IQR from 281 to 368 (Table 6). Large variations in field parameters at any one monitoring event are not expected; however slight seasonal variations may occur. Temperature does play a role in both the magnitude of nitrification and denitrification; however, the potential seasonal variations at the site are not expected to be significant enough for measurable rate changes. Furthermore, although slight variation in pH may occur, the bacteria responsible for denitrification are not highly sensitive to pH fluctuations, and while near neutral pH may be optimal for denitrification; research has shown that low pH levels have little to no impact on the process. Although high levels of DO may inhibit denitrification, the concentrations of DO seen at the site are only slightly above the limiting level of 1 mg/L, and thus little effect is expected. Instead, further analysis of the field parameters may provide additional information regarding plume extent. The complete field parameter data set is included in Appendix F.

**Table 6**
**Field Parameters**

| | Dec 9, 2010 | | March 29 - April 4, 2011 | | June 27 – June 29, 2011 | |
|---|---|---|---|---|---|---|
| **Field Parameters** | **Range** | **IQR** | **Range** | **IQR** | **Range** | **IQR** |
| Temperature (°C) | 20.7 -27.6 | 21.8 - 22.7 | 19.4 - 28.9 | 21.9 - 23.9 | 23.9-30.2 | 24.5-26.0 |
| pH | 4.2 - 5.7 | 4.8 - 5.0 | 4.3 - 7.6 | 5.0 - 5.6 | 4.0-6.1 | 4.7-5.1 |
| DO (mg/L) | 0.4 - 3.3 | 0.8 - 1.4 | 0.2 - 10.9 | 0.8 - 2.2 | 0.1-5.1 | 0.3-1.0 |
| Specific conductance (µS) | 163 - 649 | 292 - 342 | 59 - 295 | 182 - 351 | 80-752 | 281-368 |
| Chloride (mg/L) | | | | | 3-82 | 9-21 |

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### 4.3.2 Correlations

Correlations between various parameters were conducted to determine if for example the NOX concentration could be estimated in the absence of actual field data. Such estimates can then provide insight into expected nitrogen removal or can be used to approximate a difficult to obtain parameter value. Based on the data collected to date, the relationship between chloride and specific conductance and the concentration of NOX has an observed strong correlation. Figure 10 illustrates the correlation between specific conductance and the concentration of chloride based on the June data. Figure 11 illustrates the correlation between the concentrations of chloride and NOX.

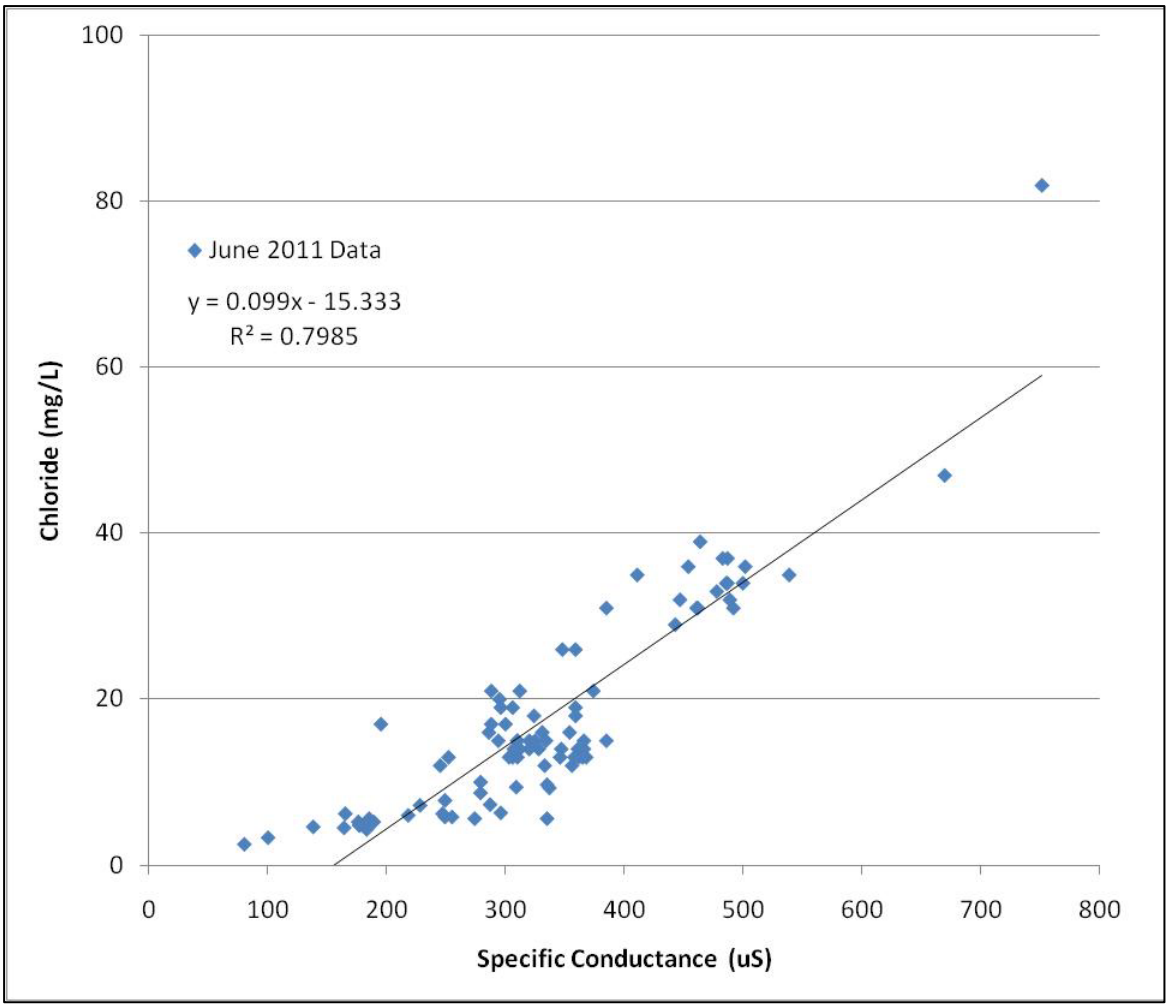


**Figure 10**
**Correlation Between the Specific Conductance (uS) and Concentrations of Chloride (mg/L)**

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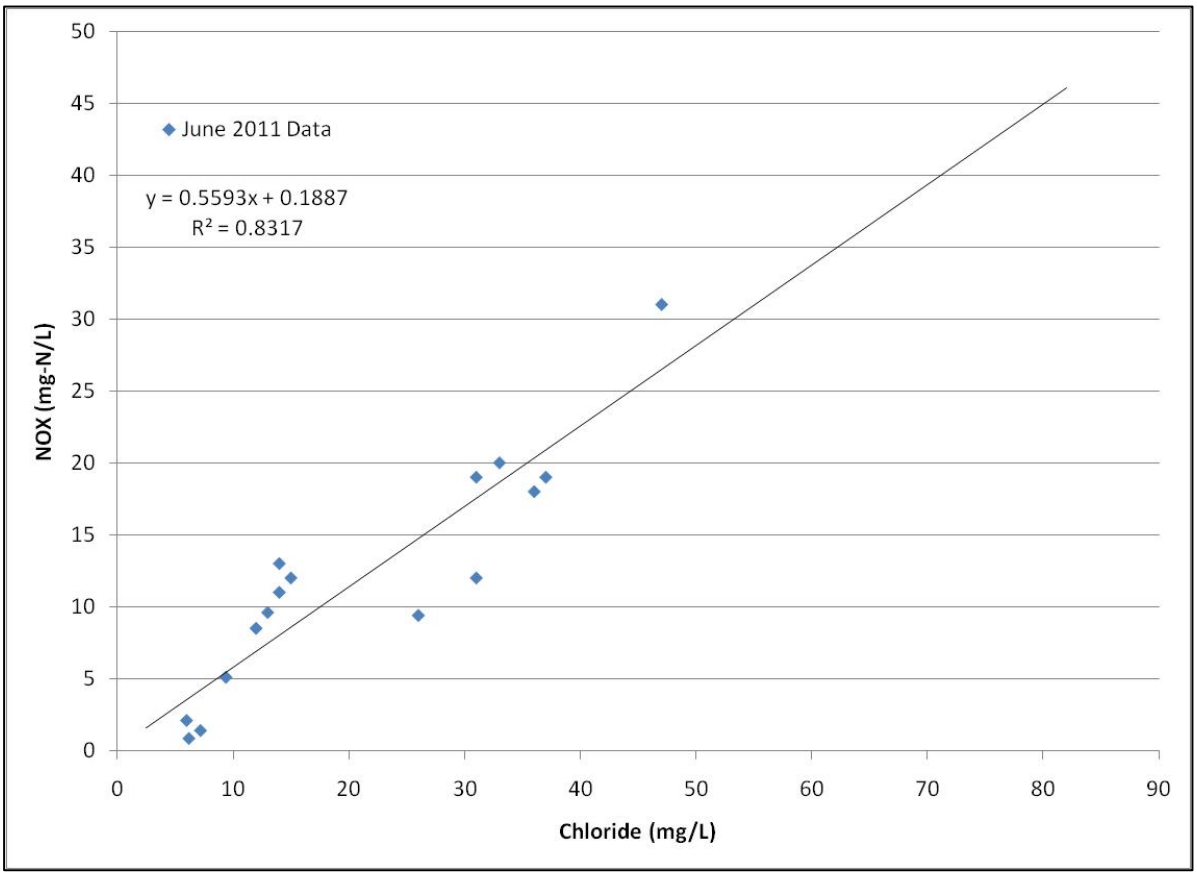


**Figure 11**
**Correlation Between the Specific Conductance (uS) and Concentrations of Chloride (mg/L)**

### 4.3.3 Analytical Parameters

In addition to measuring field parameters, all samples were analyzed for chloride. Some of the samples were additionally analyzed for: total alkalinity (as $CaCO_3$), total Kjeldahl nitrogen (TKN-N), ammonia nitrogen (NH3-N), and nitrate/nitrite nitrogen (NOX-N), total organic carbon (TOC), dissolved organic carbon (DOC), chemical oxygen demand (COD), and cations and anions. Although the June sampling event again provides further insight into the existing nitrogen plume, it did not provide enough information to make any conclusive interpretations. The complete water quality analytical results for Sample Event No. 3 are listed in Table 1, Appendix F, and the statistical summary of the water quality is presented in Table 1, Appendix G. The laboratory report containing the raw analytical data is included in Appendix H.

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### 4.3.4 Nitrate/Nitrite Concentrations with Depth

Although great care was taken to install the drive points at specific depths (e.g. 5, 7 and 9 feet below ground surface [bgs] in June of 2010, and 14, 21 and 27 feet bgs during the November drilling event), the reality is that the points are located at all different elevations from 92.85 feet to 120.82 feet. **Surfer** is an excellent tool for contour mapping; however, as it cannot project a 3-dimensional view of concentrations with depth. Thus, it was deemed necessary to "lump" the concentrations of parameters from the different sampling locations into "slices" of similar depth, allowing the different "slices" to be compared. With 121 drive points installed at different depths below the ground surface at 63 different locations outside of the mound, deciding on a logical way to separate the drive points into a few select "slices" that would represent a selection of elevation depths provided a challenge.

Samples were collected at 62 locations during the December sampling event. Based on the distribution of points with depth, four "slices" were chosen for the December data. The bottom three slices were separated into five-foot intervals, and the top group was divided into a ten-foot interval as that group comprises primarily drive points within the spodic layer. A **Surfer** schematic illustrating the "slices" of NOX concentration with depth from December 9, 2010 is presented in Figure 11. During the comprehensive sampling event in March 2011, samples were collected at all drive point locations. As a result of the additional data points, the data could be divided into five "slices" separated into five-foot intervals, as shown in Figure 12. For this June sampling event, NOX was analyzed for limited locations, but the field parameters and chloride concentrations were collected from the majority of the drive point locations. Therefore, the chloride data can be divided into five "slices" separated into five-foot intervals, as shown in Figure 13.

Similar to the results in December (Figure 11) and March (Figure 12) for NOX, the chloride results from the June sampling event show that the plume appears to be confined in a southwesterly direction from the center of the mound. The lowest concentrations are at the deeper depths. The highest concentrations were found at 110-115 feet above sea level close to the mound from approximately AA9 and north along the 9-transect (Figure 13).

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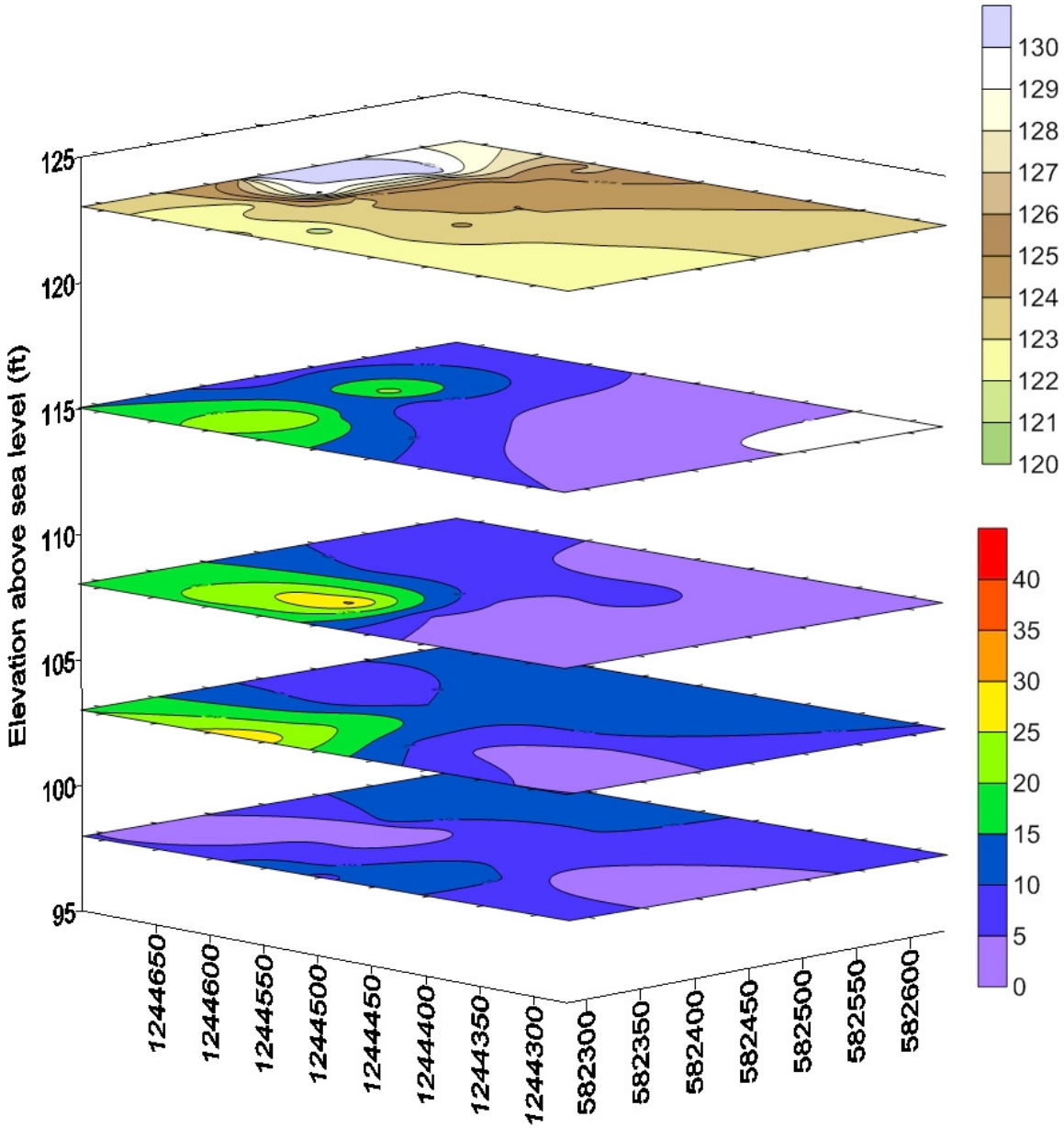


**Figure 11**

**A layered schematic (using Surfer) illustrating NOX concentrations in the subsurface at four different elevation intervals (based on the December 2010 sampling event). The top slice provides a contour map of the surface elevation. UTM coordinates are provided to correlate the schematic to Figure 1.**

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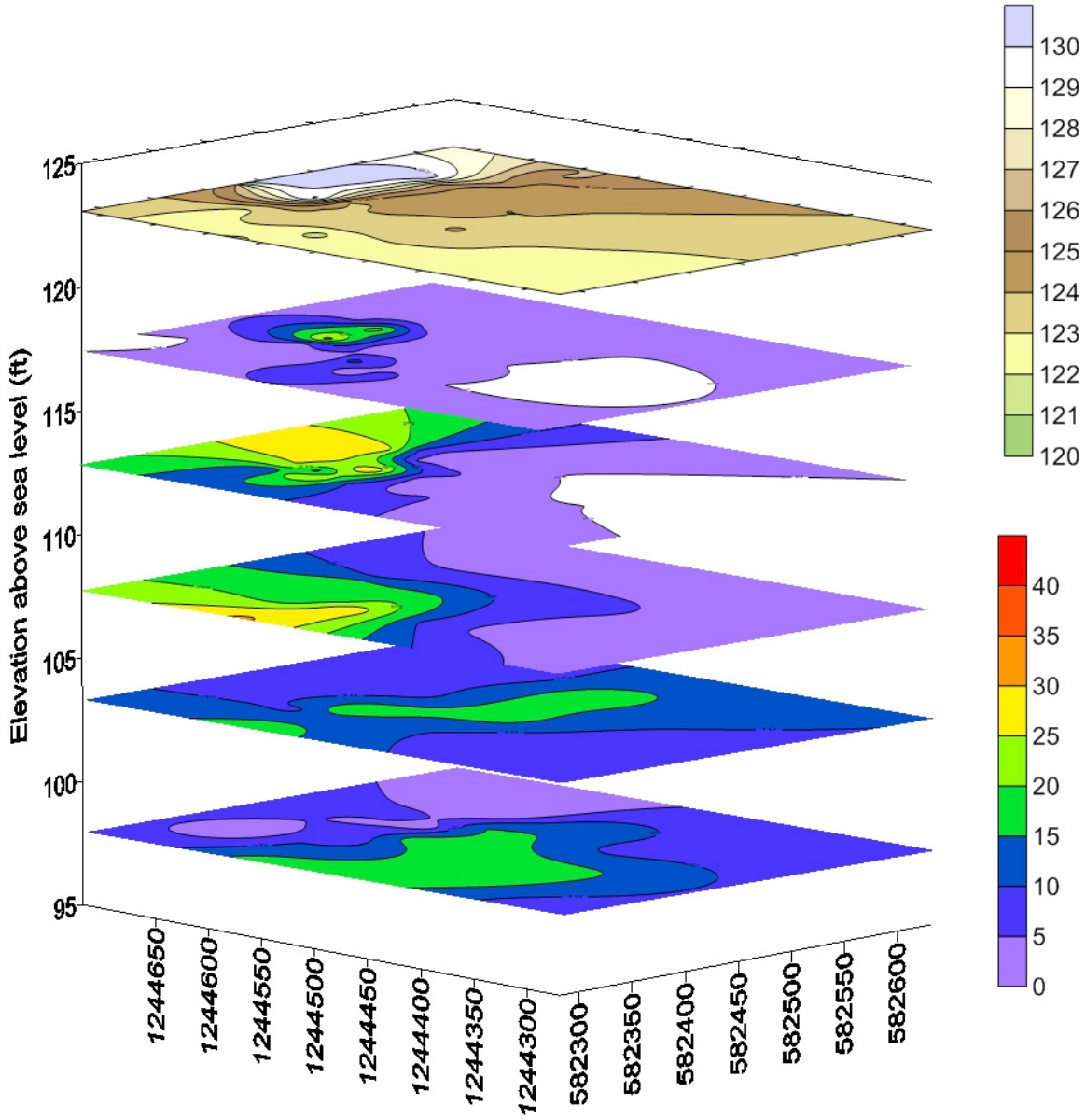


**Figure 12**

**A layered schematic (using Surfer) illustrating NOX concentrations in the subsurface at four different elevation intervals (based on the March 2011 sampling event). The top slice provides a contour map of the surface elevation. UTM coordinates are provided to correlate the schematic to Figure 1.**

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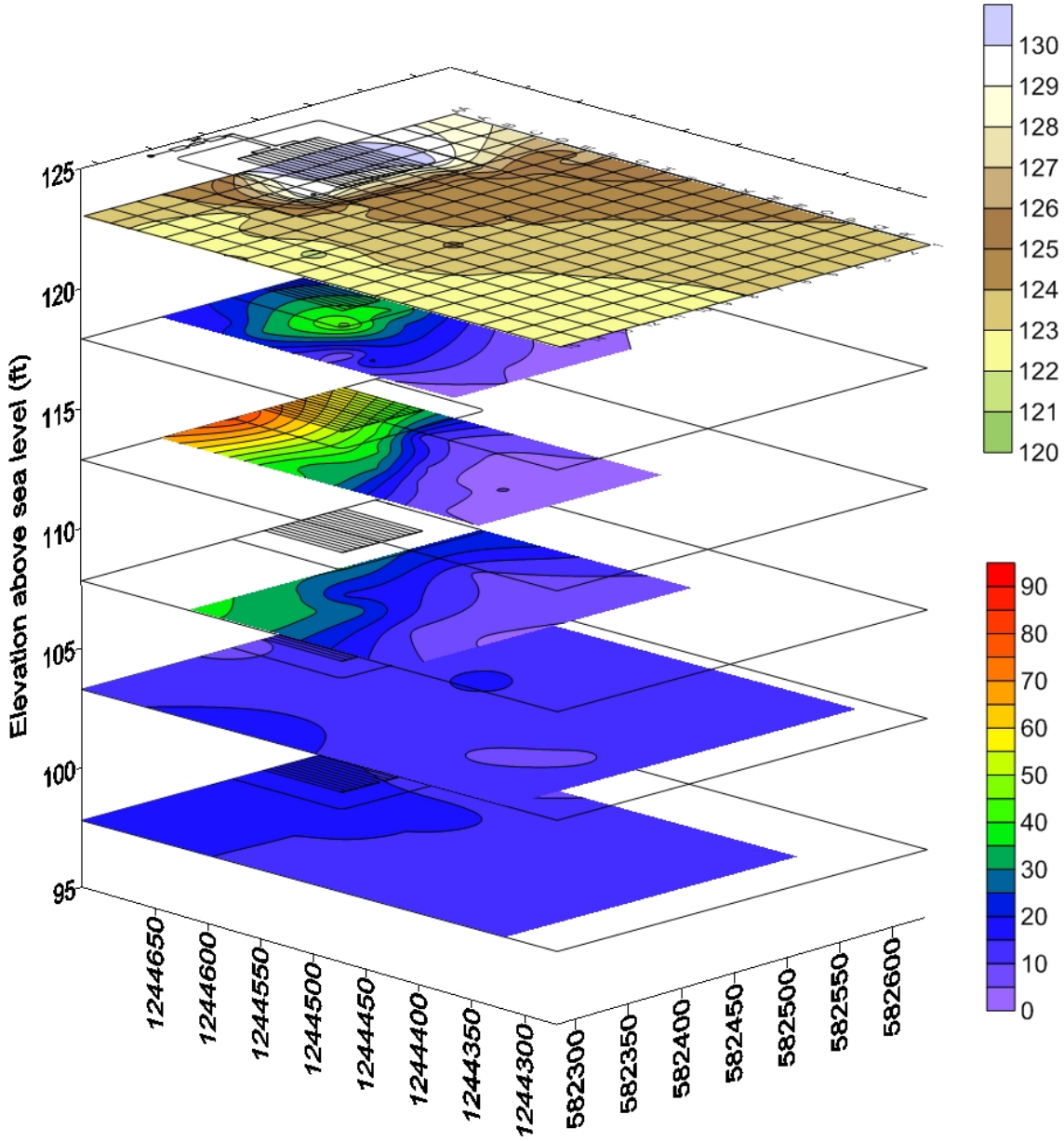


**Figure 13**

**A layered schematic (using Surfer) illustrating Chloride concentrations in the sub-surface at five different elevation intervals (based on the June 2011 sampling event). UTM coordinates are provided to correlate the schematic to Figure 1.**

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# 5.0 GCREC Data Summary Report No. 3: Summary and Recommendations

## 5.1 Summary

The results of the data collected to date has provided additional understanding of the extent of the spodic layer, allowed for estimations of groundwater flow, gradient and velocity, and provided additional insights into the general trend of the NOX plume. Results of Sample Event No. 3 indicate that:

- Although the groundwater levels fluctuate, the direction of flow remains constant at 220 degrees to true north.
- The groundwater gradient has been found to range from 0.0066 to 0.0094.
- Initial analysis suggests that the groundwater velocity range is from 0.66 to 0.94 ft/day.
- Additional verification of the elevation of the top of the spodic layer show that it follows the same trend as that of the groundwater.
- A good correlation has been established between specific conductance and concentrations of chloride ($R^2$=0.7).
- The chloride plume appears to follow the extent and movement of the NOX plume and be in a southwesterly direction with elevated concentrations in the spodic layer closer to the mound and higher elevations just below the spodic layer further away from the mound. The concentration is lowest just above the confining layer.
- Any potential interference from the elevated concentrations of NOX observed in PZ24 is still being evaluated.

## 5.2 Recommendations

The results of Sample Event No. 3 will be used to gain additional insights into the NOX plume and provide additional information needed for the development of the simple groundwater model in Task D. The project team will continuously evaluate all results including those that particularly result from implementation of the recommendations and make further adaptations as needed.

Following is a list with select recommendations:

- Additional analyses of field parameters will give a better understanding of if and how they may correlate to nitrogen reduction.
- Continuous groundwater level monitoring, will provide information needed to determine the necessary parameters for model development.
- Comprehensive sampling at the site will provide additional information that is needed for plume identification and for nitrogen fate and transport determination.

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# Appendix A: GCREC Mound Wastewater Flow Data

**Table A.1**
**GCREC Mound Metered Wastewater Flow Data**

| Date Range | 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) |
|---|---|---|---|
| **Before A/C Condensate Diversion** | | | |
| 12/21/10 – 7/16/10 | 1,650 | 591 | 2,241 |
| **After A/C Condensate Diversion** | | | |
| 7/19/10 – 7/5/11 | 994 | 1,235 | 2,229 |

**Table A.2**
**Summary of Daily Wastewater Flows (PLC Recorded)**

| | Date Range | Average Recorded Flow (gpd) | Std. Dev. | MIN (gpd) | MAX (gpd) |
|---|---|---|---|---|---|
| **Before A/C Condensate Diversion** | | | | | |
| Pump 1 to Mound | 6/14/10 – 7/16/10 | 5,422 | 1,565 | 3,013 | 9,117 |
| Pump 2 to Mound | | - | - | - | - |
| Sum of Both Pumps | | 5,422 | 1,565 | 3,013 | 9,117 |
| **After A/C Condensate Diversion** | | | | | |
| Pump 1 to Mound | 7/16/10 – 6/27/11 | 984 | 680 | 0 | 3,548 |
| Pump 2 to Mound | | 1,249 | 784 | 0 | 5,022 |
| Sum of Both Pumps | | 2,233 | 1,017 | 584 | 5,730 |

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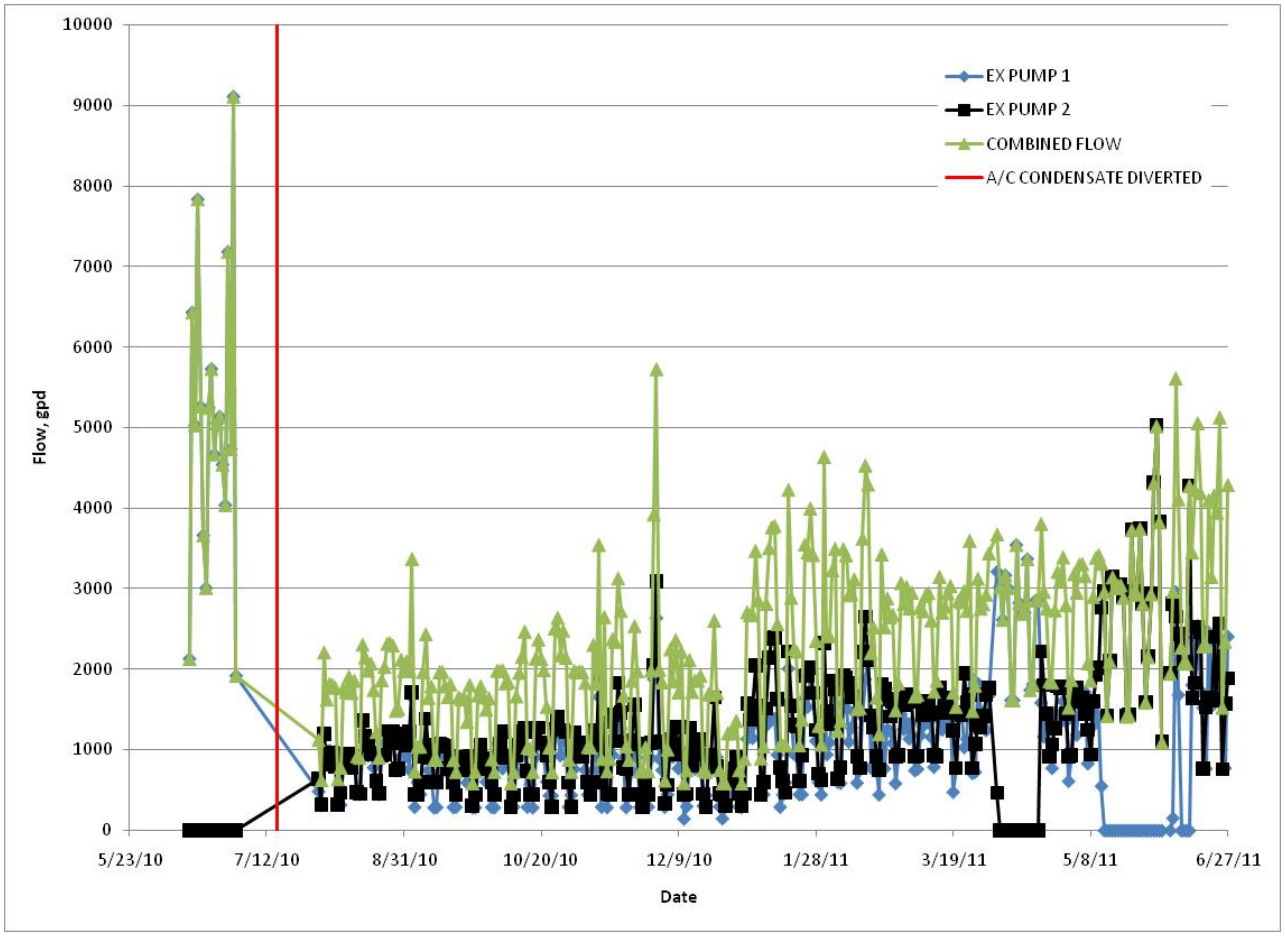


**Figure A.1**
**PLC Recorded Daily Wastewater Flows**
**(6/14/10 – 6/27/11)**

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# Appendix B: GCREC Weather Station Data

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## Table B.1
## Monthly Recorded Meteorological Data

| 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 |

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# Appendix C: GCREC Mound Sample Identification

**Table C.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 C.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 |

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**Table C.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 |

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**Table C.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 | H9 | 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 | I6 | DP-I06-14 | SST Drive Point | 110.24 |
| 106 | I6 | DP-I06-20 | SST Drive Point | 103.99 |
| 107 | I6 | DP-I06-26 | SST Drive Point | 97.94 |
| 108 | I7 | DP-I07-8 | SST Drive Point | 115.67 |
| 109 | I8 | DP-I08-5 | SST Drive Point | 118.56 |
| 110 | I8.5 | PZ09-I08-5 | 1 1/4" Standpipe Piezometer, 4' screen | 118.93 |
| 111 | I9 | DP-I09-11 | SST Drive Point | 112.96 |
| 112 | I10 | DP-I10-6 | SST Drive Point | 117.72 |
| 113 | I11 | DP-I11-10 | SST Drive Point | 113.50 |
| 114 | I12 | DP-I12-6 | SST Drive Point | 117.54 |
| 115 | I15 | 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 |

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**Table C.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-O10-12 | SST Drive Point | 110.71 |
| 140 | O10 | DP-O10-18 | SST Drive Point | 104.56 |
| 141 | O10 | DP-O10-24 | 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 D: Soil Analytical Results

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# Table D.1
# Soil Analytical Results

| ID# | Sample ID | Depth | pH | BufpH | CEC | TN[1] | TKN | ON[2] | NH3-N | NOx-N | TIN[3] | OrgMt | Est. TOC[4] | K | Ca | Mg | Na |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | % | 0.68% OM | mg/kg | mg/kg | mg/kg | mg/kg |
| 1 | O-10 | 0-1.57' | 6.10 | 7.80 | 6.92 | 800.92 | 799.0897 | 797.44 | 1.65 | 1.83 | 3.48 | 2.11 | 1.43 | 27.19 | 634.0 | 50.20 | 23.68 |
| 2 | O-10 | 1.57-2.49' | 5.30 | 7.89 | 2.36 | 115.37 | 114.3235 | 113.31 | 1.02 | 1.05 | 2.06 | 0.20 | 0.14 | 12.89 | 42.86 | 1.58 | 21.25 |
| 3 | O-10 | 2.49-3.58' | 5.40 | 7.92 | 2.19 | 49.20 | 48.9296 | 48.06 | 0.87 | 0.27 | 1.14 | 0.14 | 0.10 | 11.81 | 38.34 | 1.99 | 23.84 |
| 4 | O-10 | 3.58-5.1' | 5.20 | 7.92 | 2.15 | 41.04 | 40.777 | 39.92 | 0.86 | 0.26 | 1.12 | 0.14 | 0.10 | 13.01 | 39.47 | 1.88 | 22.10 |
| 5 | O-10 | 5.1-5.6' | 4.70 | 7.76 | 3.79 | 66.94 | 66.7042 | 65.68 | 1.03 | 0.23 | 1.26 | 0.20 | 0.14 | 17.00 | 34.48 | 0.54 | 28.90 |
| 6 | O-10 | 5.6-6.2' | 4.60 | 7.52 | 6.20 | 116.14 | 115.8041 | 114.62 | 1.18 | 0.34 | 1.52 | 0.54 | 0.37 | 21.73 | 40.38 | 1.03 | 36.54 |
| 7 | E-06 | 0-2.4' | 6.10 | 7.81 | 8.48 | 741.19 | 716.9355 | 715.98 | 0.96 | 24.26 | 25.21 | 2.04 | 1.39 | 65.70 | 795.0 | 52.20 | 19.91 |
| 8 | E-06 | 2.44-2.9' | 6.10 | 7.87 | 3.22 | 145.49 | 144.4289 | 143.50 | 0.92 | 1.06 | 1.99 | 0.48 | 0.33 | 22.54 | 133.6 | 11.93 | 19.09 |
| 9 | E-06 | 2.8-3.9' | 5.10 | NES[5] | 1.31 | 54.49 | 54.1427 | 52.77 | 1.37 | 0.34 | 1.71 | 0.14 | 0.10 | 13.05 | 35.32 | 0.73 | 18.29 |
| 10 | E-06 | 3.9-4' | 6.10 | 7.93 | 2.33 | 56.94 | 56.5046 | 55.50 | 1.00 | 0.44 | 1.44 | 0.14 | 0.10 | 19.86 | 64.20 | 9.60 | 19.80 |
| 11 | E-06 | 4-4.35' | 5.80 | 7.97 | 1.65 | 60.71 | 58.6418 | 57.69 | 0.95 | 2.07 | 3.02 | 0.14 | 0.10 | 12.82 | 68.60 | 3.20 | 16.34 |
| 12 | E-06 | 4.35-4.85' | 4.60 | NES[5] | 1.52 | 54.22 | 52.7575 | 51.37 | 1.39 | 1.46 | 2.86 | 0.14 | 0.10 | 16.61 | 39.65 | 1.41 | 20.33 |
| 13 | E-06 | 4.85-5.35' | 4.40 | NES[5] | 1.73 | 204.35 | 201.9656 | 199.86 | 2.10 | 2.38 | 4.49 | 1.22 | 0.83 | 23.64 | 35.36 | -1.41 | 22.07 |
| 14 | E-06 | 6-8' | 4.70 | 7.30 | 8.18 | 322.05 | 319.6979 | 318.72 | 0.98 | 2.35 | 3.33 | 2.38 | 1.62 | 19.44 | 42.37 | 0.63 | 42.80 |
| 15 | G-10 | 0-1.2' | 5.90 | 7.74 | 6.25 | 472.86 | 470.9396 | 465.80 | 5.14 | 1.92 | 7.06 | 1.70 | 1.16 | 46.82 | 352.9 | 20.01 | 23.97 |
| 16 | G-10 | 1.2-2.8' | 4.90 | 7.61 | 5.09 | 105.16 | 102.5401 | 98.95 | 3.59 | 2.62 | 6.21 | 0.41 | 0.28 | 20.74 | 57.40 | 3.35 | 25.84 |
| 17 | G-10 | 2.8-6.1' | 5.70 | NES[5] | 5.27 | 566.03 | 563.7461 | 557.91 | 5.84 | 2.28 | 8.12 | 1.50 | 1.02 | 65.50 | 380.3 | 28.36 | 33.38 |
| 18 | G-10 | 6.1-9' | 5.00 | 7.15 | 9.47 | 286.09 | 283.8583 | 280.52 | 3.34 | 2.23 | 5.57 | 2.24 | 1.52 | 38.03 | 91.50 | 3.93 | 27.73 |
| 19 | G-10 | 9-10.1' | 5.20 | 7.14 | 9.17 | 235.29 | 233.4414 | 231.18 | 2.26 | 1.85 | 4.10 | 1.50 | 1.02 | 26.30 | 89.80 | 3.17 | 26.30 |
| 20 | G-10 | 10.1-13.9' | 5.00 | 7.66 | 4.57 | 173.91 | 171.1635 | 169.04 | 2.13 | 2.74 | 4.87 | 1.22 | 0.83 | 19.31 | 65.10 | 0.78 | 23.52 |
| 21 | G-10 | 13.9-16.6' | 5.20 | 7.55 | 5.96 | 122.10 | 118.4095 | 115.41 | 3.00 | 3.69 | 6.69 | 0.75 | 0.51 | 28.65 | 74.30 | 2.94 | 28.17 |
| 22 | G-10 | 16.6-19' | 5.30 | 7.32 | 7.63 | 218.35 | 215.8369 | 213.42 | 2.42 | 2.52 | 4.93 | 1.50 | 1.02 | 30.33 | 77.50 | 2.77 | 23.10 |
| 23 | G-10 | 19-23' | 5.20 | 7.44 | 7.08 | 126.14 | 122.7524 | 120.20 | 2.56 | 3.39 | 5.95 | 0.68 | 0.46 | 33.10 | 109.4 | 5.16 | 26.63 |
| 24 | G-10 | 23-27.5' | 5.40 | 7.88 | 3.28 | 50.61 | 48.4507 | 46.62 | 1.83 | 2.16 | 3.99 | 0.14 | 0.10 | 19.62 | 170.6 | 9.63 | 20.22 |
| 25 | G-10 | 27.5-27.9' | 5.30 | NES[5] | 9.49 | 86.50 | 84.48341 | 81.07 | 3.41 | 2.02 | 5.43 | 0.27 | 0.18 | 33.57 | 1293 | 74.30 | 35.52 |
| 26 | G-10 | 27.9-30' | 5.70 | 7.71 | 34.05 | 237.70 | 235.0367 | 223.28 | 11.75 | 2.66 | 14.41 | 0.20 | 0.14 | 281.9 | 3035 | 850.0 | 51.70 |

T: for Value < MDL Non-detect

I: for Value >= MDL but < PQL

[1]Total Nitrogen (TN) is a calculated value equal to the sum of TKN and $NO_X$.

[2]Organic Nitrogen (ON) is a calculated value equal to the difference of TKN and $NH_3$.

[3]Total Inorganic Nitrogen (TIN) is a calculated value equal to the sum of $NH_3$ and $NO_X$.

[4]TOC calculated value typical range 0.58-0.70 of organic matter, using 0.68

[5]NES: for Not Enough Sample

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# Appendix E: Groundwater Elevations

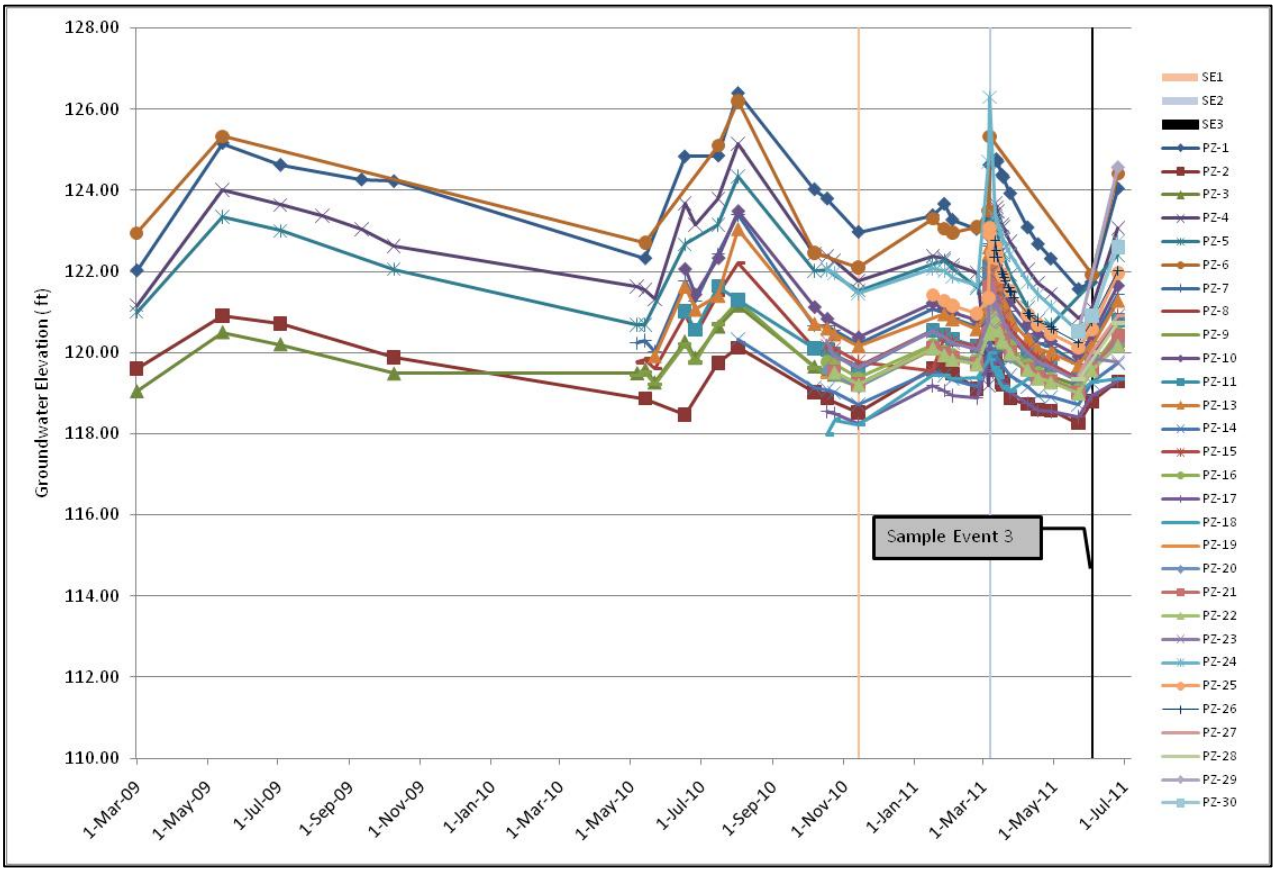


**Figure E.1**
**Groundwater Elevations**

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Table E.1
Groundwater Elevations

| ID | PZ-1 | PZ-2 | PZ-3 | PZ-4 | PZ-5 | PZ-6 | PZ-7 | PZ-8 | PZ-9 | PZ-10 | PZ-11 | PZ-13 | PZ-14 | PZ-15 | PZ-16 | PZ-17 | PZ-18 | PZ-19 | PZ-20 | PZ-21 | PZ-22 | PZ-23 | PZ-24 | PZ-25 | PZ-26 | PZ-27 | PZ-28 | PZ-29 | PZ-30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | BKG, N | PG1.75 | H11 | BKG, N | BKG, E | BKG, NW | D5.5 | FG7 | I8.5 | CD6.5 | E9 | F4 | G13 | A11 | C12 | I15 | R12 | G9.75 | G9.75 | E11 | E11 | D9 | BKG, N | C-Mound | EF2 | D08 | D11 | BKG | A0 |
| 3/26/2009 | 122.02 | 119.61 | 119.04 | 121.17 | 121.00 | 122.95 | | | | | | | | | | | | | | | | | | | | | | | |
| 6/8/2009 | 125.16 | 120.92 | 120.50 | 124.01 | 123.34 | 125.33 | | | | | | | | | | | | | | | | | | | | | | | |
| 7/28/2009 | 124.62 | 120.72 | 120.20 | 123.64 | 123.00 | | | | | | | | | | | | | | | | | | | | | | | | |
| 9/2/2009 | | | | 123.37 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10/6/2009 | 124.26 | | | 123.04 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11/3/2009 | 124.22 | 119.88 | 119.48 | 122.63 | 122.06 | | | | | | | | | | | | | | | | | | | | | | | | |
| 6/1/2010 | | | 119.49 | 121.63 | 120.69 | | 120.23 | 119.76 | 119.44 | | | | | | | | | | | | | | | | | | | | |
| 6/8/2010 | 122.32 | 118.87 | 119.58 | 121.55 | 120.68 | 122.70 | 120.29 | 119.84 | 119.52 | | | | | | | | | | | | | | | | | | | | |
| 6/16/2010 | | | 119.26 | 121.31 | | | 120.03 | 119.61 | 119.22 | | | 119.91 | | | | | | | | | | | | | | | | | |
| 7/12/2010 | 124.83 | 118.47 | 120.27 | 123.68 | 122.67 | | 121.77 | 120.94 | 120.22 | 122.06 | 121.01 | 121.63 | | | | | | | | | | | | | | | | | |
| 7/21/2010 | | | 119.87 | 123.16 | | | 121.28 | 120.44 | 119.77 | 121.43 | 120.56 | 121.06 | | | | | | | | | | | | | | | | | |
| 8/10/2010 | 124.85 | 119.74 | 120.64 | 123.79 | 123.15 | 125.10 | 122.42 | 121.42 | 120.70 | 122.33 | 121.64 | 121.40 | | | | | | | | | | | | | | | | | |
| 8/27/2010 | 126.39 | 120.12 | 121.16 | 125.14 | 124.35 | 126.19 | 123.39 | 122.21 | 121.28 | 123.49 | 121.29 | 123.05 | 120.32 | | | | | | | | | | | | | | | | |
| 11/1/2010 | 124.02 | 119.03 | 119.65 | 122.43 | 122.01 | 122.46 | 120.67 | 120.10 | 119.62 | 121.12 | 120.10 | 120.71 | 119.13 | | | | | | | | | | | | | | | | |
| 11/12/2010 | 123.79 | 118.87 | 119.54 | 122.37 | 122.05 | | 120.67 | 120.04 | 119.49 | 120.83 | 120.07 | 120.59 | 119.07 | 120.16 | 119.78 | 118.56 | 117.98 | 119.38 | 119.58 | | | 120.27 | 122.05 | | | | | | |
| 11/18/2010 | | | 119.45 | 122.26 | | | 120.56 | 119.93 | 119.38 | | 119.96 | 120.45 | 119.01 | 120.09 | 119.71 | 118.49 | 118.34 | 119.45 | 119.45 | 119.53 | 119.51 | 119.91 | 121.96 | | | | | | |
| 12/9/2010 | 122.97 | 118.52 | 119.21 | 121.76 | 121.53 | 122.09 | 120.22 | 119.65 | 119.15 | 120.37 | 119.57 | 120.16 | 118.72 | 119.77 | 119.37 | 118.26 | 118.22 | 119.18 | 119.17 | 119.22 | 119.21 | 119.64 | 121.46 | | | | | | |
| 2/11/2011 | 123.38 | 119.60 | 120.13 | 122.38 | 122.18 | 123.30 | 121.06 | 120.54 | 120.08 | 121.22 | 120.55 | | 119.55 | 119.56 | 120.20 | 119.19 | 119.44 | 120.08 | 120.10 | 120.10 | 120.11 | 120.51 | 122.07 | 121.42 | | | | | |
| 2/21/2011 | 123.66 | 119.62 | 120.01 | 122.33 | 122.27 | 123.05 | 120.98 | 120.45 | 120.03 | 121.10 | 120.44 | 120.95 | 119.44 | 120.40 | 120.03 | 119.06 | 119.44 | 119.97 | 119.98 | 119.96 | 119.94 | 120.37 | 122.01 | 121.28 | | | | | |
| 2/28/2011 | 123.27 | 119.48 | 119.90 | 122.17 | 122.08 | 122.95 | 120.85 | 120.33 | 119.90 | 120.98 | 120.33 | 120.82 | 119.34 | 120.28 | 119.93 | 118.94 | 119.35 | 119.85 | 119.86 | 119.85 | 119.83 | 120.24 | 121.86 | 121.15 | | | | | |
| 3/21/2011 | 123.04 | 119.11 | 119.80 | 121.97 | 121.60 | 123.10 | 120.64 | 120.14 | 119.75 | 120.79 | 120.15 | 120.58 | 119.17 | 120.16 | 119.81 | 118.88 | 119.37 | 119.73 | 119.76 | 119.71 | 119.71 | 120.07 | 121.65 | 120.97 | | | | | |
| 3/31/2011 | 123.24 | 119.78 | 120.60 | 119.19 | 121.87 | 123.50 | 121.10 | 120.81 | 120.53 | 121.21 | 120.85 | 121.12 | 119.99 | 120.82 | 120.53 | 119.82 | 119.82 | 120.48 | 120.49 | 120.48 | 120.47 | 120.77 | 124.70 | 121.35 | | | | | |
| 4/1/2011 | | | | | | | 122.67 | 122.17 | 121.68 | 122.86 | 122.13 | 122.60 | | 122.10 | 121.41 | | | 121.58 | 121.61 | 121.60 | 121.48 | 121.98 | | 122.92 | | | | | |
| 4/1/2011 | 124.62 | 120.37 | 121.24 | 120.73 | 123.32 | 125.33 | 122.63 | 121.98 | 121.39 | 122.92 | 121.91 | 122.45 | 120.28 | 121.96 | 121.36 | 120.10 | 119.99 | 121.35 | 121.37 | 121.27 | 121.28 | 121.90 | 126.30 | 123.08 | | | | | |
| 4/4/2011 | | 119.74 | 120.60 | | | | 121.96 | 121.25 | 120.64 | 122.17 | 121.25 | 121.82 | 119.93 | 121.36 | 120.91 | 119.57 | 119.57 | 120.66 | 120.67 | 120.69 | 120.68 | 121.25 | | 122.46 | | | | | |
| 4/4/2011 | | 119.68 | 120.54 | | | | 121.90 | 121.18 | 120.56 | 122.14 | 121.20 | 121.75 | 119.90 | 121.33 | 120.81 | 119.51 | 119.63 | 120.59 | 120.57 | 120.63 | 120.63 | 121.20 | | 122.44 | | | | | |
| 4/5/2011 | | | 120.50 | | | | 121.82 | 121.11 | 120.51 | 122.04 | 121.10 | 121.65 | 119.86 | 121.25 | 120.76 | | | 120.55 | 120.57 | 120.58 | 120.57 | 121.11 | | 122.34 | 122.36 | | | | |
| 4/6/2011 | 124.73 | 119.90 | 120.79 | 123.67 | 123.17 | | 122.17 | 121.49 | 120.86 | 122.36 | 121.48 | 122.06 | 120.08 | 121.56 | 121.04 | 119.78 | 119.55 | 120.88 | 120.89 | 120.89 | 120.88 | 121.46 | 123.36 | 122.62 | 122.76 | | | | |
| 4/7/2011 | 124.76 | 119.66 | 120.55 | 123.58 | 123.03 | | 121.94 | 121.21 | 120.57 | 122.15 | 121.22 | 121.80 | 119.92 | 121.35 | 120.86 | 119.54 | 119.45 | 120.62 | 120.63 | 120.66 | 120.65 | 121.21 | 123.26 | 122.43 | 122.52 | | | | |
| 4/8/2011 | 124.71 | 119.56 | 120.45 | 123.49 | 122.90 | | 121.80 | 121.08 | 120.46 | 122.02 | 121.11 | 121.65 | 119.85 | 121.23 | 120.73 | 119.45 | 119.39 | 120.50 | 120.53 | 120.56 | 120.54 | 121.10 | 123.18 | 122.31 | 122.35 | | | | |
| 4/12/2011 | 124.37 | 119.27 | 120.19 | 123.15 | 122.49 | | 121.46 | 120.77 | 120.17 | 121.67 | 120.81 | 121.28 | 119.69 | 120.92 | 120.47 | 119.24 | 119.15 | 120.25 | 120.27 | 120.31 | 120.31 | 120.81 | 122.85 | 121.93 | 121.98 | | | | |
| 4/13/2011 | 124.32 | 119.22 | 120.18 | 123.10 | 122.41 | | 121.40 | 120.71 | 120.12 | 121.61 | 120.76 | 121.23 | 119.66 | 120.89 | 120.43 | 119.22 | 119.13 | 120.20 | 120.21 | 120.28 | 120.26 | 120.77 | 122.80 | 121.88 | 121.93 | | | | |
| 4/14/2011 | | | | | | | 121.33 | | | | | 121.16 | | | | | | | | | | | | | 121.85 | | | | |
| 4/15/2011 | | | | | | | | | | | | 121.09 | | | | | | | | | | | | | 121.77 | | | | |
| 4/18/2011 | | | | | | | | | | | | 120.91 | | | | | | | | | | | | | 121.60 | | | | |
| 4/19/2011 | 123.92 | 118.87 | 119.93 | 122.73 | 121.92 | | 121.03 | 120.37 | 119.82 | 121.27 | 120.44 | 120.84 | 119.44 | 120.60 | 120.16 | 119.01 | 119.05 | 119.91 | 119.90 | 119.99 | 119.98 | 120.46 | 122.44 | 121.52 | 121.52 | | | | |
| 4/20/2011 | | | | | | | | | | | | 120.77 | | | | | | | | | | | | | 121.48 | | | | |
| 4/22/2011 | | | | | | | | | | | | 120.68 | | | | | | | | | | | | | 121.36 | | | | |
| 5/4/2011 | 123.08 | 118.73 | 119.65 | 122.04 | 121.10 | | 120.47 | 119.95 | 119.55 | 120.69 | 120.00 | 120.33 | 119.15 | 120.09 | 119.70 | 118.74 | 119.35 | 119.56 | 119.55 | 119.59 | 119.58 | 119.99 | 121.74 | 120.94 | 120.96 | | | | |
| 5/5/2011 | | | | | | | | | | | | 120.30 | | | | | | | | | | | | | 120.95 | | | | |
| 5/6/2011 | | | | | | | | | | | | 120.29 | | | | | | | | | | | | | 120.92 | | | | |
| 5/13/2011 | 122.67 | 118.59 | 119.49 | 121.72 | 120.80 | | 120.25 | 119.75 | 119.40 | 120.46 | 119.79 | 120.09 | 118.94 | 119.87 | 119.49 | 118.57 | 119.28 | 119.37 | 119.38 | 119.39 | 119.37 | 119.76 | 121.43 | 120.68 | 120.77 | | | | |
| 5/24/2011 | 122.31 | 118.57 | 119.42 | 121.45 | 120.68 | | 120.12 | 119.66 | 119.34 | 120.28 | 119.68 | 119.99 | 118.90 | 119.72 | 119.36 | 118.56 | 119.29 | 119.29 | 119.30 | 119.29 | 119.27 | 119.64 | 121.14 | 120.46 | 120.62 | | | | |
| 5/26/2011 | | | | | | | | | | | | 119.97 | | | | | | | | | | | | | 120.58 | | | | |
| 6/17/2011 | 121.56 | 118.26 | 119.20 | 120.85 | | | 119.72 | 119.33 | 119.06 | 119.90 | 119.36 | 119.68 | 118.71 | 119.36 | 119.07 | 118.42 | 119.01 | 119.02 | 119.03 | 119.01 | 119.00 | 119.31 | 120.52 | 120.12 | 120.25 | 119.45 | 119.34 | 120.51 | 120.52 |
| 6/28/2011 | 121.73 | 118.80 | 119.74 | 121.11 | | 121.92 | 120.26 | 119.93 | 119.63 | 120.40 | 119.96 | 120.15 | 119.26 | 119.88 | 119.63 | 118.93 | 119.28 | 119.60 | 119.62 | 119.58 | 119.57 | 119.85 | 120.80 | 120.58 | 120.78 | 120.01 | | | 120.91 |
| 7/21/2011 | 124.04 | 119.29 | 120.21 | 123.06 | 122.39 | 124.41 | 121.44 | 120.75 | 120.17 | 121.65 | 120.79 | 119.73 | 120.91 | 120.48 | 119.29 | 119.35 | 120.22 | 120.25 | 120.42 | 120.17 | 119.78 | 122.74 | 121.96 | 122.01 | 120.91 | 120.73 | 124.56 | 122.60 | |



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# Appendix F: Water Quality Analytical Results

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Table F.1
Water Quality Analytical Results
(June 27 – June 29, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg-N/L) | NH3-N (mg-N/L) | NOx-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| **STE Sample** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STE-EX Pump Tank | 6/28/2011 1:50:00 PM | G | 31.0 | 6.6 | 200 | 0.1 | 875 | | | | 270 | 26.1 | 26 | 4 | 22 | 0.1 | 22.1 | | | | | 6.7 | 72 | 0.1 | 0.01 | 9.9 | 22 | 0.065 | 56 | 0.81 | 19 | 0.04 | 23 | 49 |
| **Drivepoints** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DP-AA9-14 | 6/27/2011 8:28:00 AM | G | 24.5 | 4.6 | | 1.3 | 752 | | | | | | | | | | | | | | | | 82 | | | | | | | | | | | | |
| DP-AA9-22 | 6/27/2011 9:04:00 AM | G | 24.7 | 5.2 | | 0.3 | 279 | | | | | | | | | | | | | | | | 8.7 | | | | | | | | | | | | |
| DP-AA9-27 | 6/27/2011 9:16:00 AM | G | 24.7 | 5.1 | | 0.7 | 295 | | | | | | | | | | | | | | | | 20 | | | | | | | | | | | | |
| DP-C11-8 | 6/27/2011 9:38:00 AM | G | 27.8 | 5.8 | 21 | 3.0 | 385 | | | | 12 | 13.9 | 1.9 | 1.81 | 0.09 | 12 | 12.09 | | | 5.5 | 5.2 | 0.017 | 31 | 12 | 0.01 | 0.01 | 53 | 0.11 | 30 | 6.6 | 7.2 | 0.31 | 7 | 31 |
| DP-D07-9 | 6/28/2011 8:05:00 AM | G | 24.4 | 4.0 | | 1.9 | 539 | | | | | | | | | | | | | | | | 35 | | | | | | | | | | | | |
| DP-D7.5-14 | 6/29/2011 12:25:00 PM | G | 24.4 | 4.5 | | 0.4 | 483 | | | | | | | | | | | | | | | | 37 | | | | | | | | | | | | |
| DP-D08-9 | 6/27/2011 1:50:00 PM | G | 27.4 | 5.3 | | 1.8 | 411 | | | | | | | | | | | | | | | | 35 | | | | | | | | | | | | |
| DP-D09-8 | 6/27/2011 12:38:00 PM | G | 27.0 | 4.4 | 2 | 1.1 | 670 | | | | 10 | 33.8 | 2.8 | 2.773 | 0.027 | 31 | 31.027 | | | 2.8 | 2.4 | 0.11 | 47 | 31 | 0.01 | 0.01 | 74 | 0.12 | 52 | 0.033 | 14 | 0.009 | 14 | 47 |
| DP-D09-15 | 6/27/2011 1:10:00 PM | G | 26.2 | 5.2 | 12 | 0.9 | 461 | | | | 10 | 21.5 | 2.5 | 2.495 | 0.005 | 19 | 19.005 | | | 3.2 | 3.3 | 0.043 | 31 | 19 | 0.01 | 0.01 | 59 | 0.12 | 35 | 0.045 | 9.3 | 0.11 | 13 | 32 |
| DP-D11-11 | 6/27/2011 10:54:00 AM | G | 26.3 | 5.2 | | 1.1 | 464 | | | | | | | | | | | | | | | | 39 | | | | | | | | | | | | |
| DP-D12-11 | 6/27/2011 10:30:00 AM | G | 26.2 | 4.9 | 5.2 | 0.3 | 487 | | | | 10 | 21.6 | 2.6 | 2.14 | 0.46 | 19 | 19.46 | | | 2.6 | 1.8 | 0.01 | 37 | 19 | 0.01 | 0.01 | 52 | 0.13 | 38 | 0.044 | 9.1 | 0.066 | 11 | 31 |
| DP-E04-8 | 6/28/2011 9:10:00 AM | G | 26.0 | 4.7 | | 1.6 | 185 | | | | | | | | | | | | | | | | 5.6 | | | | | | | | | | | | |
| DP-E07-10 | 6/28/2011 9:05:00 AM | G | 25.5 | 4.5 | | 0.2 | 245 | | | | | | | | | | | | | | | | 12 | | | | | | | | | | | | |
| DP-E08-8 | 6/28/2011 9:00:00 AM | G | 25.8 | 4.5 | | 0.3 | 348 | | | | | | | | | | | | | | | | 26 | | | | | | | | | | | | |
| DP-E11-12 | 6/28/2011 8:50:00 AM | G | 24.9 | 5.0 | | 0.3 | 489 | | | | | | | | | | | | | | | | 32 | | | | | | | | | | | | |
| DP-E12-10 | 6/28/2011 8:20:00 AM | G | 25.1 | 4.9 | | 0.3 | 502 | | | | | | | | | | | | | | | | 36 | | | | | | | | | | | | |
| DP-E12-15 | 6/28/2011 8:25:00 AM | G | 24.7 | 5.2 | | 0.4 | 462 | | | | | | | | | | | | | | | | 31 | | | | | | | | | | | | |
| DP-E12-22 | 6/28/2011 8:30:00 AM | G | 24.2 | 4.8 | 12 | 0.4 | 328 | | | | 10 | 12.8 | 1.8 | 1.714 | 0.086 | 11 | 11.086 | | | 2.6 | 2.1 | 0.01 | 14 | 11 | 0.01 | 0.01 | 67 | 0.1 | 30 | 0.067 | 8.5 | 0.19 | 11 | 8.4 |
| DP-E12-22-D | 6/28/2011 8:35:00 AM | G | 24.2 | 4.8 | 6.2 | 0.4 | 328 | | | | 14 | 12.7 | 1.7 | 1.6 | 0.1 | 11 | 11.1 | | | 2.4 | 2 | 0.01 | 13 | 11 | 0.01 | 0.01 | 66 | 0.096 | 30 | 0.067 | 8.5 | 0.2 | 11 | 8.3 |
| DP-E12-28 | 6/28/2011 8:40:00 AM | G | 24.2 | 4.8 | | 0.4 | 320 | | | | | | | | | | | | | | | | 15 | | | | | | | | | | | | |
| DP-F04-17 | 6/28/2011 9:25:00 AM | G | 25.1 | 6.1 | | 0.3 | 374 | | | | | | | | | | | | | | | | 21 | | | | | | | | | | | | |
| DP-F04-32 | 6/28/2011 9:30:00 AM | G | 24.6 | 6.1 | | 0.3 | 335 | | | | | | | | | | | | | | | | 5.6 | | | | | | | | | | | | |
| DP-F08-20 | 6/28/2011 9:40:00 AM | G | 24.7 | 5.3 | | 0.4 | 347 | | | | | | | | | | | | | | | | 14 | | | | | | | | | | | | |
| DP-F08-28 | 6/28/2011 9:45:00 AM | G | 24.3 | 5.4 | | 0.3 | 324 | | | | | | | | | | | | | | | | 18 | | | | | | | | | | | | |
| DP-F10-11 | 6/28/2011 9:50:00 AM | G | 25.3 | 4.9 | | 0.4 | 492 | | | | | | | | | | | | | | | | 31 | | | | | | | | | | | | |
| DP-F11-11 | 6/28/2011 9:55:00 AM | G | 26.0 | 4.8 | | 0.3 | 447 | | | | | | | | | | | | | | | | 32 | | | | | | | | | | | | |
| DP-F11-15 | 6/28/2011 10:00:00 AM | G | 24.6 | 4.7 | | 0.2 | 486 | | | | | | | | | | | | | | | | 34 | | | | | | | | | | | | |
| DP-F11-18 | 6/28/2011 10:05:00 AM | G | 24.5 | 5.0 | | 0.3 | 359 | | | | | | | | | | | | | | | | 19 | | | | | | | | | | | | |
| DP-F11-21 | 6/28/2011 10:10:00 AM | G | 24.4 | 4.9 | | 0.4 | 310 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | | |
| DP-F11-24 | 6/28/2011 10:20:00 AM | G | 24.4 | 4.8 | | 0.2 | 310 | | | | | | | | | | | | | | | | 15 | | | | | | | | | | | | |
| DP-F11-27 | 6/28/2011 10:25:00 AM | G | 24.3 | 4.9 | | 0.2 | 331 | | | | | | | | | | | | | | | | 16 | | | | | | | | | | | | |



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Table F.1 (con't)
Water Quality Analytical Results
(June 27 – June 29, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg-N/L) | NH3-N (mg-N/L) | NOx-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-F12-10 | 6/28/2011 10:30:00 AM | G | 25.3 | 4.3 | | 0.2 | 500 | | | | | | | | | | | | | | | | 34 | | | | | | | | | | | |
| DP-F15-14 | 6/29/2011 12:50:00 PM | G | 24.2 | 4.5 | | 0.3 | 487 | | | | | | | | | | | | | | | | 34 | | | | | | | | | | | |
| DP-F15-20 | 6/29/2011 12:55:00 PM | G | 24.4 | 4.6 | | 0.3 | 359 | | | | | | | | | | | | | | | | 18 | | | | | | | | | | | |
| DP-F15-26 | 6/29/2011 1:00:00 PM | G | 24.2 | 4.3 | | 0.2 | 320 | | | | | | | | | | | | | | | | 14 | | | | | | | | | | | |
| DP-G07-13 | 6/28/2011 12:10:00 PM | G | 29.9 | 5.4 | | 3.1 | 255 | | | | | | | | | | | | | | | | 5.8 | | | | | | | | | | | |
| DP-G07-15 | 6/28/2011 12:15:00 PM | G | 25.6 | 5.0 | | 0.8 | 296 | | | | | | | | | | | | | | | | 6.3 | | | | | | | | | | | |
| DP-G07-17 | 6/28/2011 12:20:00 PM | G | 24.5 | 5.0 | | 0.8 | 337 | | | | | | | | | | | | | | | | 9.3 | | | | | | | | | | | |
| DP-G07-21 | 6/28/2011 12:35:00 PM | G | 24.8 | 5.1 | 5.2 | 1.3 | 333 | | | | 10 | 9.8 | 1.3 | 1.295 | 0.005 | 8.5 | 8.505 | | | 2.3 | 1.8 | 0.016 | 12 | 8.5 | 0.01 | 0.01 | 77 | 0.068 | 29 | 0.045 | 8.8 | 0.17 | 15 | 7.4 |
| DP-G07-24 | 6/28/2011 12:45:00 PM | G | 24.6 | 4.9 | | 0.6 | 286 | | | | | | | | | | | | | | | | 16 | | | | | | | | | | | |
| DP-G07-27 | 6/28/2011 12:50:00 PM | G | 25.0 | 5.0 | | 1.8 | 325 | | | | | | | | | | | | | | | | 15 | | | | | | | | | | | |
| DP-G09-11 | 6/28/2011 11:50:00 AM | G | 27.9 | 5.4 | | 2.9 | 279 | | | | | | | | | | | | | | | | 10 | | | | | | | | | | | |
| DP-G11-8 | 6/28/2011 11:45:00 AM | G | 27.6 | 4.6 | | 1.0 | 312 | | | | | | | | | | | | | | | | 21 | | | | | | | | | | | |
| DP-G12-9 | 6/28/2011 10:45:00 AM | G | 26.5 | 4.2 | 2 | 0.2 | 359 | | | | 12 | 10.8 | 1.4 | | 0.037 | 9.4 | 9.437 | | | 4.6 | 2.2 | 0.17 | 26 | 9.4 | 0.01 | 0.01 | 60 | 0.06 | 22 | 0.81 | 5.9 | 0.15 | 5.6 | 23 |
| DP-G12-15 | 6/28/2011 10:55:00 AM | G | 25.2 | 4.7 | 5.2 | 0.2 | 478 | | | | 10 | 23.4 | 3.4 | 3.04 | 0.36 | 20 | 20.36 | | | 3.6 | 2.1 | 0.014 | 33 | 20 | 0.01 | 0.01 | 53 | 0.062 | 35 | 0.17 | 9.1 | 0.21 | 12 | 29 |
| DP-G12-18 | 6/28/2011 11:00:00 AM | G | 24.6 | 4.8 | | 0.2 | 443 | | | | | | | | | | | | | | | | 29 | | | | | | | | | | | |
| DP-G12-21 | 6/28/2011 11:10:00 AM | G | 24.4 | 4.9 | 7.3 | 0.1 | 361 | | | | 10 | 15.5 | 2.5 | 2.493 | 0.007 | 13 | 13.007 | | | 3.5 | 2 | 0.01 | 14 | 13 | 0.01 | 0.01 | 62 | 0.069 | 33 | 0.18 | 7.6 | 0.18 | 15 | 12 |
| DP-G12-24 | 6/28/2011 11:30:00 AM | G | 24.8 | 4.8 | 5.2 | 0.2 | 334 | | | | 51 | 13.2 | 1.2 | 1.195 | 0.005 | 12 | 12.005 | | | 1.8 | 1.4 | 0.19 | 15 | 12 | 0.01 | 0.01 | 59 | 0.067 | 27 | 0.039 | 11 | 0.18 | 15 | 6.7 |
| DP-G12-27 | 6/28/2011 11:15:00 AM | G | 24.3 | 4.8 | | 0.1 | 346 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | |
| DP-H06-7 | 6/28/2011 1:05:00 PM | G | 30.2 | 5.9 | | 4.7 | 164 | | | | | | | | | | | | | | | | 4.5 | | | | | | | | | | | |
| DP-H09-12 | 6/28/2011 1:15:00 PM | G | 25.8 | 5.0 | | 0.8 | 274 | | | | | | | | | | | | | | | | 5.6 | | | | | | | | | | | |
| DP-H10-11 | 6/28/2011 1:25:00 PM | G | 28.5 | 5.6 | 17 | 5.1 | 228 | | | | 10 | 2.02 | 0.62 | 0.48 | 0.14 | 1.4 | 1.54 | | | 4.3 | 3.6 | 0.034 | 7.2 | 1.2 | 0.11 | 0.01 | 51 | 0.062 | 20 | 4.1 | 4.7 | 0.42 | 9.3 | 6.3 |
| DP-I06-14 | 6/29/2011 9:30:00 AM | G | 24.4 | 4.7 | 6.2 | 0.3 | 218 | | | | 10 | 2.65 | 0.55 | 0.545 | 0.005 | 2.1 | 2.105 | | | 3 | 2.4 | 0.19 | 6 | 2.1 | 0.01 | 0.023 | 62 | 0.058 | 23 | 0.024 | 5 | 0.19 | 11 | 3.1 |
| DP-I06-20 | 6/29/2011 9:35:00 AM | G | 24.1 | 4.9 | | 0.3 | 362 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | |
| DP-I06-26 | 6/29/2011 9:40:00 AM | G | 24.2 | 5.0 | | 0.2 | 312 | | | | | | | | | | | | | | | | 14 | | | | | | | | | | | |
| DP-I12-6 | 6/29/2011 9:25:00 AM | G | 26.6 | 4.7 | | 0.4 | 138 | | | | | | | | | | | | | | | | 4.6 | | | | | | | | | | | |
| DP-J08-6 | 6/29/2011 9:50:00 AM | G | 27.3 | 5.9 | | 3.1 | 183 | | | | | | | | | | | | | | | | 4.3 | | | | | | | | | | | |
| DP-J09-12 | 6/29/2011 10:00:00 AM | G | 25.7 | 4.8 | | 0.4 | 189 | | | | | | | | | | | | | | | | 5.2 | | | | | | | | | | | |
| DP-J09-14 | 6/29/2011 10:05:00 AM | G | 24.8 | 4.5 | | 0.3 | 249 | | | | | | | | | | | | | | | | 7.8 | | | | | | | | | | | |
| DP-J09-20 | 6/29/2011 10:10:00 AM | G | 24.1 | 4.7 | | 0.2 | 368 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | |
| DP-J09-26 | 6/29/2011 10:15:00 AM | G | 24.0 | 4.5 | | 0.2 | 306 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | |
| DP-J12-13 | 6/29/2011 10:20:00 AM | G | 24.9 | 4.6 | | 0.3 | 249 | | | | | | | | | | | | | | | | 5.8 | | | | | | | | | | | |
| DP-J12-15 | 6/29/2011 10:25:00 AM | G | 24.7 | 4.6 | | 0.3 | 287 | | | | | | | | | | | | | | | | 7.3 | | | | | | | | | | | |
| DP-J12-20 | 6/29/2011 10:30:00 AM | G | 24.5 | 4.9 | | 0.4 | 356 | | | | | | | | | | | | | | | | 12 | | | | | | | | | | | |
| DP-J12-27 | 6/29/2011 10:35:00 AM | G | 24.4 | 4.7 | | 0.2 | 310 | | | | | | | | | | | | | | | | 15 | | | | | | | | | | | |
| DP-K10-7 | 6/29/2011 10:45:00 AM | G | 27.4 | 5.1 | | 1.3 | 176 | | | | | | | | | | | | | | | | 5.2 | | | | | | | | | | | |
| DP-K12-5 | 6/29/2011 10:40:00 AM | G | 27.5 | 4.7 | | 0.7 | 80 | | | | | | | | | | | | | | | | 2.5 | | | | | | | | | | | |



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Table F.1 (con't)
Water Quality Analytical Results
(June 27 – June 29, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg-N/L) | NH3-N (mg-N/L) | NOx-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-M07-21 | 6/29/2011 10:50:00 AM | G | 24.5 | 4.9 | | 0.3 | 366 | | | | | | | | | | | | | | | | 14 | | | | | | | | | | | |
| DP-M07-27 | 6/29/2011 10:55:00 AM | G | 24.3 | 5.0 | | 0.2 | 303 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | |
| DP-M12-10 | 6/29/2011 11:00:00 AM | G | 27.0 | 5.1 | | 0.9 | 177 | | | | | | | | | | | | | | | | 4.8 | | | | | | | | | | | |
| DP-N12-14 | 6/29/2011 11:10:00 AM | G | 25.4 | 4.4 | | 0.2 | 177 | | | | | | | | | | | | | | | | 4.8 | | | | | | | | | | | |
| DP-N12-18 | 6/29/2011 11:15:00 AM | G | 25.2 | 4.7 | | 0.3 | 247 | | | | | | | | | | | | | | | | 6.2 | | | | | | | | | | | |
| DP-N12-21 | 6/29/2011 11:20:00 AM | G | 24.9 | 4.8 | 5.2 | 0.2 | 309 | | | | 10 | 5.79 | 0.69 | 0.685 | 0.005 | 5.1 | 5.105 | | | 2.6 | 1 | 0.2 | 9.4 | 5.1 | 0.01 | 0.025 | 84 | 0.05 | 32 | 0.042 | 8.2 | 0.093 | 15 | 4.3 |
| DP-N12-24 | 6/29/2011 11:30:00 AM | G | 24.7 | 4.6 | | 0.1 | 354 | | | | | | | | | | | | | | | | 16 | | | | | | | | | | | |
| DP-N12-27 | 6/29/2011 11:35:00 AM | G | 24.6 | 4.7 | 5.2 | 0.1 | 365 | | | | 10 | 11 | 1.4 | 1.395 | 0.005 | 9.6 | 9.605 | | | 2.2 | 2.2 | 0.2 | 13 | 9.6 | 0.01 | 0.022 | 84 | 0.05 | 32 | 0.041 | 11 | 0.043 | 22 | 5.2 |
| DP-N12-27-D | 6/29/2011 11:40:00 AM | G | 24.6 | 4.7 | 6.2 | 0.1 | 365 | | | | 10 | 10.9 | 1.3 | 1.295 | 0.005 | 9.6 | 9.605 | | | 2.2 | 2.1 | 0.32 | 13 | 9.6 | 0.01 | 0.012 | 84 | 0.05 | 31 | 0.037 | 11 | 0.042 | 22 | 5 |
| DP-O10-18 | 6/29/2011 12:10:00 PM | G | 25.1 | 4.9 | | 0.7 | 335 | | | | | | | | | | | | | | | | 9.7 | | | | | | | | | | | |
| DP-O10-24 | 6/29/2011 12:15:00 PM | G | 24.7 | 4.7 | | 0.3 | 366 | | | | | | | | | | | | | | | | 15 | | | | | | | | | | | |
| DP-Q15-21 | 6/29/2011 12:35:00 PM | G | 25.2 | 4.8 | | 0.3 | 358 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | |
| DP-Q15-26 | 6/29/2011 12:40:00 PM | G | 25.3 | 4.8 | | 0.4 | 385 | | | | | | | | | | | | | | | | 15 | | | | | | | | | | | |
| **Standpipe Piezometers** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PZ03-H11-6 | 6/27/2011 12:03:00 PM | G | 28.4 | 4.5 | 2 | 3.0 | 165 | | | | 10 | 1.19 | 0.34 | | 0.01 | 0.85 | 0.86 | | | 4.8 | 3.4 | 0.14 | 6.2 | 0.85 | 0.01 | 0.01 | 44 | 0.05 | 11 | 0.022 | 2.7 | 0.052 | 4.8 | 5.8 |
| PZ04-BKG-9 | 6/27/2011 8:40:00 AM | G | 25.9 | 5.6 | | 4.2 | 100 | | | | | | | | | | | | | | | | 3.3 | | | | | | | | | | | |
| PZ07-D05-7 | 6/27/2011 11:40:00 AM | G | 27.3 | 4.7 | | 2.5 | 288 | | | | | | | | | | | | | | | | 21 | | | | | | | | | | | |
| PZ11-E09-10 | 6/27/2011 11:00:00 AM | G | 27.6 | 5.3 | 9.4 | 1.8 | 454 | | | | 10 | 20.3 | 2.3 | | 0.1 | 18 | 18.1 | | | 2.2 | 1.5 | 0.038 | 36 | 18 | 0.01 | 0.01 | 59 | 0.093 | 34 | 0.29 | 8.9 | 0.23 | 10 | 30 |
| PZ11-E09-10-D | 6/27/2011 11:05:00 AM | G | 27.6 | 5.3 | 9.4 | 1.8 | 454 | | | | 10 | 20.2 | 2.2 | | 0.13 | 18 | 18.13 | | | 2.7 | 1.6 | 0.02 | 35 | 18 | 0.01 | 0.01 | 62 | 0.095 | 35 | 0.26 | 9.3 | 0.22 | 11 | 32 |
| PZ15-A11-6 | 6/27/2011 10:40:00 AM | G | 29.4 | 5.3 | | 3.1 | 195 | | | | | | | | | | | | | | | | 17 | | | | | | | | | | | |
| PZ16-C12-28 | 6/27/2011 10:32:00 AM | G | 25.1 | 5.5 | | 0.5 | 306 | | | | | | | | | | | | | | | | 19 | | | | | | | | | | | |
| PZ17-I15-26 | 6/27/2011 12:39:00 PM | G | 25.4 | 4.9 | | 1.6 | 307 | | | | | | | | | | | | | | | | 14 | | | | | | | | | | | |
| PZ18-R12-26 | 6/27/2011 1:02:00 PM | G | 26.6 | 5.1 | | 0.6 | 252 | | | | | | | | | | | | | | | | 13 | | | | | | | | | | | |
| PZ19-G10-26 | 6/27/2011 9:31:00 AM | G | 23.9 | 5.0 | | 0.6 | 294 | | | | | | | | | | | | | | | | 15 | | | | | | | | | | | |
| PZ20-G10-15 | 6/27/2011 9:05:00 AM | G | 25.7 | 5.3 | | 2.6 | 300 | | | | | | | | | | | | | | | | 17 | | | | | | | | | | | |
| PZ21-E11-26 | 6/27/2011 9:56:00 AM | G | 24.8 | 4.9 | | 0.9 | 288 | | | | | | | | | | | | | | | | 17 | | | | | | | | | | | |
| PZ24-BKG-26 | 6/27/2011 8:29:00 AM | G | 24.4 | 4.9 | | 0.7 | 296 | | | | | | | | | | | | | | | | 19 | | | | | | | | | | | |
| **Blanks** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment Rinsate | 6/29/2011 1:15:00 PM | | 28.8 | 6.8 | | 4.9 | 10 | | | | | | | | | | | | | | | | 0.05 | | | | | | | | | | | |
| Field Blank DI | 6/29/2011 1:30:00 PM | | | | | | | | | | | | | | | | | | | | | | 0.05 | | | | | | | | | | | |

Notes
DO - Dissolved oxygen
G - Grab sample
Gray - Shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.
Yellow shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
Dark Orange shaded data points indicate too many colonies were present for accurate counting.



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# Appendix G: Summary of Water Quality Data

o:\44237-001\Wpdocs\Report

# Table G.1
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (CL/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_2$-N[-] | $NO_3$-N[-] | $PO_4$-P[-] | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| **STE Sample** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STE-EX Pump Tank | n | 6 | 6 | 7 | 4 | 5 | 3 | 5 | 4 | 5 | 6 | 6 | 6 | 7 | 7 | 6 | 4 | 5 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| | MEAN | 26.9 | | 230.4 | 0.16 | 806.2 | 410.3 | 33.2 | 138.7 | 271 | 38.3 | 38.2 | 7.95 | 26.8 | 0.07 | 30.3 | 4.1 | 256052.0 | | | 5.7 | 60 | 0.07 | 0.01 | 6.6 | 21.5 | 0.11 | 57.0 | 3.9 | 18.5 | 0.061 | 19.0 | 46.0 | 0.03 |
| | STD. DEV. | 4.0 | | 87.8 | 0.10 | 308.9 | 166.9 | 27.1 | 107.6 | 237 | 13.6 | 13.6 | 7.99 | 11.3 | 0.09 | 7.1 | 2.4 | 425495.9 | | | | | | | | | | | | | | | | |
| | MIN | 19.9 | 6.5 | 150.0 | 0.10 | 494.0 | 260.0 | 14.0 | 82.7 | 120 | 24.2 | 24.2 | -1.00 | 5.8 | 0.01 | 21.5 | 1.3 | 60.0 | | | 4.6 | 47 | 0.03 | 0.01 | 3.2 | 21 | 0.07 | 56 | 0.8 | 18.0 | 0.040 | 15.0 | 43.0 | 0.03 |
| | MAX | 31.0 | 7.3 | 410.0 | 0.30 | 1273.0 | 590.0 | 80.0 | 300.0 | 680 | 56.0 | 56.0 | 21.00 | 39.0 | 0.26 | 39.3 | 6.4 | 1,000,000.0 | | | 6.7 | 72 | 0.10 | 0.01 | 9.9 | 22 | 0.15 | 58 | 7.0 | 19.0 | 0.081 | 23.0 | 49.0 | 0.03 |
| **Drivepoints** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DP-AA9-14 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.0 | 4.9 | 8.0 | 1.06 | 577.6 | | | | | 27.7 | 1.8 | 1.75 | 0.014 | 26.0 | 26.0 | | | | | | 82 | | | | | | | | | | | | |
| | STD. DEV. | 1.5 | 0.3 | 4.3 | 0.21 | 257.5 | | | | | 29.5 | 1.2 | 1.17 | 0.011 | 28.4 | 28.4 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.5 | 4.6 | 4.9 | 0.89 | 281.9 | | | | | 6.8 | 0.9 | 0.92 | 0.006 | 5.9 | 5.9 | | | | | | 82 | | | | | | | | | | | | |
| | MAX | 24.5 | 5.1 | 11.0 | 1.30 | 752.0 | | | | | 48.6 | 2.6 | 2.58 | 0.021 | 46.0 | 46.0 | | | | | | 82 | | | | | | | | | | | | |
| DP-AA9-22 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.9 | 5.1 | 4.5 | 0.71 | 294.6 | | | | | 10.0 | 1.0 | 0.98 | 0.027 | 9.0 | 9.0 | | | | | | 8.7 | | | | | | | | | | | | |
| | STD. DEV. | 0.4 | 0.3 | 3.5 | 0.21 | 23.1 | | | | | 1.2 | 0.3 | 0.25 | 0.020 | 1.5 | 1.5 | | | | | | | | | | | | | | | | | | |
| | MIN | 23.3 | 4.9 | 2.0 | 0.30 | 279.0 | | | | | 9.1 | 0.8 | 0.81 | 0.013 | 7.9 | 7.9 | | | | | | 8.7 | | | | | | | | | | | | |
| | MAX | 24.7 | 5.3 | 6.9 | 1.06 | 318.7 | | | | | 10.8 | 1.2 | 1.16 | 0.041 | 10.0 | 10.0 | | | | | | 8.7 | | | | | | | | | | | | |
| DP-AA9-27 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.8 | 5.0 | 2.5 | 0.8 | 292.1 | | | | | 9.5 | 1.1 | 1.01 | 0.036 | 8.5 | 8.5 | | | | | | 20 | | | | | | | | | | | | |
| | STD. DEV. | 1.0 | 0.2 | 0.7 | 0.1 | 3.6 | | | | | 2.3 | 0.1 | 0.06 | 0.011 | 2.2 | 2.2 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.7 | 4.8 | 2.0 | 0.70 | 288.0 | | | | | 7.9 | 1.0 | 0.97 | 0.028 | 6.9 | 6.9 | | | | | | 20 | | | | | | | | | | | | |
| | MAX | 24.7 | 5.2 | 3.0 | 0.84 | 295.0 | | | | | 11.1 | 1.1 | 1.06 | 0.044 | 10.0 | 10.0 | | | | | | 20 | | | | | | | | | | | | |
| DP-C11-8 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.8 | 5.9 | 28.0 | 3.3 | 352 | | | | 12 | 9.3 | 1.7 | 1.61 | 0.09 | 7.6 | 7.6 | | | 5.5 | 5.2 | 0.02 | 31 | 12 | 0.01 | 0.01 | 53 | 0.11 | 30 | 6.6 | 7.2 | 0.31 | 7 | 31 | |
| | STD. DEV. | 4.2 | 0.1 | 9.9 | 0.4 | 47 | | | | | 6.6 | 0.3 | 0.28 | 0 | 6.3 | 6.3 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.8 | 5.8 | 21.0 | 3.0 | 319 | | | | 12 | 4.6 | 1.5 | 1.41 | 0.09 | 3.1 | 3.2 | | | 5.5 | 5.2 | 0.02 | 31 | 12 | 0.01 | 0.01 | 53 | 0.11 | 30 | 6.6 | 7.2 | 0.31 | 7 | 31 | |
| | MAX | 27.8 | 5.9 | 35.0 | 3.5 | 385 | | | | 12 | 13.9 | 1.9 | 1.81 | 0.09 | 12.0 | 12.1 | | | 5.5 | 5.2 | 0.02 | 31 | 12 | 0.01 | 0.01 | 53 | 0.11 | 30 | 6.6 | 7.2 | 0.31 | 7 | 31 | |
| DP-D07-5 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.1 | 6 | 14 | 4.86 | 326 | | | | | 13 | 2 | 2.00 | 0.005 | 11.0 | 11.01 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.1 | 6.0 | 14 | 4.86 | 326 | | | | | 13 | 2 | 2.00 | 0.005 | 11.0 | 11.01 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.1 | 6.0 | 14 | 4.86 | 326 | | | | | 13.0 | 2.0 | 2.00 | 0.005 | 11.0 | 11.01 | | | | | | | | | | | | | | | | | | |
| DP-D07-7 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.3 | 0.0 | 2.0 | 0.77 | 365.0 | | | | 20 | 13.6 | 1.6 | 1.59 | 0.011 | 12.0 | 12.0 | 0.015 | | 1.7 | 1.4 | 0.1 | 23 | 12.0 | 0.010 | 0.010 | 53 | 0.096 | 27 | 0.054 | 5.4 | 0.0084 | 8.0 | 20.0 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.3 | 4.7 | 2.0 | 0.77 | 365.0 | | | | 20 | 13.6 | 1.6 | 1.59 | 0.011 | 12.0 | 12.0 | 0.015 | | 1.7 | 1.4 | 0.1 | 23 | 12.0 | 0.010 | 0.010 | 53 | 0.096 | 27 | 0.054 | 5.4 | 0.0084 | 8.0 | 20.0 | |
| | MAX | 23.3 | 4.7 | 2.0 | 0.77 | 365.0 | | | | 20 | 13.6 | 1.6 | 1.59 | 0.011 | 12.0 | 12.0 | 0.015 | | 1.7 | 1.4 | 0.1 | 23 | 12.0 | 0.010 | 0.010 | 53 | 0.096 | 27 | 0.054 | 5.4 | 0.0084 | 8.0 | 20.0 | |
| DP-D07-9 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.2 | 4.3 | 2.0 | 3.20 | 465.5 | | | | | 23.8 | 1.8 | 1.8 | 0.007 | 22.0 | 22.0 | | | | | | 35 | | | | | | | | | | | | |
| | STD. DEV. | 0.3 | 0.4 | | 1.84 | 103.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.0 | 4.0 | 2.0 | 1.90 | 392.0 | | | | | 23.8 | 1.8 | 1.8 | 0.007 | 22.0 | 22.0 | | | | | | 35 | | | | | | | | | | | | |
| | MAX | 24.4 | 4.5 | 2.0 | 4.50 | 539.0 | | | | | 23.8 | 1.8 | 1.8 | 0.007 | 22.0 | 22.0 | | | | | | 35 | | | | | | | | | | | | |
| DP-D7.5-14 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.1 | 5.5 | 3.0 | 0.72 | 476.3 | | | | | 27.4 | 1.9 | 1.88 | 0.065 | 25.5 | 25.6 | | | 2.9 | 1.2 | | 37 | | | | | | | | | | | | |
| | STD. DEV. | 1.7 | 1.3 | 1.4 | 0.35 | 41.4 | | | | | 6.7 | 1.8 | 1.9 | 0.078 | 4.9 | 4.9 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.2 | 4.5 | 2.0 | 0.40 | 432.0 | | | | | 22.7 | 0.7 | 0.56 | 0.009 | 22.0 | 22.1 | | | 2.9 | 1.2 | | 37 | | | | | | | | | | | | |
| | MAX | 24.4 | 7.0 | 4.0 | 1.1 | 514.0 | | | | | 32.2 | 3.2 | 3.19 | 0.120 | 29.0 | 29.0 | | | 2.9 | 1.2 | | 37 | | | | | | | | | | | | |
| DP-D7.5-20 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.6 | 6.2 | 4.0 | 1.91 | 277.0 | | | | 10 | 8.6 | 1.1 | 1.04 | 0.014 | 7.5 | 7.5 | 0.2 | | 1.8 | 1.3 | 0.0 | 10 | 7.6 | 0.01 | 0.2 | 67 | 0.1 | 28 | 0.022 | 6.5 | 0.21 | 16.0 | 6.7 | |
| | STD. DEV. | 2.0 | 1.2 | 2.8 | 0.91 | 26.9 | | | | | 0.5 | 0.4 | 0.37 | 0.012 | 0.1 | 0.1 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 5.3 | 2.0 | 1.26 | 258.0 | | | | 10 | 8.2 | 0.8 | 0.78 | 0.005 | 7.4 | 7.4 | 0.2 | | 1.8 | 1.3 | 0.0 | 10 | 7.6 | 0.01 | 0.16 | 67 | 0.050 | 28 | 0.022 | 6.5 | 0.21 | 16.0 | 6.7 | |
| | MAX | 25.0 | 7.0 | 5.9 | 2.55 | 296.0 | | | | 10 | 8.9 | 1.3 | 1.30 | 0.022 | 7.6 | 7.6 | 0.2 | | 1.8 | 1.3 | 0.0 | 10 | 7.6 | 0.01 | 0.16 | 67 | 0.050 | 28 | 0.022 | 6.5 | 0.21 | 16.0 | 6.7 | |
| DP-D7.5-26 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.2 | 6.2 | 3.0 | 1.74 | 293.5 | | | | | 10.8 | 1.1 | 1.1 | 0.022 | 9.7 | 9.7 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 2.6 | 1.2 | 1.4 | 0.38 | 2.1 | | | | | 3.0 | 0.2 | 0.2 | 0.023 | 3.3 | 3.3 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.3 | 5.3 | 2.0 | 1.47 | 292.0 | | | | | 8.7 | 1.0 | 0.95 | 0.005 | 7.4 | 7.4 | | | | | | | | | | | | | | | | | | |
| | MAX | 25.0 | 7.0 | 4.0 | 2.01 | 295.0 | | | | | 13.0 | 1.3 | 1.30 | 0.038 | 12.0 | 12.0 | | | | | | | | | | | | | | | | | | |
| DP-D08-9 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 26.0 | 5.5 | 20.0 | 1.58 | 456.5 | | | | 16 | 21.0 | 2.0 | 1.9 | 0.1 | 19.0 | 19.1 | 0.2 | | | 3.5 | 0.1 | 39 | 19.0 | 0.0 | 0.2 | 52.0 | 0.094 | 33 | 11.0 | 10 | 0.33 | 8.0 | 35.0 | |
| | STD. DEV. | 2.0 | 0.2 | | 0.31 | 64.3 | | | | | | | | | | | | | | | | 5 | | | | | | | | | | | | |
| | MIN | 24.6 | 5.3 | 20.0 | 1.36 | 411.0 | | | | 16 | 21.0 | 2.0 | 1.9 | 0.1 | 19.0 | 19.1 | 0.2 | | | 3.5 | 0.1 | 35 | 19.0 | 0.01 | 0.15 | 52.0 | 0.094 | 33 | 11.0 | 10 | 0.33 | 8.0 | 35.0 | |
| | MAX | 27.4 | 5.6 | 20.0 | 1.80 | 502.0 | | | | 16 | 21.0 | 2.0 | 1.9 | 0.1 | 19.0 | 19.1 | 0.2 | | | 3.5 | 0.1 | 42 | 19.0 | 0.01 | 0.15 | 52.0 | 0.094 | 33 | 11.0 | 10 | 0.33 | 8.0 | 35.0 | |
| DP-D09-6 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 19.8 | 4.7 | 2.0 | 5.05 | 409.5 | | | | | 16.84 | 0.84 | 0.82 | 0.018 | 16.0 | 16.0 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 4.0 | 0.2 | 0.0 | 0.77 | 65.8 | | | | | 7.07 | 0.00 | 0.01 | 0.014 | 7.1 | 7.1 | | | | | | | | | | | | | | | | | | |
| | MIN | 17.0 | 4.5 | 2.0 | 4.50 | 363.0 | | | | | 11.84 | 0.84 | 0.81 | 0.008 | 11.0 | 11.0 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.6 | 4.8 | 2.0 | 5.59 | 456.0 | | | | | 21.84 | 0.84 | 0.83 | 0.028 | 21.0 | 21.0 | | | | | | | | | | | | | | | | | | |
| DP-D09-8 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 22.7 | 4.6 | 2.0 | 1.88 | 512.3 | | | | 10 | 25.5 | 2.2 | 2.15 | 0.018 | 23.3 | 23.4 | | | 2.8 | 2.4 | 0.11 | 47 | 31 | 0.01 | 0.01 | 74 | 0.12 | 52 | 0.03 | 14.0 | 0.01 | 14 | 47 | |
| | STD. DEV. | 4.3 | 0.1 | 0.0 | 1.42 | 146.7 | | | | | 11.1 | 1.1 | 1.1 | 0.012 | 10.0 | 10.0 | | | | | | | | | | | | | | | | | | |
| | MIN | 18.4 | 4.4 | 2.0 | 1.01 | 380.0 | | | | 10 | 12.9 | 0.9 | 0.89 | 0.005 | 12.0 | 12.0 | | | 2.8 | 2.4 | 0.11 | 47 | 31 | 0.01 | 0.01 | 74 | 0.12 | 52 | 0.03 | 14.0 | 0.01 | 14 | 47 | |
| | MAX | 27.0 | 4.7 | 2.0 | 3.52 | 670.0 | | | | 10 | 33.8 | 2.8 | 2.80 | 0.027 | 31.0 | 31.0 | | | 2.8 | 2.4 | 0.11 | 47 | 31 | 0.01 | 0.01 | 74 | 0.12 | 52 | 0.03 | 14.0 | 0.01 | 14 | 47 | |
| DP-D09-15 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 22.9 | 5.3 | 9.7 | 1.75 | 454.7 | | | | 10 | 18.3 | 1.6 | 1.61 | 0.032 | 16.7 | 16.70 | | | 4.3 | 2.9 | 0.043 | 31 | 19 | 0.01 | 0.01 | 59.0 | 0.12 | 35 | 0.05 | 9.3 | 0.11 | 13 | 32 | |
| | STD. DEV. | 3.6 | 0.1 | 6.8 | 1.26 | 19.3 | | | | | 4.3 | 1.1 | 1.13 | 0.047 | 3.2 | 3.17 | | | 1.5 | 0.6 | | | | | | | | | | | | | | |
| | MIN | 19.1 | 5.2 | 2.0 | 0.90 | 433.0 | | | | 10 | 13.4 | 0.4 | 0.34 | 0.005 | 13.0 | 13.09 | | | 3.2 | 2.5 | 0.043 | 31 | 19 | 0.01 | 0.01 | 59.0 | 0.12 | 35 | 0.05 | 9.3 | 0.11 | 13 | 32 | |
| | MAX | 26.2 | 5.4 | 15 | 3.20 | 470.0 | | | | 10 | 21.5 | 2.5 | 2.50 | 0.086 | 19.0 | 19.01 | | | 5.3 | 3.3 | 0.043 | 31 | 19 | 0.01 | 0.01 | 59.0 | 0.12 | 35 | 0.05 | 9.3 | 0.11 | 13 | 32 | |
| DP-D09-21 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.0 | 5.5 | 3.5 | 1.08 | 299.0 | | | | | 8.0 | 0.3 | 0.3 | 0.029 | 7.7 | 7.7 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.8 | 0.3 | 2.1 | 0.39 | 1.4 | | | | | 0.4 | 0.1 | 0.1 | 0.034 | 0.4 | 0.3 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.7 | 5.3 | 2.0 | 0.80 | 298.0 | | | | | 7.7 | 0.3 | 0.2 | 0.005 | 7.4 | 7.5 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.2 | 5.8 | 4.9 | 1.35 | 300.0 | | | | | 8.3 | 0.4 | 0.4 | 0.053 | 7.9 | 7.9 | | | | | | | | | | | | | | | | | | |
| DP-D09-27 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.4 | 6.0 | 7.0 | 1.51 | 289.5 | | | | | 1.8 | 0.7 | 0.65 | 0.029 | 1.1 | 1.1 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 3.0 | 0.0 | 5.7 | 1.06 | 27.6 | | | | | 0.5 | 0.6 | 0.6 | 0.027 | 1.1 | 1.1 | | | | | | | | | | | | | | | | | | |
| | MIN | 20.2 | 6.0 | 3.0 | 0.76 | 270.0 | | | | | 1.4 | 0.3 | 0.20 | 0.010 | 0.3 | 0.3 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.5 | 6.0 | 11.0 | 2.26 | 309.0 | | | | | 2.2 | 1.1 | 1.09 | 0.048 | 1.9 | 1.9 | | | | | | | | | | | | | | | | | | |



o:\44237-001\Wpdocs\Report

Table G.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-D10-8 | MEAN | 23.8 | 5.7 | 23 | 1.45 | 337.0 | | | | | 4.1 | 1.9 | 1.9 | 0.025 | 2.2 | 2.2 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.8 | 5.7 | 23 | 1.45 | 337.0 | | | | | 4.1 | 1.9 | 1.9 | 0.025 | 2.2 | 2.2 | | | | | | | | | | | | | | | | | | |
| | MAX | 23.8 | 5.7 | 23 | 1.45 | 337.0 | | | | | 4.1 | 1.9 | 1.9 | 0.025 | 2.2 | 2.2 | | | | | | | | | | | | | | | | | | |
| | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-D11-11 | MEAN | 24.0 | 5.3 | 9.9 | 1.25 | 471.5 | | | | | 26.8 | 1.8 | 1.7 | 0.080 | 25.0 | 25.1 | | | | | | 39 | | | | | | | | | | | | |
| | STD. DEV. | 3.3 | 0.0 | | 0.21 | 10.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.7 | 5.2 | 9.9 | 1.10 | 464.0 | | | | | 26.8 | 1.8 | 1.7 | 0.080 | 25.0 | 25.1 | | | | | | 39 | | | | | | | | | | | | |
| | MAX | 26.3 | 5.3 | 9.9 | 1.39 | 479.0 | | | | | 26.8 | 1.8 | 1.7 | 0.080 | 25.0 | 25.1 | | | | | | 39 | | | | | | | | | | | | |
| | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| DP-D12-11 | MEAN | 24.3 | 4.9 | 6.05 | 0.475 | 482 | | | | 10 | 16.95 | 2.7 | 2.1 | 0.6 | 14.25 | 14.85 | | | 2.6 | 1.8 | 0.01 | 37 | 19 | 0.01 | 0.01 | 52 | 0.13 | 38 | 0.04 | 9.1 | 0.07 | 11 | 31 | |
| | STD. DEV. | 2.8 | 0.0 | 1.2 | 0.2 | 7.1 | | | | | 6.6 | 0.1 | 0.1 | 0.2 | 6.72 | 6.52 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.3 | 4.8 | 5.2 | 0.3 | 477 | | | | 10 | 12.3 | 2.6 | 2.06 | 0.46 | 9.5 | 10.24 | | | 2.6 | 1.8 | 0.01 | 37 | 19 | 0.01 | 0.01 | 52 | 0.13 | 38 | 0.04 | 9.1 | 0.07 | 11 | 31 | |
| | MAX | 26.2 | 4.9 | 6.9 | 0.65 | 487 | | | | 10 | 21.6 | 2.8 | 2.14 | 0.74 | 19 | 19.46 | | | 2.6 | 1.8 | 0.01 | 37 | 19 | 0.01 | 0.01 | 52 | 0.13 | 38 | 0.04 | 9.1 | 0.07 | 11 | 31 | |
| | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-E02-6 | MEAN | 21.3 | 5.5 | 4.9 | 2.41 | 98.5 | | | | | 2.02 | 0.42 | 0.398 | 0.022 | 1.6 | 1.622 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.3 | 5.5 | 4.9 | 2.41 | 98.5 | | | | | 2.02 | 0.42 | 0.398 | 0.022 | 1.6 | 1.622 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.3 | 5.5 | 4.9 | 2.41 | 98.5 | | | | | 2.02 | 0.42 | 0.398 | 0.022 | 1.6 | 1.622 | | | | | | | | | | | | | | | | | | |
| | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-E02-8 | MEAN | 21.3 | 5.1 | 5.0 | 0.46 | 158.9 | | | | | 0.64 | 0.22 | 0.214 | 0.006 | 0.42 | 0.426 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.3 | 5.1 | 5.0 | 0.46 | 158.9 | | | | | 0.64 | 0.22 | 0.214 | 0.006 | 0.42 | 0.426 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.3 | 5.1 | 5.0 | 0.46 | 158.9 | | | | | 0.64 | 0.22 | 0.214 | 0.006 | 0.42 | 0.426 | | | | | | | | | | | | | | | | | | |
| | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-E03-10 | MEAN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MAX | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| DP-E04-6 | MEAN | 22.3 | 4.7 | 2.0 | 3.49 | 90.6 | | | | 39 | 1.13 | 0.67 | 0.652 | 0.018 | 0.46 | 0.478 | 2.5 | | | 3.2 | 0.076 | 3 | 0.46 | 0.01 | 0.01 | 21 | 0.05 | 7.5 | 0.33 | 1.8 | 0.049 | 0.94 | 2.3 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.3 | 4.7 | 2.0 | 3.49 | 90.6 | | | | 39 | 1.13 | 0.67 | 0.652 | 0.018 | 0.46 | 0.478 | 2.5 | | | 3.2 | 0.076 | 3 | 0.46 | 0.01 | 0.01 | 21 | 0.05 | 7.5 | 0.33 | 1.8 | 0.049 | 0.94 | 2.3 | |
| | MAX | 22.3 | 4.7 | 2.0 | 3.49 | 90.6 | | | | 39 | 1.13 | 0.67 | 0.652 | 0.018 | 0.46 | 0.478 | 2.5 | | | 3.2 | 0.076 | 3 | 0.46 | 0.01 | 0.01 | 21 | 0.05 | 7.5 | 0.33 | 1.8 | 0.049 | 0.94 | 2.3 | |
| | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-E04-8 | MEAN | 24.0 | 4.8 | 4.9 | 1.515 | 178.05 | | | | | 3.8 | 1 | 0.976 | 0.024 | 2.8 | 2.824 | | | | | | 5.6 | | | | | | | | | | | | |
| | STD. DEV. | 2.8 | 0.1 | | 0.1 | 9.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.0 | 4.7 | 4.9 | 1.43 | 171.1 | | | | | 3.8 | 1.0 | 0.976 | 0.024 | 2.8 | 2.824 | | | | | | 5.6 | | | | | | | | | | | | |
| | MAX | 26.0 | 4.9 | 4.9 | 1.6 | 185 | | | | | 3.8 | 1.0 | 0.976 | 0.024 | 2.8 | 2.824 | | | | | | 5.6 | | | | | | | | | | | | |
| | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-E05-6 | MEAN | 24.8 | 6 | 33 | 2.96 | 171.8 | | | | | 3.16 | 3.1 | 0.5 | 2.6 | 0.06 | 2.66 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.8 | 6.0 | 33 | 2.96 | 171.8 | | | | | 3.16 | 3.1 | 0.5 | 2.6 | 0.06 | 2.66 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.8 | 6.0 | 33 | 2.96 | 171.8 | | | | | 3.16 | 3.1 | 0.5 | 2.6 | 0.06 | 2.66 | | | | | | | | | | | | | | | | | | |
| | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-E06-6 | MEAN | 22.8 | 4.4 | 2.0 | 1.89 | 162.8 | | | | | 3.2 | 1.3 | 1.287 | 0.013 | 1.9 | 1.913 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.8 | 4.4 | 2.0 | 1.89 | 162.8 | | | | | 3.2 | 1.3 | 1.287 | 0.013 | 1.9 | 1.913 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.8 | 4.4 | 2.0 | 1.89 | 162.8 | | | | | 3.2 | 1.3 | 1.287 | 0.013 | 1.9 | 1.913 | | | | | | | | | | | | | | | | | | |
| | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-E06-8 | MEAN | 22.7 | 4.5 | 2.0 | 10.9 | 180.6 | | | | | 3.22 | 0.82 | 0.813 | 0.007 | 2.4 | 2.407 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.7 | 4.5 | 2.0 | 10.9 | 180.6 | | | | | 3.22 | 0.82 | 0.813 | 0.007 | 2.4 | 2.407 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.7 | 4.5 | 2.0 | 10.9 | 180.6 | | | | | 3.22 | 0.82 | 0.813 | 0.007 | 2.4 | 2.407 | | | | | | | | | | | | | | | | | | |
| | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-E07-10 | MEAN | 24.0 | 4.7 | 5.9 | 0.7 | 267.0 | | | | | 10.1 | 2.3 | 2.248 | 0.052 | 7.8 | 7.852 | | | | | | 12 | | | | | | | | | | | | |
| | STD. DEV. | 2.1 | 0.3 | | 0.7 | 31.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.5 | 4.5 | 5.9 | 0.2 | 245.0 | | | | | 10.1 | 2.3 | 2.248 | 0.052 | 7.8 | 7.852 | | | | | | 12 | | | | | | | | | | | | |
| | MAX | 25.5 | 4.9 | 5.9 | 1.2 | 289.0 | | | | | 10.1 | 2.3 | 2.248 | 0.052 | 7.8 | 7.852 | | | | | | 12 | | | | | | | | | | | | |
| | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-E08-6 | MEAN | 22.4 | 5.0 | 3.0 | 1.83 | 326.0 | | | | | 12 | 2.1 | 2.086 | 0.014 | 9.9 | 9.914 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.4 | 5.0 | 3.0 | 1.83 | 326.0 | | | | | 12 | 2.1 | 2.086 | 0.014 | 9.9 | 9.914 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.4 | 5.0 | 3.0 | 1.83 | 326.0 | | | | | 12 | 2.1 | 2.086 | 0.014 | 9.9 | 9.914 | | | | | | | | | | | | | | | | | | |
| | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-E08-8 | MEAN | 24.2 | 4.75 | 3.0 | 0.91 | 348.0 | | | | | 12.6 | 1.6 | 1.595 | 0.005 | 11 | 11.005 | | | | | | 26 | | | | | | | | | | | | |
| | STD. DEV. | 2.26274 | 0.35355339 | | 0.8626703 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.6 | 4.5 | 3.0 | 0.3 | 348.0 | | | | | 12.6 | 1.6 | 1.595 | 0.005 | 11 | 11.005 | | | | | | 26 | | | | | | | | | | | | |
| | MAX | 25.8 | 5.0 | 3.0 | 1.52 | 348.0 | | | | | 12.6 | 1.6 | 1.595 | 0.005 | 11 | 11.005 | | | | | | 26 | | | | | | | | | | | | |

# Table G.1 (con't)
# Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[3] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-E10-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.0 | 4.6 | 3.0 | 0.60 | 407.0 | | | | | 9.7 | 1.2 | 1.195 | 0.005 | 8.5 | 8.505 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.0 | 4.6 | 3.0 | 0.60 | 407.0 | | | | | 9.7 | 1.2 | 1.195 | 0.005 | 8.5 | 8.505 | | | | | | | | | | | | | | | | | | | |
| | MAX | 23.0 | 4.6 | 3.0 | 0.60 | 407.0 | | | | | 9.7 | 1.2 | 1.195 | 0.005 | 8.5 | 8.505 | | | | | | | | | | | | | | | | | | | |
| DP-E11-12 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.0 | 5.1 | 8.9 | 0.6 | 465.0 | | | | | 14.6 | 1.6 | 1.582 | 0.018 | 13 | 13.018 | | | | | | 32 | | | | | | | | | | | | | |
| | STD. DEV. | 1.3 | 0.1 | | 0.5 | 33.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.0 | 5.0 | 8.9 | 0.3 | 441.0 | | | | | 14.6 | 1.6 | 1.582 | 0.018 | 13 | 13.018 | | | | | | 32 | | | | | | | | | | | | | |
| | MAX | 24.9 | 5.1 | 8.9 | 1.0 | 489.0 | | | | | 14.6 | 1.6 | 1.582 | 0.018 | 13 | 13.018 | | | | | | 32 | | | | | | | | | | | | | |
| DP-E12-10 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 22.7 | 5.2 | 5.5 | 1.8 | 504.3 | | | | 24 | 25.3 | 1.8 | 1.6 | 0.2 | 23.5 | 23.7 | 0.026 | | 1.2 | 0.88 | 0.01 | 39 | 22 | 0.01 | 0.01 | 47 | 0.075 | 39 | 0.089 | 9.9 | 0.21 | 11 | 33 | |
| | STD. DEV. | 3.1 | 0.3 | 4.9 | 2.5 | 14.6 | | | | | 2.9 | 0.8 | 0.7 | 0.0 | 2.1 | 2.2 | | | | | | 4 | | | | | | | | | | | | | |
| | MIN | 19.2 | 4.9 | 2.0 | 0.3 | 491.0 | | | | 24 | 23.2 | 1.2 | 1.0 | 0.2 | 22.0 | 22.2 | 0.026 | | 1.2 | 0.88 | 0.01 | 36 | 22 | 0.01 | 0.01 | 47 | 0.075 | 39 | 0.089 | 9.9 | 0.21 | 11 | 33 | |
| | MAX | 25.1 | 5.48 | 8.9 | 4.68 | 520.0 | | | | 24 | 27.3 | 2.3 | 2.1 | 0.2 | 25.0 | 25.2 | 0.026 | | 1.2 | 0.88 | 0.01 | 41 | 22 | 0.01 | 0.01 | 47 | 0.075 | 39 | 0.089 | 9.9 | 0.21 | 11 | 33 | |
| DP-E12-15 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 22.9 | 5.0 | 5.5 | 1.2 | 490.7 | | | | 14 | 23.19 | 1.69 | 1.56 | 0.13 | 21.5 | 21.63 | 0.012 | | | 0.92 | 0.029 | 34 | 17 | 0.01 | 0.18 | 54 | 0.100 | 35 | 0.03 | 7.1 | 0.045 | 12 | 33 | |
| | STD. DEV. | 1.5 | 0.2 | 4.9 | 1.1 | 51.4 | | | | | 5.22 | 1.15 | 1.32 | 0.17 | 6.36 | 6.54 | | | | | | 4 | | | | | | | | | | | | | |
| | MIN | 21.9 | 4.9 | 2.0 | 0.4 | 460.0 | | | | 14 | 19.5 | 0.88 | 0.63 | 0.005 | 17 | 17.005 | 0.012 | | | 0.92 | 0.029 | 31 | 17 | 0.01 | 0.18 | 54 | 0.100 | 35 | 0.03 | 7.1 | 0.045 | 12 | 33 | |
| | MAX | 24.7 | 5.2 | 8.9 | 2.5 | 550.0 | | | | 14 | 26.88 | 2.5 | 2.495 | 0.25 | 26 | 26.25 | 0.012 | | | 0.92 | 0.029 | 36 | 17 | 0.01 | 0.18 | 54 | 0.100 | 35 | 0.03 | 7.1 | 0.045 | 12 | 33 | |
| DP-E12-22 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 3 | 1 | 3 | 1 | 3 | 1 | 1 | 0 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 22.4 | 5.0 | 6.6 | 1.0 | 363.0 | | | | 10 | 14.6 | 1.9 | 1.76 | 0.14 | 12.7 | 12.84 | 0.035 | | 2.03 | 1.48 | 0.014 | 13 | 10.05 | 0.01 | 0.125 | 61.5 | 0.1 | 29.5 | 0.05 | 7.3 | 0.175 | 10.5 | 8.4 | |
| | STD. DEV. | 1.9 | 0.3 | 5.0 | 0.8 | 88.8 | | | | 0 | 3.83 | 0.95 | 0.83 | 0.13 | 4.69 | 4.59 | | | 0.74 | 0.64 | 0.005 | 1 | 1.343503 | 0 | 0.162635 | 7.778175 | 0 | 0.707107 | 0.0212132 | 1.697056275 | 0.0212132 | 0.7071068 | 0 | |
| | MIN | 20.4 | 4.8 | 2.0 | 0.4 | 297.0 | | | | 10 | 12 | 1 | 0.951 | 0.049 | 9.1 | 9.39 | 0.035 | | 1.2 | 0.83 | 0.010 | 12 | 9.1 | 0.01 | 0.01 | 56 | 0.1 | 29 | 0.04 | 6.1 | 0.16 | 10 | 8.4 | |
| | MAX | 24.2 | 5.3 | 12.0 | 2.0 | 464.0 | | | | 10 | 19 | 2.9 | 2.61 | 0.29 | 18 | 18.05 | 0.035 | | 2.6 | 2.1 | 0.017 | 14 | 11 | 0.01 | 0.24 | 67 | 0.1 | 30 | 0.07 | 8.5 | 0.19 | 11 | 8.4 | |
| DP-E12-28 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.0 | 5.1 | 3.0 | 0.99 | 309.0 | | | | 10 | 11.0 | 2.1 | 2.06 | 0.041 | 8.9 | 8.9 | 0.069 | | | 0.5 | 0.019 | 15 | 9.8 | 0.01 | 0.065 | 59 | 0.05 | 27 | 0.023 | 9.5 | 0.11 | 15 | 5.3 | |
| | STD. DEV. | 1.2 | 0.3 | 1.4 | 0.88 | 11.5 | | | | | 1.1 | 0.3 | 0.2 | 0.040 | 1.3 | 1.3 | | | | | | 0 | | | | | | | | | | | | | |
| | MIN | 21.9 | 4.8 | 2.0 | 0.40 | 297.0 | | | | 10 | 10.2 | 1.9 | 1.89 | 0.013 | 7.9 | 8.0 | 0.069 | | | 0.5 | 0.019 | 15 | 9.8 | 0.01 | 0.065 | 59 | 0.05 | 27 | 0.023 | 9.5 | 0.11 | 15 | 5.3 | |
| | MAX | 24.2 | 5.3 | 4.0 | 2.01 | 320.0 | | | | 10 | 11.7 | 2.3 | 2.23 | 0.069 | 9.8 | 9.8 | 0.069 | | | 0.5 | 0.019 | 15 | 9.8 | 0.01 | 0.065 | 59 | 0.05 | 27 | 0.023 | 9.5 | 0.11 | 15 | 5.3 | |
| DP-F03-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.7 | 6.2 | 18 | 1.22 | 145.6 | | | | | 3.3 | 1.6 | 1.21 | 0.39 | 1.7 | 2.09 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.7 | 6.2 | 18 | 1.22 | 145.6 | | | | | 3.3 | 1.6 | 1.21 | 0.39 | 1.7 | 2.09 | | | | | | | | | | | | | | | | | | | |
| | MAX | 21.7 | 6.2 | 18 | 1.22 | 145.6 | | | | | 3.3 | 1.6 | 1.21 | 0.39 | 1.7 | 2.09 | | | | | | | | | | | | | | | | | | | |
| DP-F04-17 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.6 | 6.7 | 90 | 0.435 | 394.9 | | | | | 2.15 | 0.35 | 0.322 | 0.028 | 1.8 | 1.828 | | | | | | 21 | | | | | | | | | | | | | |
| | STD. DEV. | 2.2 | 0.8 | | 0.1909188 | 29.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.0 | 6.1 | 90 | 0.3 | 374.0 | | | | | 2.15 | 0.35 | 0.322 | 0.028 | 1.8 | 1.828 | | | | | | 21 | | | | | | | | | | | | | |
| | MAX | 25.1 | 7.3 | 90 | 0.57 | 415.7 | | | | | 2.15 | 0.35 | 0.322 | 0.028 | 1.8 | 1.828 | | | | | | 21 | | | | | | | | | | | | | |
| DP-F04-22 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.8 | 6.0 | 9.9 | 0.72 | 314.1 | | | | | 10.9 | 2.7 | 2.683 | 0.017 | 8.2 | 8.217 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.8 | 6.0 | 9.9 | 0.72 | 314.1 | | | | | 10.9 | 2.7 | 2.683 | 0.017 | 8.2 | 8.217 | | | | | | | | | | | | | | | | | | | |
| | MAX | 22.8 | 6.0 | 9.9 | 0.72 | 314.1 | | | | | 10.9 | 2.7 | 2.683 | 0.017 | 8.2 | 8.217 | | | | | | | | | | | | | | | | | | | |
| DP-F04-32 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.9 | 6.5 | 69 | 0.67 | 340 | | | | | 0.96 | 0.25 | 0.208 | 0.042 | 0.71 | 0.752 | | | | | | 5.6 | | | | | | | | | | | | | |
| | STD. DEV. | 1.1 | 0.6 | | 0.52 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.1 | 6.1 | 69 | 0.30 | 335 | | | | | 0.96 | 0.25 | 0.208 | 0.042 | 0.71 | 0.752 | | | | | | 5.6 | | | | | | | | | | | | | |
| | MAX | 24.6 | 6.9 | 69 | 1.04 | 346 | | | | | 0.96 | 0.25 | 0.208 | 0.042 | 0.71 | 0.752 | | | | | | 5.6 | | | | | | | | | | | | | |
| DP-F05-5 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 27.7 | 5.8 | 6.9 | 7.36 | 173.3 | | | | | 2.41 | 2.4 | 2.27 | 0.13 | 0.01 | 0.14 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 27.7 | 5.8 | 6.9 | 7.36 | 173.3 | | | | | 2.41 | 2.4 | 2.27 | 0.13 | 0.01 | 0.14 | | | | | | | | | | | | | | | | | | | |
| | MAX | 27.7 | 5.8 | 6.9 | 7.36 | 173.3 | | | | | 2.41 | 2.4 | 2.27 | 0.13 | 0.01 | 0.14 | | | | | | | | | | | | | | | | | | | |
| DP-F05-31 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.0 | 6.2 | 35.5 | 1.86 | 242.1 | | | | 18 | 6.11 | 1.46 | 1.39 | 0.07 | 4.65 | 4.72 | 0.29 | | | 1.7 | 0.58 | 10 | 1.3 | 0.11 | 0.01 | 23 | 0.05 | 31 | 1.5 | 6.4 | 0.063 | 2.9 | 11 | |
| | STD. DEV. | 1.6 | 1.5 | 47.4 | 0.22 | 77.7 | | | | | 5.78 | 1.19 | 1.19 | 0.00 | 4.60 | 4.60 | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.9 | 5.2 | 2.0 | 1.70 | 187.1 | | | | 18 | 2.02 | 0.62 | 0.55 | 0.069 | 1.40 | 1.47 | 0.29 | | | 1.7 | 0.58 | 10 | 1.3 | 0.11 | 0.01 | 23 | 0.05 | 31 | 1.5 | 6.4 | 0.063 | 2.9 | 11 | |
| | MAX | 24.1 | 7.3 | 69 | 2.01 | 297.0 | | | | 18 | 10.2 | 2.3 | 2.231 | 0.07 | 7.90 | 7.97 | 0.29 | | | 1.7 | 0.58 | 10 | 1.3 | 0.11 | 0.01 | 23 | 0.05 | 31 | 1.5 | 6.4 | 0.063 | 2.9 | 11 | |
| DP-F06-10 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.8 | 5.2 | 4.0 | 0.30 | 190.6 | | | | | 1.83 | 0.33 | 0.274 | 0.056 | 1.5 | 1.556 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.8 | 5.2 | 4.0 | 0.30 | 190.6 | | | | | 1.83 | 0.33 | 0.274 | 0.056 | 1.5 | 1.556 | | | | | | | | | | | | | | | | | | | |
| | MAX | 21.8 | 5.2 | 4.0 | 0.30 | 190.6 | | | | | 1.83 | 0.33 | 0.274 | 0.056 | 1.5 | 1.556 | | | | | | | | | | | | | | | | | | | |
| DP-F08-14 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.5 | 7.3 | 225.0 | 3.69 | 956.5 | | | | | 7.1 | 1.1 | 0.91 | 0.140 | 6.0 | 6.1 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.1 | 0.4 | 120.2 | 3.40 | 644.2 | | | | | 3.3 | 0.2 | 0.3 | 0.071 | 3.5 | 3.6 | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.4 | 7.0 | 140 | 1.28 | 501.0 | | | | | 4.7 | 0.9 | 0.71 | 0.090 | 3.5 | 3.6 | | | | | | | | | | | | | | | | | | | |
| | MAX | 22.5 | 7.6 | 310 | 6.1 | 1412.0 | | | | | 9.4 | 1.2 | 1.11 | 0.190 | 8.5 | 8.7 | | | | | | | | | | | | | | | | | | | |
| DP-F08-20 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.7 | 5.9 | 6.5 | 0.86 | 350.2 | | | | 10 | 10.8 | 1.5 | 1.45 | 0.033 | 9.3 | 9.3 | 0.33 | | 3.0 | 1.60 | 0.032 | 13 | 8.6 | 0.01 | 0.01 | 65 | 0.05 | 32 | 0.07 | 7.3 | 0.22 | 14 | 6.4 | |
| | STD. DEV. | 0.9 | 0.5 | 4.9 | 0.79 | 16.4 | | | | | 0.1 | 0.9 | 0.87 | 0.004 | 1.0 | 1.0 | | | | 1.13 | | 2 | | | | | | | | | | | | | |
| | MIN | 23.1 | 5.3 | 3.0 | 0.40 | 335.6 | | | | 10 | 10.7 | 0.9 | 0.83 | 0.030 | 8.6 | 8.6 | 0.33 | | 3.0 | 0.80 | 0.032 | 11 | 8.6 | 0.01 | 0.01 | 65 | 0.05 | 32 | 0.07 | 7.3 | 0.22 | 14 | 6.4 | |
| | MAX | 24.7 | 6.3 | 9.9 | 1.77 | 368.0 | | | | 10 | 10.9 | 2.1 | 2.07 | 0.036 | 10.0 | 10.0 | 0.33 | | 3.0 | 2.40 | 0.032 | 14 | 8.6 | 0.01 | 0.01 | 65 | 0.05 | 32 | 0.07 | 7.3 | 0.22 | 14 | 6.4 | |



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Table G.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Cf/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_2$-N | $NO_3$-N | $PO_4$-P | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-F08-28 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.6 | 5.9 | 26.5 | 0.80 | 326.6 | | | | | 3.97 | 0.9 | 0.8 | 0.081 | 3.1 | 3.2 | | | | | | 18 | | | | | | | | | | | | |
| | STD. DEV. | 0.6 | 0.5 | 12.0 | 0.81 | 4.6 | | | | | 0.05 | 0.3 | 0.4 | 0.098 | 0.3 | 0.4 | | | | | | | | | | | | | | | | | | |
| | MIN | 23.1 | 5.4 | 18 | 0.30 | 323.9 | | | | | 3.93 | 0.6 | 0.5 | 0.012 | 2.9 | 2.9 | | | | | | 18 | | | | | | | | | | | | |
| | MAX | 24.3 | 6.3 | 35 | 1.73 | 332.0 | | | | | 4.00 | 1.1 | 1.1 | 0.150 | 3.3 | 3.5 | | | | | | 18 | | | | | | | | | | | | |
| DP-F09-05 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.8 | 6.6 | 22 | 1.15 | 191.1 | | | | 24 | 3.4 | 1.5 | 1.27 | 0.23 | 1.9 | 2.13 | 0.27 | | | 7.7 | 0.1 | 10 | 1.9 | 0.01 | 0.026 | 26 | 0.05 | 14 | 5.8 | 3.5 | 0.37 | 4.7 | 9.1 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.8 | 6.6 | 22 | 1.15 | 191.1 | | | | 24 | 3.4 | 1.5 | 1.27 | 0.23 | 1.9 | 2.13 | 0.27 | | | 7.7 | 0.1 | 10 | 1.9 | 0.01 | 0.026 | 26 | 0.05 | 14 | 5.8 | 3.5 | 0.37 | 4.7 | 9.1 | |
| | MAX | 24.8 | 6.6 | 22 | 1.15 | 191.1 | | | | 24 | 3.4 | 1.5 | 1.27 | 0.23 | 1.9 | 2.13 | 0.27 | | | 7.7 | 0.1 | 10 | 1.9 | 0.01 | 0.026 | 26 | 0.05 | 14 | 5.8 | 3.5 | 0.37 | 4.7 | 9.1 | |
| DP-F10-11 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.3 | 4.8 | 2.0 | 0.60 | 484 | | | | | 32.3 | 2.3 | 1.2 | 1.1 | 30 | 31.1 | | | | | | 31 | | | | | | | | | | | | |
| | STD. DEV. | 2.8 | 0.1 | | 0.28 | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.3 | 4.7 | 2.0 | 0.40 | 476 | | | | | 32.3 | 2.3 | 1.2 | 1.1 | 30 | 31.1 | | | | | | 31 | | | | | | | | | | | | |
| | MAX | 25.3 | 4.9 | 2.0 | 0.80 | 492 | | | | | 32.3 | 2.3 | 1.2 | 1.1 | 30 | 31.1 | | | | | | 31 | | | | | | | | | | | | |
| DP-F11-11 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.3 | 5.2 | 5.5 | 2.15 | 409 | | | | | 18.6 | 1.6 | 0.6 | 0.97 | 17.0 | 18.0 | | | | | | 32 | | | | | | | | | | | | |
| | STD. DEV. | 3.3 | 0.3 | 4.9 | 2.71 | 40.7 | | | | | 5.5 | 0.1 | 0.6 | 0.75 | 5.7 | 4.9 | | | | | | | | | | | | | | | | | | |
| | MIN | 19.5 | 4.8 | 2.0 | 0.30 | 366.0 | | | | | 14.7 | 1.5 | 0.2 | 0.44 | 13.0 | 14.5 | | | | | | 32 | | | | | | | | | | | | |
| | MAX | 26.0 | 5.4 | 8.9 | 5.26 | 447.0 | | | | | 22.5 | 1.7 | 1.1 | 1.50 | 21.0 | 21.4 | | | | | | 32 | | | | | | | | | | | | |
| DP-F11-15 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.1 | 4.9 | 5.0 | 1.37 | 495.4 | | | | | 29.8 | 1.3 | 1.0 | 0.26 | 28.5 | 28.8 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.4 | 0.2 | 4.2 | 1.96 | 47.6 | | | | | 0.4 | 0.3 | 0.5 | 0.17 | 0.7 | 0.9 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.8 | 4.7 | 2.0 | 0.20 | 453.3 | | | | | 29.5 | 1.1 | 0.7 | 0.14 | 28.0 | 28.1 | | | | | | 34 | | | | | | | | | | | | |
| | MAX | 24.6 | 5.1 | 7.9 | 3.64 | 547.0 | | | | | 30.1 | 1.5 | 1.4 | 0.38 | 29.0 | 29.4 | | | | | | 34 | | | | | | | | | | | | |
| DP-F11-18 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.3 | 5.1 | 5.0 | 1.32 | 430.0 | | | | | 21.3 | 1.3 | 1.2 | 0.046 | 20.0 | 20.0 | | | 4.1 | 1.3 | | 19 | | | | | | | | | | | | |
| | STD. DEV. | 1.2 | 0.2 | 4.2 | 1.10 | 69.1 | | | | | 1.8 | 1.0 | 1.0 | 0.030 | 2.8 | 2.8 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 5.0 | 2.0 | 0.30 | 359.0 | | | | | 20.0 | 0.6 | 0.5 | 0.024 | 18.0 | 18.1 | | | 4.1 | 1.3 | | 19 | | | | | | | | | | | | |
| | MAX | 24.5 | 5.4 | 7.9 | 2.48 | 497.0 | | | | | 22.6 | 2.0 | 1.9 | 0.067 | 22.0 | 22.0 | | | 4.1 | 1.3 | | 19 | | | | | | | | | | | | |
| DP-F11-21 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.5 | 5.1 | 5.9 | 0.42 | 314.2 | | | | | 21.1 | 1.1 | 1.1 | 0.005 | 20.0 | 20.0 | | | | | | 13 | | | | | | | | | | | | |
| | STD. DEV. | 1.3 | 0.2 | | 0.02 | 5.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.5 | 4.9 | 5.9 | 0.40 | 310.0 | | | | | 21.1 | 1.1 | 1.1 | 0.005 | 20.0 | 20.0 | | | | | | 13 | | | | | | | | | | | | |
| | MAX | 24.4 | 5.2 | 5.9 | 0.43 | 318.4 | | | | | 21.1 | 1.1 | 1.1 | 0.005 | 20.0 | 20.0 | | | | | | 13 | | | | | | | | | | | | |
| DP-F11-24 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.4 | 5.0 | 3.0 | 0.55 | 362.0 | | | | | 19.8 | 0.8 | 0.8 | 0.015 | 19.0 | 19.0 | | | | | | 15 | | | | | | | | | | | | |
| | STD. DEV. | 0.9 | 0.2 | 1.4 | 0.52 | 97.9 | | | | | 5.2 | 0.4 | 0.5 | 0.010 | 5.7 | 5.7 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.8 | 4.8 | 2.0 | 0.20 | 301.1 | | | | | 16.1 | 0.5 | 0.4 | 0.008 | 15.0 | 15.0 | | | | | | 15 | | | | | | | | | | | | |
| | MAX | 24.4 | 5.1 | 4.0 | 1.15 | 475.0 | | | | | 23.5 | 1.1 | 1.1 | 0.022 | 23.0 | 23.0 | | | | | | 15 | | | | | | | | | | | | |
| DP-F11-27 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.6 | 5.1 | 3.5 | 0.47 | 311.8 | | | | | 6.6 | 1.1 | 1.0 | 0.017 | 5.5 | 5.5 | | | | | | 16 | | | | | | | | | | | | |
| | STD. DEV. | 0.6 | 0.2 | 2.1 | 0.32 | 17.4 | | | | | 2.9 | 0.3 | 0.3 | 0.013 | 2.5 | 2.5 | | | | | | | | | | | | | | | | | | |
| | MIN | 23.2 | 4.9 | 2.0 | 0.20 | 297.0 | | | | | 4.5 | 0.8 | 0.8 | 0.008 | 3.7 | 3.7 | | | | | | 16 | | | | | | | | | | | | |
| | MAX | 24.3 | 5.3 | 4.9 | 0.82 | 331.0 | | | | | 8.6 | 1.3 | 1.3 | 0.026 | 7.3 | 7.3 | | | | | | 16 | | | | | | | | | | | | |
| DP-F12-10 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.4 | 4.7 | 2.0 | 0.55 | 463.5 | | | | | 24.5 | 1.5 | 1.34 | 0.16 | 23 | 23.16 | | | | | | 34 | | | | | | | | | | | | |
| | STD. DEV. | 2.7 | 0.5 | | 0.5 | 51.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.5 | 4.3 | 2.0 | 0.20 | 427 | | | | | 24.5 | 1.5 | 1.34 | 0.16 | 23 | 23.16 | | | | | | 34 | | | | | | | | | | | | |
| | MAX | 25.3 | 5.0 | 2.0 | 0.90 | 500 | | | | | 24.5 | 1.5 | 1.34 | 0.16 | 23 | 23.16 | | | | | | 34 | | | | | | | | | | | | |
| DP-F15-14 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.5 | 4.9 | 16.5 | 0.65 | 469.2 | | | | | 24.5 | 0.5 | 0.3 | 0.16 | 24.0 | 24.2 | | | | | | 34 | | | | | | | | | | | | |
| | STD. DEV. | 1.5 | 0.4 | 7.8 | 0.42 | 53.9 | | | | | 10.2 | 0.3 | 0.4 | 0.05 | 9.9 | 9.8 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.5 | 4.5 | 11 | 0.30 | 408.6 | | | | | 17.3 | 0.3 | 0.1 | 0.12 | 17.0 | 17.2 | | | | | | 34 | | | | | | | | | | | | |
| | MAX | 24.2 | 5.2 | 22 | 1.11 | 512.0 | | | | | 31.7 | 0.7 | 0.6 | 0.19 | 31.0 | 31.1 | | | | | | 34 | | | | | | | | | | | | |
| DP-F15-20 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.9 | 5.0 | 11.5 | 0.57 | 463.7 | | | | | 24.9 | 0.9 | 0.8 | 0.012 | 24.0 | 24.0 | | | 1.1 | 1.2 | | 18 | | | | | | | | | | | | |
| | STD. DEV. | 1.3 | 0.4 | 0.7 | 0.24 | 161.0 | | | | | 6.3 | 0.8 | 0.8 | 0.010 | 7.1 | 7.1 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.1 | 4.6 | 11.0 | 0.30 | 359.0 | | | | | 20.4 | 0.3 | 0.3 | 0.005 | 19.0 | 19.0 | | | 1.1 | 1.2 | | 18 | | | | | | | | | | | | |
| | MAX | 24.4 | 5.4 | 12 | 0.78 | 649.0 | | | | | 29.3 | 1.4 | 1.4 | 0.019 | 29.0 | 29.0 | | | 1.1 | 1.2 | | 18 | | | | | | | | | | | | |
| DP-F15-26 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.8 | 4.8 | 3.0 | 0.50 | 305.6 | | | | | 15.0 | 1.0 | 1.0 | 0.045 | 14.0 | 14.0 | | | | | | 14 | | | | | | | | | | | | |
| | STD. DEV. | 1.2 | 0.5 | 1.4 | 0.29 | 14.6 | | | | | 4.9 | 0.7 | 0.6 | 0.041 | 4.2 | 4.3 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.8 | 4.3 | 2.0 | 0.20 | 290.8 | | | | | 11.5 | 0.5 | 0.5 | 0.016 | 11.0 | 11.0 | | | | | | 14 | | | | | | | | | | | | |
| | MAX | 24.2 | 5.2 | 4.0 | 0.78 | 320.0 | | | | | 18.5 | 1.5 | 1.4 | 0.074 | 17.0 | 17.1 | | | | | | 14 | | | | | | | | | | | | |
| DP-G05-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 26.2 | 6.1 | 22 | 2.49 | 151.9 | | | | 32 | 2.04 | 1.9 | 0.5 | 1.4 | 0.14 | 1.54 | 0.43 | | | 8.7 | 0.075 | 4.1 | 0.14 | 0.01 | 0.18 | 30 | 0.05 | 11 | 8.2 | 3.3 | 0.4 | 2.8 | 2.6 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 26.2 | 6.1 | 22 | 2.49 | 151.9 | | | | 32 | 2.04 | 1.9 | 0.5 | 1.4 | 0.14 | 1.54 | 0.43 | | | 8.7 | 0.075 | 4.1 | 0.14 | 0.01 | 0.18 | 30 | 0.05 | 11 | 8.2 | 3.3 | 0.4 | 2.8 | 2.6 | |
| | MAX | 26.2 | 6.1 | 22 | 2.49 | 151.9 | | | | 32 | 2.04 | 1.9 | 0.5 | 1.4 | 0.14 | 1.54 | 0.43 | | | 8.7 | 0.075 | 4.1 | 0.14 | 0.01 | 0.18 | 30 | 0.05 | 11 | 8.2 | 3.3 | 0.4 | 2.8 | 2.6 | |
| DP-G06-7 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 28.9 | 6.2 | 34 | 2.36 | 184 | | | | | 0.68 | 0.55 | 0.28 | 0.27 | 0.13 | 0.4 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 28.9 | 6.2 | 34 | 2.36 | 184 | | | | | 0.68 | 0.55 | 0.28 | 0.27 | 0.13 | 0.4 | | | | | | | | | | | | | | | | | | |
| | MAX | 28.9 | 6.2 | 34 | 2.36 | 184 | | | | | 0.68 | 0.55 | 0.28 | 0.27 | 0.13 | 0.4 | | | | | | | | | | | | | | | | | | |



o:\44237-001\Wpdocs\Report\Draft

# Table G.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 ml) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4^=$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-G07-13 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 27.6 | 5.6 | 14 | 2.6 | 243.5 | | | | | 3.40 | 0.70 | 0.37 | 0.33 | 2.7 | 3.03 | | | | | | 5.8 | | | | | | | | | | | | |
| | STD. DEV. | 3.3 | 0.3 | | 0.6 | 16.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.2 | 5.4 | 14 | 2.19 | 232 | | | | | 3.40 | 0.70 | 0.37 | 0.33 | 2.7 | 3.03 | | | | | | 5.8 | | | | | | | | | | | | |
| | MAX | 29.9 | 5.8 | 14 | 3.1 | 255 | | | | | 3.40 | 0.70 | 0.37 | 0.33 | 2.7 | 3.03 | | | | | | 5.8 | | | | | | | | | | | | |
| DP-G07-15 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.5 | 5.1 | 4.0 | 1.00 | 284.0 | | | | | 4.95 | 0.45 | 0.45 | 0.005 | 4.50 | 4.51 | | | | | | 6.3 | | | | | | | | | | | | |
| | STD. DEV. | 1.6 | 0.1 | | 0.28 | 17.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.4 | 5.0 | 4.0 | 0.80 | 272.0 | | | | | 4.95 | 0.45 | 0.45 | 0.005 | 4.50 | 4.51 | | | | | | 6.3 | | | | | | | | | | | | |
| | MAX | 25.6 | 5.2 | 4.0 | 1.20 | 296.0 | | | | | 4.95 | 0.45 | 0.45 | 0.005 | 4.50 | 4.51 | | | | | | 6.3 | | | | | | | | | | | | |
| DP-G07-17 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.4 | 5.2 | 5.0 | 1.50 | 322.0 | | | | | 8.51 | 0.71 | 0.70 | 0.005 | 7.80 | 7.81 | | | | | | 9.3 | | | | | | | | | | | | |
| | STD. DEV. | 1.3 | 0.2 | 0.1 | 0.70 | 13.2 | | | | | 2.11 | 0.56 | 0.56 | 0.000 | 1.56 | 1.56 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.9 | 5.0 | 4.9 | 0.80 | 312.0 | | | | | 7.01 | 0.31 | 0.31 | 0.005 | 6.70 | 6.71 | | | | | | 9.3 | | | | | | | | | | | | |
| | MAX | 24.5 | 5.4 | 5.1 | 2.19 | 337.0 | | | | | 10.00 | 1.10 | 1.10 | 0.005 | 8.90 | 8.91 | | | | | | 9.3 | | | | | | | | | | | | |
| DP-G07-21 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.3 | 5.4 | 5.4 | 1.18 | 334.0 | | | | 10.0 | 12.6 | 1.5 | 1.44 | 0.027 | 11.17 | 11.19 | | | 2.3 | 1.8 | 0.02 | 12 | 8.5 | 0.01 | 0.01 | 77 | 0.07 | 29 | 0.05 | 8.8 | 0.17 | 15 | 7.4 | |
| | STD. DEV. | 1.3 | 0.3 | 0.6 | 0.56 | 8.5 | | | | | 2.9 | 1.1 | 1.02 | 0.038 | 2.36 | 2.39 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 5.1 | 4.9 | 0.57 | 326.0 | | | | 10.0 | 9.8 | 0.5 | 0.51 | 0.005 | 8.50 | 8.51 | | | 2.3 | 1.8 | 0.02 | 12 | 8.5 | 0.01 | 0.01 | 77 | 0.07 | 29 | 0.05 | 8.8 | 0.17 | 15 | 7.4 | |
| | MAX | 24.8 | 5.6 | 6.1 | 1.66 | 343.0 | | | | 10.0 | 15.6 | 2.6 | 2.53 | 0.071 | 13.0 | 13.1 | | | 2.3 | 1.8 | 0.02 | 12 | 8.5 | 0.01 | 0.01 | 77 | 0.07 | 29 | 0.05 | 8.8 | 0.17 | 15 | 7.4 | |
| DP-G07-24 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.3 | 5.3 | 6.0 | 0.89 | 285.7 | | | | | 15.00 | 1.50 | 1.50 | 0.005 | 13.50 | 13.51 | | | | | | 16 | | | | | | | | | | | | |
| | STD. DEV. | 1.2 | 0.4 | 1.6 | 0.27 | 14.5 | | | | | 0.71 | 1.41 | 1.41 | 0.000 | 0.71 | 0.71 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.3 | 4.9 | 4.9 | 0.60 | 271.0 | | | | | 14.50 | 0.50 | 0.50 | 0.005 | 13.00 | 13.01 | | | | | | 16 | | | | | | | | | | | | |
| | MAX | 24.6 | 5.7 | 7.1 | 1.13 | 300.0 | | | | | 15.50 | 2.50 | 2.50 | 0.005 | 14.00 | 14.01 | | | | | | 16 | | | | | | | | | | | | |
| DP-G07-27 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.3 | 5.1 | 4.6 | 1.37 | 307 | | | | | 13.12 | 1.77 | 1.77 | 0.005 | 11.35 | 11.36 | | | | | | 15 | | | | | | | | | | | | |
| | STD. DEV. | 1.5 | 0.1 | 0.8 | 0.43 | 16.4 | | | | | 6.62 | 1.46 | 1.46 | 0.0 | 5.16 | 5.16 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.3 | 5.0 | 4.0 | 0.95 | 293 | | | | | 8.44 | 0.74 | 0.74 | 0.005 | 7.70 | 7.71 | | | | | | 15 | | | | | | | | | | | | |
| | MAX | 25 | 5.2 | 5.1 | 1.80 | 325 | | | | | 17.80 | 2.80 | 2.80 | 0.005 | 15.00 | 15.01 | | | | | | 15 | | | | | | | | | | | | |
| DP-G08-05 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 26.1 | 5.6 | 4.9 | 7.64 | 157.8 | | | | | 2.52 | 0.92 | 0.92 | 0.005 | 1.60 | 1.61 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 26.1 | 5.6 | 4.9 | 7.64 | 157.8 | | | | | 2.52 | 0.92 | 0.92 | 0.005 | 1.60 | 1.61 | | | | | | | | | | | | | | | | | | |
| | MAX | 26.1 | 5.6 | 4.9 | 7.64 | 157.8 | | | | | 2.52 | 0.92 | 0.92 | 0.005 | 1.60 | 1.61 | | | | | | | | | | | | | | | | | | |
| DP-G09-11 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 26.0 | 5.4 | 7.9 | 2.49 | 282.0 | | | | 41 | 10.2 | 1.10 | 1.09 | 0.010 | 9.10 | 9.11 | 0.1 | | | 1.3 | 0.036 | 12 | 9.1 | 0.0 | 0.0 | 51 | 0.05 | 27 | 1.1 | 5.6 | 0.3 | 7.0 | 12 | |
| | STD. DEV. | 2.8 | 0.0 | | 0.58 | 4.2 | | | | | | | | | | | | | | | | 2 | | | | | | | | | | | | |
| | MIN | 24.0 | 5.4 | 7.9 | 2.08 | 279.0 | | | | 41 | 10.2 | 1.10 | 1.09 | 0.010 | 9.10 | 9.11 | 0.1 | | | 1.3 | 0.036 | 10 | 9.1 | 0.01 | 0.010 | 51 | 0.05 | 27 | 1.1 | 5.6 | 0.3 | 7.0 | 12 | |
| | MAX | 27.9 | 5.4 | 7.9 | 2.90 | 285.0 | | | | 41 | 10.2 | 1.10 | 1.09 | 0.010 | 9.10 | 9.11 | 0.1 | | | 1.3 | 0.036 | 13 | 9.1 | 0.01 | 0.010 | 51 | 0.05 | 27 | 1.1 | 5.6 | 0.3 | 7.0 | 12 | |
| DP-G11-8 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.4 | 4.9 | 3.0 | 1.19 | 303.5 | | | | | 14.20 | 2.20 | 2.19 | 0.015 | 12.00 | 12.02 | | | | | | 21 | | | | | | | | | | | | |
| | STD. DEV. | - | 0.4 | | 0.27 | 12.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.2 | 4.6 | 3.0 | 1.00 | 295.0 | | | | | 14.20 | 2.20 | 2.19 | 0.015 | 12.00 | 12.02 | | | | | | 21 | | | | | | | | | | | | |
| | MAX | 27.6 | 5.1 | 3.0 | 1.38 | 312.0 | | | | | 14.20 | 2.20 | 2.19 | 0.015 | 12.00 | 12.02 | | | | | | 21 | | | | | | | | | | | | |
| DP-G12-9 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.0 | 4.5 | 2.5 | 1.41 | 350.0 | | | | 12 | 11.3 | 1.6 | 1.66 | 0.037 | 9.7 | 9.74 | | | 4.6 | 2.2 | 0.17 | 26 | 9.4 | 0.01 | 0.01 | 60 | 0.06 | 22 | 0.81 | 5.9 | 0.15 | 5.6 | 23 | |
| | STD. DEV. | 3.6 | 0.4 | 0.7 | 1.71 | 12.7 | | | | | 0.6 | 0.2 | | 0.001 | 0.4 | 0.42 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.4 | 4.2 | 2.0 | 0.20 | 341.0 | | | | 12 | 10.8 | 1.4 | 1.66 | 0.036 | 9.4 | 9.44 | | | 4.6 | 2.2 | 0.17 | 26 | 9.4 | 0.01 | 0.01 | 60 | 0.06 | 22 | 0.81 | 5.9 | 0.15 | 5.6 | 23 | |
| | MAX | 26.5 | 4.7 | 3.0 | 2.62 | 359.0 | | | | 12 | 11.7 | 1.7 | 1.66 | 0.037 | 10.0 | 10.04 | | | 4.6 | 2.2 | 0.17 | 26 | 9.4 | 0.01 | 0.01 | 60 | 0.06 | 22 | 0.81 | 5.9 | 0.15 | 5.6 | 23 | |
| DP-G12-15 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.1 | 5.0 | 5.7 | 0.68 | 491.0 | | | | 10 | 25.7 | 2.4 | 2.08 | 0.29 | 23.3 | 23.62 | | | 3.6 | 2.1 | 0.01 | 33 | 20 | 0.01 | 0.01 | 53 | 0.06 | 35 | 0.17 | 9.1 | 0.21 | 12 | 29 | |
| | STD. DEV. | 1.8 | 0.5 | 1.0 | 0.42 | 15.4 | | | | | 2.7 | 1.2 | 1.17 | 0.07 | 3.1 | 3.01 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.8 | 4.7 | 5.1 | 0.20 | 478.0 | | | | 10 | 23.4 | 1.0 | 0.78 | 0.22 | 20.0 | 20.36 | | | 3.6 | 2.1 | 0.01 | 33 | 20 | 0.01 | 0.01 | 53 | 0.06 | 35 | 0.17 | 9.1 | 0.21 | 12 | 29 | |
| | MAX | 25.2 | 5.5 | 6.9 | 0.96 | 508.0 | | | | 10 | 28.7 | 3.4 | 3.08 | 0.36 | 26.0 | 26.28 | | | 3.6 | 2.1 | 0.01 | 33 | 20 | 0.01 | 0.01 | 53 | 0.06 | 35 | 0.17 | 9.1 | 0.21 | 12 | 29 | |
| DP-G12-18 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.4 | 5.0 | 6.9 | 0.80 | 468.5 | | | | | 30.7 | 1.7 | 1.7 | 0.005 | 29.00 | 29.01 | | | | | | 29 | | | | | | | | | | | | |
| | STD. DEV. | 1.7 | 0.3 | | 0.85 | 36.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 4.8 | 6.9 | 0.20 | 443.0 | | | | | 30.7 | 1.7 | 1.7 | 0.005 | 29.00 | 29.01 | | | | | | 29 | | | | | | | | | | | | |
| | MAX | 24.6 | 5.2 | 6.9 | 1.40 | 494.0 | | | | | 30.7 | 1.7 | 1.7 | 0.005 | 29.00 | 29.01 | | | | | | 29 | | | | | | | | | | | | |
| DP-G12-21 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.3 | 5.1 | 6.8 | 0.53 | 460.7 | | | | 10 | 21.2 | 2.2 | 2.15 | 0.037 | 19.0 | 19.04 | | | 3.5 | 2 | 0.01 | 14 | 13 | 0.01 | 0.01 | 62 | 0.07 | 33 | 0.18 | 7.6 | 0.18 | 15 | 12 | |
| | STD. DEV. | 1.0 | 0.3 | 2.4 | 0.45 | 152.3 | | | | | 8.6 | 2.0 | 1.95 | 0.054 | 10.4 | 10.36 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.7 | 4.9 | 4.1 | 0.10 | 361.0 | | | | 10 | 15.5 | 0.1 | 0.06 | 0.005 | 13.0 | 13.01 | | | 3.5 | 2 | 0.01 | 14 | 13 | 0.01 | 0.01 | 62 | 0.07 | 33 | 0.18 | 7.6 | 0.18 | 15 | 12 | |
| | MAX | 24.4 | 5.4 | 8.9 | 0.99 | 636.0 | | | | 10 | 31.1 | 4.0 | 3.90 | 0.099 | 31.0 | 31.01 | | | 3.5 | 2 | 0.01 | 14 | 13 | 0.01 | 0.01 | 62 | 0.07 | 33 | 0.18 | 7.6 | 0.18 | 15 | 12 | |
| DP-G12-24 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.8 | 5.1 | 4.6 | 0.51 | 329.0 | | | | 51 | 13.1 | 1.09 | 1.09 | 0.005 | 12.00 | 12.01 | | | 1.8 | 1.4 | 0.19 | 15 | 12 | 0.01 | 0.01 | 59 | 0.07 | 27 | 0.04 | 11 | 0.18 | 15 | 6.7 | |
| | STD. DEV. | 1.5 | 0.4 | 0.9 | 0.44 | 7.1 | | | | | 0.2 | 0.16 | 0.16 | 0.000 | 0.00 | 0.00 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.7 | 4.8 | 3.9 | 0.20 | 324.0 | | | | 51 | 13.0 | 0.98 | 0.98 | 0.005 | 12.00 | 12.01 | | | 1.8 | 1.4 | 0.19 | 15 | 12 | 0.01 | 0.01 | 59 | 0.07 | 27 | 0.04 | 11 | 0.18 | 15 | 6.7 | |
| | MAX | 24.8 | 5.4 | 5.2 | 0.82 | 334.0 | | | | 51 | 13.2 | 1.20 | 1.20 | 0.005 | 12.00 | 12.01 | | | 1.8 | 1.4 | 0.19 | 15 | 12 | 0.01 | 0.01 | 59 | 0.07 | 27 | 0.04 | 11 | 0.18 | 15 | 6.7 | |
| DP-G12-27 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.4 | 5.0 | 5.5 | 0.33 | 388.7 | | | | | 16.44 | 0.94 | 0.77 | 0.17 | 15.50 | 15.67 | | | | | | 13 | | | | | | | | | | | | |
| | STD. DEV. | 0.8 | 0.4 | 0.8 | 0.20 | 105.7 | | | | | 4.58 | 0.37 | 0.44 | 0.07 | 4.95 | 5.02 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.9 | 4.7 | 4.9 | 0.10 | 311.0 | | | | | 13.20 | 0.68 | 0.46 | 0.12 | 12.00 | 12.12 | | | | | | 13 | | | | | | | | | | | | |
| | MAX | 24.3 | 5.4 | 6.1 | 0.45 | 509.0 | | | | | 19.68 | 1.20 | 1.08 | 0.22 | 19.00 | 19.22 | | | | | | 13 | | | | | | | | | | | | |



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Table G.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 ml) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-H05-7 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.6 | 6.3 | 15 | 6.73 | 136.7 | | | | | 1.75 | 1.70 | 0.10 | 1.60 | 0.05 | 1.65 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.6 | 6.3 | 15 | 6.73 | 136.7 | | | | | 1.75 | 1.70 | 0.10 | 1.60 | 0.05 | 1.65 | | | | | | | | | | | | | | | | | | |
| | MAX | 25.6 | 6.3 | 15 | 6.73 | 136.7 | | | | | 1.75 | 1.70 | 0.10 | 1.60 | 0.05 | 1.65 | | | | | | | | | | | | | | | | | | |
| DP-H06-7 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.0 | 6.0 | 18 | 4.37 | 158.2 | | | | | 1.35 | 1.20 | 0.55 | 0.65 | 0.15 | 0.80 | | | | | | 4.5 | | | | | | | | | | | | |
| | STD. DEV. | 7.4 | 0.1 | | 0.47 | 8.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 19.8 | 5.9 | 18 | 4.04 | 152.4 | | | | | 1.35 | 1.20 | 0.55 | 0.65 | 0.15 | 0.80 | | | | | | 4.5 | | | | | | | | | | | | |
| | MAX | 30.2 | 6.0 | 18 | 4.70 | 164.0 | | | | | 1.35 | 1.20 | 0.55 | 0.65 | 0.15 | 0.80 | | | | | | 4.5 | | | | | | | | | | | | |
| DP-H07-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 20.2 | 5.1 | 2.0 | 1.57 | 151.3 | | | | | 1.69 | 0.71 | 0.66 | 0.051 | 0.98 | 1.03 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 20.2 | 5.1 | 2.0 | 1.57 | 151.3 | | | | | 1.69 | 0.71 | 0.66 | 0.051 | 0.98 | 1.03 | | | | | | | | | | | | | | | | | | |
| | MAX | 20.2 | 5.1 | 2.0 | 1.57 | 151.3 | | | | | 1.69 | 0.71 | 0.66 | 0.051 | 0.98 | 1.03 | | | | | | | | | | | | | | | | | | |
| DP-H08-10 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.7 | 6.2 | 24 | 2.97 | 189.0 | | | | | 2.95 | 2.20 | 1.32 | 0.88 | 0.75 | 1.63 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.7 | 6.2 | 24 | 2.97 | 189.0 | | | | | 2.95 | 2.20 | 1.32 | 0.88 | 0.75 | 1.63 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.7 | 6.2 | 24 | 2.97 | 189.0 | | | | | 2.95 | 2.20 | 1.32 | 0.88 | 0.75 | 1.63 | | | | | | | | | | | | | | | | | | |
| DP-H09-12 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.9 | 5.4 | 6.9 | 2.10 | 261.5 | | | | | 8.60 | 1.20 | 1.19 | 0.010 | 7.40 | 7.41 | | | | | | 5.6 | | | | | | | | | | | | |
| | STD. DEV. | 2.8 | 0.5 | | 1.84 | 17.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.9 | 5.0 | 6.9 | 0.80 | 249.0 | | | | | 8.60 | 1.20 | 1.19 | 0.010 | 7.40 | 7.41 | | | | | | 5.6 | | | | | | | | | | | | |
| | MAX | 25.8 | 5.7 | 6.9 | 3.40 | 274.0 | | | | | 8.60 | 1.20 | 1.19 | 0.010 | 7.40 | 7.41 | | | | | | 5.6 | | | | | | | | | | | | |
| DP-H10-11 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 25.4 | 5.9 | 21 | 5.47 | 216.3 | | | | 10 | 2.07 | 0.42 | 0.30 | 0.115 | 1.7 | 1.76 | | | 4.3 | 3.6 | 0.03 | 7.2 | 1.2 | 0.11 | 0.01 | 51 | 0.06 | 20 | 4.1 | 4.7 | 0.42 | 9.3 | 6.3 | |
| | STD. DEV. | 4.5 | 0.4 | 6 | 0.52 | 16.6 | | | | | 0.06 | 0.29 | 0.25 | 0.036 | 0.4 | 0.32 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 5.6 | 17 | 5.10 | 204.5 | | | | 10 | 2.02 | 0.21 | 0.12 | 0.089 | 1.4 | 1.54 | | | 4.3 | 3.6 | 0.03 | 7.2 | 1.2 | 0.11 | 0.01 | 51 | 0.06 | 20 | 4.1 | 4.7 | 0.42 | 9.3 | 6.3 | |
| | MAX | 28.5 | 6.2 | 25 | 5.83 | 228.0 | | | | 10 | 2.11 | 0.62 | 0.48 | 0.140 | 1.9 | 1.99 | | | 4.3 | 3.6 | 0.03 | 7.2 | 1.2 | 0.11 | 0.01 | 51 | 0.06 | 20 | 4.1 | 4.7 | 0.42 | 9.3 | 6.3 | |
| DP-H12-5 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.9 | 5.6 | 7.9 | 0.94 | 188.5 | | | | | 2.81 | 0.81 | 0.76 | 0.047 | 2.00 | 2.05 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.9 | 5.6 | 7.9 | 0.94 | 188.5 | | | | | 2.81 | 0.81 | 0.76 | 0.047 | 2.00 | 2.05 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.9 | 5.6 | 7.9 | 0.9 | 188.5 | | | | | 2.81 | 0.81 | 0.76 | 0.047 | 2.00 | 2.05 | | | | | | | | | | | | | | | | | | |
| DP-I06-14 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 21.9 | 5.1 | 6.1 | 1.13 | 223.4 | | | | 10 | 3.01 | 0.74 | 0.74 | 0.005 | 2.27 | 2.27 | | | 3.0 | 2.4 | 0.19 | 6.0 | 2.1 | 0.01 | 0.023 | 62 | 0.06 | 23 | 0.02 | 5 | 0.19 | 11 | 3.1 | |
| | STD. DEV. | 2.2 | 0.3 | 0.2 | 0.73 | 14.6 | | | | | 1.16 | 0.31 | 0.31 | 0.000 | 0.86 | 0.86 | | | | | | | | | | | | | | | | | | |
| | MIN | 20.4 | 4.7 | 5.9 | 0.30 | 212.3 | | | | 10 | 2.07 | 0.55 | 0.55 | 0.005 | 1.50 | 1.51 | | | 3.0 | 2.4 | 0.19 | 6.0 | 2.1 | 0.01 | 0.023 | 62 | 0.06 | 23 | 0.02 | 5 | 0.19 | 11 | 3.1 | |
| | MAX | 24.4 | 5.3 | 6.2 | 1.66 | 240.0 | | | | 10 | 4.30 | 1.10 | 1.10 | 0.005 | 3.20 | 3.21 | | | 3.0 | 2.4 | 0.19 | 6.0 | 2.1 | 0.01 | 0.023 | 62 | 0.06 | 23 | 0.02 | 5 | 0.19 | 11 | 3.1 | |
| DP-I06-20 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.3 | 5.0 | 3.0 | 1.04 | 362.3 | | | | | 17.28 | 0.78 | 0.78 | 0.005 | 16.50 | 16.51 | | | | | | 13 | | | | | | | | | | | | |
| | STD. DEV. | 1.6 | 0.1 | 1.3 | 0.75 | 4.5 | | | | | 2.57 | 0.45 | 0.45 | 0.000 | 2.12 | 2.12 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.4 | 4.9 | 2.0 | 0.30 | 358.0 | | | | | 15.46 | 0.46 | 0.46 | 0.005 | 15.00 | 15.01 | | | | | | 13 | | | | | | | | | | | | |
| | MAX | 24.1 | 5.0 | 3.9 | 1.80 | 367.0 | | | | | 19.10 | 1.10 | 1.10 | 0.005 | 18.00 | 18.01 | | | | | | 13 | | | | | | | | | | | | |
| DP-I06-26 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.4 | 5.0 | 2.5 | 1.23 | 306.3 | | | | | 13.29 | 1.29 | 1.29 | 0.005 | 12.00 | 12.01 | | | 0.75 | 1.00 | | 14 | | | | | | | | | | | | |
| | STD. DEV. | 1.6 | 0.1 | 0.7 | 1.08 | 5.1 | | | | | 4.12 | 1.29 | 1.29 | 0.000 | 2.83 | 2.83 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.3 | 4.9 | 2.0 | 0.20 | 302.0 | | | | | 10.38 | 0.38 | 0.38 | 0.005 | 10.00 | 10.01 | | | 0.75 | 1.00 | | 14 | | | | | | | | | | | | |
| | MAX | 24.2 | 5.0 | 3.0 | 2.36 | 312.0 | | | | | 16.20 | 2.20 | 2.20 | 0.005 | 14.00 | 14.01 | | | 0.75 | 1.00 | | 14 | | | | | | | | | | | | |
| DP-I07-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 19.4 | 5.8 | 17 | 2.2 | 170.7 | | | | | 1.28 | 0.42 | 0.38 | 0.041 | 0.86 | 0.90 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 19.4 | 5.8 | 17 | 2.2 | 170.7 | | | | | 1.28 | 0.42 | 0.38 | 0.041 | 0.86 | 0.90 | | | | | | | | | | | | | | | | | | |
| | MAX | 19.4 | 5.8 | 17 | 2.2 | 170.7 | | | | | 1.28 | 0.42 | 0.38 | 0.041 | 0.86 | 0.90 | | | | | | | | | | | | | | | | | | |
| DP-I08-5 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.0 | 6.5 | 15 | 4.69 | 191.5 | | | | | 2.44 | 2.10 | 0.90 | 1.20 | 0.34 | 1.54 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.0 | 6.5 | 15 | 4.69 | 191.5 | | | | | 2.44 | 2.10 | 0.90 | 1.20 | 0.34 | 1.54 | | | | | | | | | | | | | | | | | | |
| | MAX | 23.0 | 6.5 | 15 | 4.69 | 191.5 | | | | | 2.44 | 2.10 | 0.90 | 1.20 | 0.34 | 1.54 | | | | | | | | | | | | | | | | | | |
| DPI09-11 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.5 | 5.1 | 3.0 | 0.77 | 180.6 | | | | | 2.22 | 0.72 | 0.72 | 0.005 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.5 | 5.1 | 3.0 | 0.77 | 180.6 | | | | | 2.22 | 0.72 | 0.72 | 0.005 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.5 | 5.1 | 3.0 | 0.77 | 180.6 | | | | | 2.22 | 0.72 | 0.72 | 0.005 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | | |
| DP-I10-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 20.2 | 6.2 | 27 | 5.10 | 173.4 | | | | | 1.75 | 1.40 | 0.74 | 0.66 | 0.35 | 1.01 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 20.2 | 6.2 | 27 | 5.10 | 173.4 | | | | | 1.75 | 1.40 | 0.74 | 0.66 | 0.35 | 1.01 | | | | | | | | | | | | | | | | | | |
| | MAX | 20.2 | 6.2 | 27 | 5.10 | 173.4 | | | | | 1.75 | 1.40 | 0.74 | 0.66 | 0.35 | 1.01 | | | | | | | | | | | | | | | | | | |
| DP-I11-10 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.4 | 5.7 | 17 | 0.90 | 166.8 | | | | | 1.03 | 0.64 | 0.38 | 0.26 | 0.39 | 0.65 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.4 | 5.7 | 17 | 0.90 | 166.8 | | | | | 1.03 | 0.64 | 0.38 | 0.26 | 0.39 | 0.65 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.4 | 5.7 | 17 | 0.90 | 166.8 | | | | | 1.03 | 0.64 | 0.38 | 0.26 | 0.39 | 0.65 | | | | | | | | | | | | | | | | | | |



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# Table G.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 ml) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-I12-6 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.3 | 5.2 | 11 | 1.14 | 132.8 | | | | | 7.77 | 0.67 | 0.67 | 0.005 | 7.10 | 7.11 | | | | | | 4.6 | | | | | | | | | | | | |
| | STD. DEV. | 3.3 | 0.6 | | 1.04 | 7.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.9 | 4.7 | 11 | 0.40 | 127.6 | | | | | 7.77 | 0.67 | 0.67 | 0.005 | 7.10 | 7.11 | | | | | | 4.6 | | | | | | | | | | | | |
| | MAX | 26.6 | 5.6 | 11 | 1.87 | 138.0 | | | | | 7.77 | 0.67 | 0.67 | 0.005 | 7.10 | 7.11 | | | | | | 4.6 | | | | | | | | | | | | |
| DP-J08-6 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.5 | 6.0 | 15 | 2.90 | 161.7 | | | | | 3.75 | 3.70 | 0.70 | 3.00 | 0.05 | 3.05 | | | | | | 4.3 | | | | | | | | | | | | |
| | STD. DEV. | 5.4 | 0.1 | | 0.28 | 30.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 19.7 | 5.9 | 15 | 2.70 | 140.3 | | | | | 3.75 | 3.70 | 0.70 | 3.00 | 0.05 | 3.05 | | | | | | 4.3 | | | | | | | | | | | | |
| | MAX | 27.3 | 6.0 | 15 | 3.10 | 183.0 | | | | | 3.75 | 3.70 | 0.70 | 3.00 | 0.05 | 3.05 | | | | | | 4.3 | | | | | | | | | | | | |
| DP-J09-12 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.4 | 4.8 | 2.0 | 0.61 | 178.0 | | | | | 1.55 | 0.45 | 0.45 | 0.005 | 1.10 | 1.11 | | | | | | 5.2 | | | | | | | | | | | | |
| | STD. DEV. | 3.3 | 0.0 | | 0.29 | 15.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.1 | 4.8 | 2.0 | 0.40 | 167.0 | | | | | 1.55 | 0.45 | 0.45 | 0.005 | 1.10 | 1.11 | | | | | | 5.2 | | | | | | | | | | | | |
| | MAX | 25.7 | 4.8 | 2.0 | 0.81 | 189.0 | | | | | 1.55 | 0.45 | 0.45 | 0.005 | 1.10 | 1.11 | | | | | | 5.2 | | | | | | | | | | | | |
| DP-J09-14 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.7 | 4.6 | 2.5 | 1.44 | 235.7 | | | | | 6.06 | 0.61 | 0.60 | 0.005 | 5.45 | 5.46 | | | | | | 7.8 | | | | | | | | | | | | |
| | STD. DEV. | 1.8 | 0.2 | 0.7 | 1.62 | 11.9 | | | | | 3.02 | 0.26 | 0.26 | 0.000 | 2.76 | 2.76 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.4 | 4.5 | 2.0 | 0.30 | 226.0 | | | | | 3.92 | 0.42 | 0.42 | 0.005 | 3.50 | 3.51 | | | | | | 7.8 | | | | | | | | | | | | |
| | MAX | 24.8 | 4.8 | 3.0 | 3.29 | 249.0 | | | | | 8.19 | 0.79 | 0.79 | 0.005 | 7.40 | 7.41 | | | | | | 7.8 | | | | | | | | | | | | |
| DP-J09-20 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.1 | 4.6 | 4.0 | 0.43 | 366.5 | | | | | 18.20 | 1.20 | 1.20 | 0.005 | 17.00 | 17.01 | | | | 0.91 | | 13 | | | | | | | | | | | | |
| | STD. DEV. | 1.4 | 0.2 | | 0.33 | 2.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.1 | 4.4 | 4.0 | 0.20 | 365.0 | | | | | 18.20 | 1.20 | 1.20 | 0.005 | 17.00 | 17.01 | | | | 0.91 | | 13 | | | | | | | | | | | | |
| | MAX | 24.1 | 4.7 | 4.0 | 0.66 | 368.0 | | | | | 18.20 | 1.20 | 1.20 | 0.005 | 17.00 | 17.01 | | | | 0.91 | | 13 | | | | | | | | | | | | |
| DP-J09-26 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.2 | 4.8 | 3.0 | 1.15 | 300.4 | | | | | 14.05 | 1.40 | 1.40 | 0.005 | 12.65 | 12.66 | | | | | | 13 | | | | | | | | | | | | |
| | STD. DEV. | 0.8 | 0.3 | 1.4 | 1.21 | 4.9 | | | | | 5.16 | 0.42 | 0.42 | 0.000 | 4.74 | 4.74 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.5 | 4.5 | 2.0 | 0.20 | 297.0 | | | | | 10.40 | 1.10 | 1.10 | 0.005 | 9.30 | 9.31 | | | | | | 13 | | | | | | | | | | | | |
| | MAX | 24.0 | 5.0 | 4.0 | 2.51 | 306.0 | | | | | 17.70 | 1.70 | 1.70 | 0.005 | 16.00 | 16.01 | | | | | | 13 | | | | | | | | | | | | |
| DP-J10-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.0 | 5.9 | 14 | 3.48 | 186.6 | | | | | 3.4 | 2.4 | 0.0 | 2.4 | 1.0 | 3.4 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.0 | 5.9 | 14 | 3.48 | 186.6 | | | | | 3.4 | 2.4 | 0.0 | 2.4 | 1.0 | 3.4 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.0 | 5.9 | 14 | 3.48 | 186.6 | | | | | 3.4 | 2.4 | 0.0 | 2.4 | 1.0 | 3.4 | | | | | | | | | | | | | | | | | | |
| DP-J11-12 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.7 | 4.4 | 2.0 | 1.02 | 196.7 | | | | 14 | 2.65 | 0.55 | 0.55 | 0.005 | 2.10 | 2.11 | 0.010 | | | 1.1 | 0.16 | 6.3 | 2.1 | 0.01 | 0.01 | 65 | 0.05 | 16 | 0.039 | 4.2 | 0.15 | 3.8 | 2.9 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.7 | 4.4 | 2.0 | 1.02 | 196.7 | | | | 14 | 2.65 | 0.55 | 0.55 | 0.005 | 2.10 | 2.11 | 0.010 | | | 1.1 | 0.16 | 6.3 | 2.1 | 0.01 | 0.010 | 65 | 0.05 | 16 | 0.039 | 4.2 | 0.15 | 3.8 | 2.9 | |
| | MAX | 23.7 | 4.4 | 2.0 | 1.02 | 196.7 | | | | 14 | 2.65 | 0.55 | 0.55 | 0.005 | 2.10 | 2.11 | 0.010 | | | 1.1 | 0.16 | 6.3 | 2.1 | 0.01 | 0.010 | 65 | 0.05 | 16 | 0.039 | 4.2 | 0.15 | 3.8 | 2.9 | |
| DP-J12-13 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.9 | 4.8 | 4.0 | 0.92 | 243.5 | | | | | 6.21 | 0.61 | 0.61 | 0.005 | 5.60 | 5.61 | | | | | | 5.8 | | | | | | | | | | | | |
| | STD. DEV. | 1.4 | 0.2 | | 0.88 | 7.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.9 | 4.6 | 4.0 | 0.30 | 238.0 | | | | | 6.21 | 0.61 | 0.61 | 0.005 | 5.60 | 5.61 | | | | | | 5.8 | | | | | | | | | | | | |
| | MAX | 24.9 | 4.9 | 4.0 | 1.54 | 249.0 | | | | | 6.21 | 0.61 | 0.61 | 0.005 | 5.60 | 5.61 | | | | | | 5.8 | | | | | | | | | | | | |
| DP-J12-15 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.4 | 4.8 | 4.0 | 0.98 | 285.2 | | | | | 7.01 | 0.26 | 0.25 | 0.005 | 6.75 | 6.76 | | | | | | 7.3 | | | | | | | | | | | | |
| | STD. DEV. | 1.3 | 0.3 | 2.8 | 0.61 | 3.6 | | | | | 2.76 | 0.29 | 0.29 | 0.000 | 2.47 | 2.47 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.1 | 4.6 | 2.0 | 0.30 | 281.0 | | | | | 5.05 | 0.05 | 0.05 | 0.005 | 5.00 | 5.01 | | | | | | 7.3 | | | | | | | | | | | | |
| | MAX | 24.7 | 5.1 | 5.9 | 1.50 | 287.5 | | | | | 8.96 | 0.46 | 0.46 | 0.005 | 8.50 | 8.51 | | | | | | 7.3 | | | | | | | | | | | | |
| DP-J12-20 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.6 | 5.2 | 4.0 | 0.91 | 351.0 | | | | 18 | 10.1 | 1.2 | 1.16 | 0.005 | 8.9 | 8.9 | 0.11 | | 2.6 | 1.4 | 0.011 | 13 | 10 | 0.01 | 0.010 | 88 | 0.050 | 33 | 0.020 | 9.6 | 0.059 | 21 | 4.3 | |
| | STD. DEV. | 0.8 | 0.4 | 2.8 | 0.44 | 7.1 | | | | | 2.0 | 0.5 | 0.47 | 0.000 | 1.6 | 1.6 | | | | 0.14 | | 1 | | | | | | | | | | | | |
| | MIN | 22.9 | 4.9 | 2.0 | 0.40 | 342.9 | | | | 18 | 8.6 | 0.8 | 0.83 | 0.005 | 7.8 | 7.8 | 0.11 | | 2.60 | 1.30 | 0.011 | 12 | 10 | 0.01 | 0.010 | 88 | 0.050 | 33 | 0.020 | 9.6 | 0.059 | 21 | 4.3 | |
| | MAX | 24.5 | 5.6 | 5.9 | 1.20 | 356.0 | | | | 18 | 11.5 | 1.5 | 1.50 | 0.005 | 10.0 | 10.0 | 0.11 | | 2.60 | 1.50 | 0.011 | 14 | 10 | 0.01 | 0.010 | 88 | 0.050 | 33 | 0.020 | 9.6 | 0.059 | 21 | 4.3 | |
| DP-J12-27 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.5 | 4.9 | 3.0 | 0.75 | 306.7 | | | | | 15.05 | 1.05 | 1.05 | 0.005 | 14.00 | 14.01 | | | | | | 15 | | | | | | | | | | | | |
| | STD. DEV. | 0.9 | 0.2 | 1.4 | 0.49 | 3.5 | | | | | 2.76 | 0.07 | 0.07 | 0.000 | 2.83 | 2.83 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.6 | 4.7 | 2.0 | 0.20 | 303.0 | | | | | 13.10 | 1.00 | 1.00 | 0.005 | 12.00 | 12.01 | | | | | | 15 | | | | | | | | | | | | |
| | MAX | 24.4 | 5.1 | 4.0 | 1.14 | 310.0 | | | | | 17.00 | 1.10 | 1.10 | 0.005 | 16.00 | 16.01 | | | | | | 15 | | | | | | | | | | | | |
| DP-K10-7 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.8 | 5.6 | 6.9 | 2.55 | 169.9 | | | | | 2.33 | 2 | 0.4 | 1.6 | 0.33 | 1.93 | | | | | | 5.2 | | | | | | | | | | | | |
| | STD. DEV. | 2.3 | 0.6 | | 1.76 | 8.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.2 | 5.1 | 6.9 | 1.30 | 163.8 | | | | | 2.33 | 2 | 0.4 | 1.6 | 0.33 | 1.93 | | | | | | 5.2 | | | | | | | | | | | | |
| | MAX | 27.4 | 6.0 | 6.9 | 3.79 | 176.0 | | | | | 2.33 | 2 | 0.4 | 1.6 | 0.33 | 1.93 | | | | | | 5.2 | | | | | | | | | | | | |
| DP-K11-13 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.1 | 4.9 | 4.0 | 1.8 | 168.3 | | | | | 1.89 | 0.59 | 0.59 | 0.005 | 1.3 | 1.31 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.1 | 4.9 | 4.0 | 1.8 | 168.3 | | | | | 1.89 | 0.59 | 0.59 | 0.005 | 1.3 | 1.31 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.1 | 4.9 | 4.0 | 1.8 | 168.3 | | | | | 1.89 | 0.59 | 0.59 | 0.005 | 1.3 | 1.31 | | | | | | | | | | | | | | | | | | |
| DP-K12-5 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.9 | 5.2 | 6.9 | 1.05 | 69.7 | | | | 55 | 0.81 | 0.77 | 0.68 | 0.092 | 0.04 | 0.13 | 0.34 | | | 7.30 | 0.083 | 2.2 | 0.04 | 0.01 | 0.010 | 11 | 0.050 | 5.5 | 2.2 | 0.86 | 0.210 | 0.40 | 1.9 | |
| | STD. DEV. | 3.7 | 0.6 | | 0.49 | 14.6 | | | | | | | | | | | | | | | | 0.4 | | | | | | | | | | | | |
| | MIN | 22.3 | 4.7 | 6.9 | 0.70 | 59 | | | | 55 | 0.81 | 0.77 | 0.68 | 0.092 | 0.04 | 0.13 | 0.34 | | | 7.30 | 0.083 | 1.9 | 0.04 | 0.01 | 0.010 | 11 | 0.050 | 5.5 | 2.2 | 0.86 | 0.210 | 0.40 | 1.9 | |
| | MAX | 27.5 | 5.6 | 6.9 | 1.40 | 80 | | | | 55 | 0.81 | 0.77 | 0.68 | 0.092 | 0.04 | 0.13 | 0.34 | | | 7.30 | 0.083 | 2.5 | 0.04 | 0.01 | 0.010 | 11 | 0.050 | 5.5 | 2.2 | 0.86 | 0.210 | 0.40 | 1.9 | |



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Table G.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-M07-15 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.6 | 5.0 | 4.0 | 0.8 | 285.5 | | | | | 6.62 | 0.52 | 0.51 | 0.005 | 6.1 | 6.11 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.6 | 0.3 | 2.8 | 0.1 | 26.2 | | | | | 0.01 | 0.13 | 0.13 | 0.000 | 0.1 | 0.14 | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 4.8 | 2.0 | 0.7 | 267.0 | | | | | 6.61 | 0.42 | 0.42 | 0.005 | 6.0 | 6.01 | | | | | | | | | | | | | | | | | | | |
| | MAX | 23.0 | 5.2 | 5.9 | 0.8 | 304.0 | | | | | 6.62 | 0.61 | 0.61 | 0.005 | 6.2 | 6.21 | | | | | | | | | | | | | | | | | | | |
| DP-M07-21 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.7 | 4.9 | 2.0 | 0.6 | 367.6 | | | | | 13.7 | 1.2 | 1.18 | 0.0 | 12.5 | 12.5 | | | | | | 14 | | | | | | | | | | | | | |
| | STD. DEV. | 1.0 | 0.0 | 0.0 | 0.3 | 6.6 | | | | | 0.3 | 0.5 | 0.45 | 0.0 | 0.7 | 0.7 | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.5 | 4.9 | 2.0 | 0.3 | 362.0 | | | | | 13.5 | 0.9 | 0.86 | 0.005 | 12.0 | 12.0 | | | | | | 14 | | | | | | | | | | | | | |
| | MAX | 24.5 | 4.9 | 2.0 | 0.9 | 374.9 | | | | | 13.9 | 1.5 | 1.50 | 0.005 | 13.0 | 13.0 | | | | | | 14 | | | | | | | | | | | | | |
| DP-M07-27 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.5 | 5.0 | 4.0 | 0.59 | 299.2 | | | | | 9.7 | 1.5 | 1.5 | 0.0 | 8.3 | 8.3 | | | | | | 13 | | | | | | | | | | | | | |
| | STD. DEV. | 0.9 | 0.2 | 2.8 | 0.45 | 5.4 | | | | | 0.5 | 1.0 | 1.0 | 0.0 | 0.5 | 0.5 | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.5 | 4.8 | 2.0 | 0.20 | 293 | | | | | 9.34 | 0.74 | 0.74 | 0.005 | 7.9 | 7.91 | | | | | | 13 | | | | | | | | | | | | | |
| | MAX | 24.3 | 5.2 | 5.9 | 1.08 | 303 | | | | | 10.10 | 2.2 | 2.20 | 0.005 | 8.6 | 8.61 | | | | | | 13 | | | | | | | | | | | | | |
| DP-M12-10 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.5 | 5.4 | 8.9 | 1.37 | 189.3 | | | | | 1.49 | 0.60 | 0.52 | 0.083 | 0.89 | 0.97 | | | | | | 4.8 | | | | | | | | | | | | | |
| | STD. DEV. | 2.1 | 0.4 | | 0.66 | 10.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.0 | 5.1 | 8.9 | 0.90 | 161.6 | | | | | 1.49 | 0.60 | 0.52 | 0.083 | 0.89 | 0.97 | | | | | | 4.8 | | | | | | | | | | | | | |
| | MAX | 27.0 | 5.7 | 8.9 | 1.83 | 177.0 | | | | | 1.49 | 0.60 | 0.52 | 0.083 | 0.89 | 0.97 | | | | | | 4.8 | | | | | | | | | | | | | |
| DP-N12-14 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.5 | 4.7 | 2.5 | 0.80 | 173.0 | | | | | 3.06 | 0.62 | 0.62 | 0.005 | 2.44 | 2.44 | | | | | | 4.8 | | | | | | | | | | | | | |
| | STD. DEV. | 1.7 | 0.3 | 0.7 | 0.55 | 8.4 | | | | | 2.86 | 0.51 | 0.51 | 0.000 | 2.35 | 2.35 | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.1 | 4.4 | 2.0 | 0.20 | 163.4 | | | | | 1.03 | 0.26 | 0.26 | 0.005 | 0.77 | 0.78 | | | | | | 4.8 | | | | | | | | | | | | | |
| | MAX | 25.4 | 5.0 | 3.0 | 1.28 | 178.6 | | | | | 5.08 | 0.98 | 0.98 | 0.005 | 4.10 | 4.11 | | | | | | 4.8 | | | | | | | | | | | | | |
| DP-N12-18 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.2 | 4.9 | 4.0 | 0.705 | 248.5 | | | | | 7.2 | 1.1 | 1.1 | 0.005 | 6.1 | 6.11 | | | | | | 6.2 | | | | | | | | | | | | | |
| | STD. DEV. | 1.41421 | 0.28284271 | | 0.5727565 | 2.121320344 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.2 | 4.7 | 4.0 | 0.3 | 247 | | | | | 7.2 | 1.1 | 1.1 | 0.005 | 6.1 | 6.11 | | | | | | 6.2 | | | | | | | | | | | | | |
| | MAX | 25.2 | 5.1 | 4.0 | 1.11 | 250 | | | | | 7.2 | 1.1 | 1.1 | 0.005 | 6.1 | 6.11 | | | | | | 6.2 | | | | | | | | | | | | | |
| DP-N12-21 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.5 | 5.0 | 4.4 | 1.05 | 297.4 | | | | 10 | 5.7 | 0.61 | 0.61 | 0.005 | 5.13 | 5.14 | | | 2.6 | 1.0 | 0.2 | 9.4 | 5.1 | 0.01 | 0.025 | 84 | 0.05 | 32 | 0.04 | 8.2 | 0.09 | 15 | 4.3 | | |
| | STD. DEV. | 1.3 | 0.2 | 2.1 | 0.86 | 16.1 | | | | | 1.0 | 0.08 | 0.08 | 0.000 | 1.05 | 1.05 | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.3 | 4.8 | 2.0 | 0.20 | 279.0 | | | | 10 | 4.7 | 0.54 | 0.54 | 0.005 | 4.10 | 4.11 | | | 2.6 | 1.0 | 0.2 | 9.4 | 5.1 | 0.01 | 0.025 | 84 | 0.05 | 32 | 0.04 | 8.2 | 0.09 | 15 | 4.3 | | |
| | MAX | 24.9 | 5.2 | 5.9 | 1.91 | 309.0 | | | | 10 | 6.7 | 0.69 | 0.69 | 0.005 | 6.20 | 6.21 | | | 2.6 | 1.0 | 0.2 | 9.4 | 5.1 | 0.01 | 0.025 | 84 | 0.05 | 32 | 0.04 | 8.2 | 0.09 | 15 | 4.3 | | |
| DP-N12-24 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.4 | 4.9 | 4.9 | 0.44 | 351.0 | | | | | 13.3 | 1.3 | 1.30 | 0.005 | 12.00 | 12.01 | | | | | | 16 | | | | | | | | | | | | | |
| | STD. DEV. | 0.4 | 0.4 | | 0.48 | 4.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.1 | 4.6 | 4.9 | 0.10 | 348.0 | | | | | 13.3 | 1.3 | 1.30 | 0.005 | 12.00 | 12.01 | | | | | | 16 | | | | | | | | | | | | | |
| | MAX | 24.7 | 5.2 | 4.9 | 0.78 | 354.0 | | | | | 13.3 | 1.3 | 1.30 | 0.005 | 12.00 | 12.01 | | | | | | 16 | | | | | | | | | | | | | |
| DP-N12-27 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.4 | 4.9 | 4.0 | 1.08 | 346.2 | | | | 10 | 14.9 | 1.4 | 1.39 | 0.005 | 13.5 | 13.54 | | | 1.9 | 2.1 | 0.2 | 13 | 9.6 | 0.01 | 0.022 | 84.0 | 0.05 | 32.0 | 0.04 | 11.0 | 0.043 | 22 | 5.2 | | |
| | STD. DEV. | 1.6 | 0.2 | 1.8 | 1.22 | 17.1 | | | | | 6.0 | 0.4 | 0.41 | 0.000 | 5.6 | 5.64 | | | 0.5 | 0.1 | | | | | | | | | | | | | | | |
| | MIN | 21.6 | 4.7 | 2.0 | 0.10 | 331.6 | | | | 10 | 11.0 | 1.0 | 0.99 | 0.005 | 9.6 | 9.61 | | | 1.5 | 2.0 | 0.2 | 13 | 9.6 | 0.01 | 0.022 | 84.0 | 0.05 | 32.0 | 0.04 | 11.0 | 0.043 | 22 | 5.2 | | |
| | MAX | 24.6 | 5.1 | 5.2 | 2.45 | 365.0 | | | | 10 | 21.8 | 1.8 | 1.80 | 0.005 | 20.0 | 20.01 | | | 2.2 | 2.2 | 0.2 | 13 | 9.6 | 0.01 | 0.022 | 84.0 | 0.05 | 32.0 | 0.04 | 11.0 | 0.043 | 22 | 5.2 | | |
| DP-O10-12 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.0 | 4.3 | 2.0 | 1.22 | 186.2 | | | | | 0.19 | 0.14 | 0.14 | 0.005 | 0.05 | 0.06 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.3 | 0.0 | 0.0 | 0.13 | 0.4 | | | | | 0.04 | 0.06 | 0.06 | 0.000 | 0.01 | 0.01 | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.1 | 4.3 | 2.0 | 1.13 | 185.9 | | | | | 0.16 | 0.10 | 0.10 | 0.005 | 0.04 | 0.05 | | | | | | | | | | | | | | | | | | | |
| | MAX | 22.9 | 4.3 | 2.0 | 1.31 | 186.4 | | | | | 0.22 | 0.18 | 0.18 | 0.005 | 0.06 | 0.07 | | | | | | | | | | | | | | | | | | | |
| DP-O10-18 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.6 | 5.0 | 4.0 | 0.84 | 309.2 | | | | | 7.07 | 1.32 | 1.32 | 0.005 | 5.75 | 5.76 | | | | | | 10 | | | | | | | | | | | | | |
| | STD. DEV. | 1.5 | 0.3 | 2.8 | 0.18 | 22.5 | | | | | 3.58 | 1.10 | 1.10 | 0.000 | 2.47 | 2.47 | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 4.8 | 2.0 | 0.70 | 294.0 | | | | | 4.54 | 0.54 | 0.54 | 0.005 | 4.00 | 4.01 | | | | | | 10 | | | | | | | | | | | | | |
| | MAX | 25.1 | 5.3 | 5.9 | 1.04 | 335.0 | | | | | 9.60 | 2.10 | 2.10 | 0.005 | 7.50 | 7.51 | | | | | | 10 | | | | | | | | | | | | | |
| DP-O10-24 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.6 | 4.7 | 2.5 | 0.65 | 303.1 | | | | | 10.3 | 2.25 | 2.24 | 0.0050 | 8.04 | 8.04 | | | | | | 15 | | | | | | | | | | | | | |
| | STD. DEV. | 1.6 | 0.5 | 0.7 | 0.33 | 104.7 | | | | | 14.3 | 3.05 | 3.05 | 0.0000 | 11.26 | 11.26 | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.8 | 4.2 | 2.0 | 0.30 | 182.2 | | | | | 0.2 | 0.09 | 0.09 | 0.0050 | 0.07 | 0.08 | | | | | | 15 | | | | | | | | | | | | | |
| | MAX | 24.7 | 5.1 | 3.0 | 0.95 | 366.0 | | | | | 20.4 | 4.40 | 4.40 | 0.0050 | 16.00 | 16.01 | | | | | | 15 | | | | | | | | | | | | | |
| DP-Q15-15 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.7 | 4.8 | 2.5 | 1.46 | 294.2 | | | | | 3.54 | 0.34 | 0.34 | 0.005 | 3.20 | 3.21 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.4 | 0.1 | 0.7 | 1.20 | 13.0 | | | | | 2.47 | 0.07 | 0.07 | 0.000 | 2.40 | 2.40 | | | | | | | | | | | | | | | | | | | |
| | MIN | 20.7 | 4.7 | 2.0 | 0.61 | 285.0 | | | | | 1.79 | 0.29 | 0.29 | 0.005 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | | | |
| | MAX | 22.7 | 4.8 | 3.0 | 2.31 | 303.4 | | | | | 5.29 | 0.39 | 0.39 | 0.005 | 4.90 | 4.91 | | | | | | | | | | | | | | | | | | | |
| DP-Q15-21 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.8 | 5.0 | 4.0 | 0.82 | 333.5 | | | | | 7.41 | 0.66 | 0.65 | 0.005 | 6.75 | 6.76 | | | | | | 13 | | | | | | | | | | | | | |
| | STD. DEV. | 1.3 | 0.2 | 2.8 | 0.58 | 21.3 | | | | | 2.13 | 0.35 | 0.35 | 0.000 | 2.47 | 2.47 | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.6 | 4.8 | 2.0 | 0.30 | 319.0 | | | | | 5.90 | 0.41 | 0.41 | 0.005 | 5.00 | 5.01 | | | | | | 13 | | | | | | | | | | | | | |
| | MAX | 25.2 | 5.2 | 5.9 | 1.44 | 358.0 | | | | | 8.91 | 0.90 | 0.90 | 0.005 | 8.50 | 8.51 | | | | | | 13 | | | | | | | | | | | | | |



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Table G.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-Q15-26 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.3 | 5.0 | 4.0 | 0.90 | 347.3 | | | | | 8.30 | 0.80 | 0.77 | 0.021 | 7.50 | 7.52 | | | | | | 15 | | | | | | | | | | | | |
| | STD. DEV. | 1.9 | 0.2 | 2.8 | 0.47 | 32.9 | | | | | 1.00 | 0.13 | 0.11 | 0.023 | 1.13 | 1.11 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.5 | 4.8 | 2.0 | 0.40 | 324.0 | | | | | 7.59 | 0.70 | 0.70 | 0.005 | 6.70 | 6.74 | | | | | | 15 | | | | | | | | | | | | |
| | MAX | 25.3 | 5.2 | 5.9 | 1.33 | 385.0 | | | | | 9.00 | 0.89 | 0.85 | 0.037 | 8.30 | 8.31 | | | | | | 15 | | | | | | | | | | | | |
| **Standpipe Piezometers** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PZ01-BKG-9 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.8 | 4.6 | 2.0 | 6.78 | 146.8 | | | | | 0.37 | 0.36 | 0.25 | 0.11 | 0.01 | 0.12 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.8 | 4.6 | 2.0 | 6.78 | 146.8 | | | | | 0.37 | 0.36 | 0.25 | 0.11 | 0.01 | 0.12 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.8 | 4.6 | 2.0 | 6.78 | 146.8 | | | | | 0.37 | 0.36 | 0.25 | 0.11 | 0.01 | 0.12 | | | | | | | | | | | | | | | | | | |
| PZ02-P02-9 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.4 | 4.7 | 2.0 | 4.63 | 73.6 | | | | | 1.73 | 0.96 | 0.96 | 0.005 | 0.77 | 0.78 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.4 | 4.7 | 2.0 | 4.63 | 73.6 | | | | | 1.73 | 0.96 | 0.96 | 0.005 | 0.77 | 0.78 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.4 | 4.7 | 2.0 | 4.63 | 73.6 | | | | | 1.73 | 0.96 | 0.96 | 0.005 | 0.77 | 0.78 | | | | | | | | | | | | | | | | | | |
| PZ03-H11-6 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 27.2 | 4.7 | 2.0 | 3.34 | 151.7 | | | | 10 | 2.50 | 1.32 | 2.29 | 0.008 | 1.18 | 1.18 | | | 4.8 | 3.4 | 0.14 | 6.2 | 0.85 | 0.01 | 0.01 | 44 | 0.05 | 11 | 0.02 | 2.7 | 0.05 | 4.8 | 5.8 | |
| | STD. DEV. | 1.8 | 0.2 | 0.0 | 0.48 | 18.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.9 | 4.5 | 2.0 | 3.00 | 138.4 | | | | 10 | 1.19 | 0.34 | 2.29 | 0.006 | 0.85 | 0.86 | | | 4.8 | 3.4 | 0.14 | 6.2 | 0.85 | 0.01 | 0.01 | 44 | 0.05 | 11 | 0.02 | 2.7 | 0.05 | 4.8 | 5.8 | |
| | MAX | 28.4 | 4.8 | 2.0 | 3.68 | 165.0 | | | | 10 | 3.80 | 2.30 | 2.29 | 0.010 | 1.50 | 1.51 | | | 4.8 | 3.4 | 0.14 | 6.2 | 0.85 | 0.01 | 0.01 | 44 | 0.05 | 11 | 0.02 | 2.7 | 0.05 | 4.8 | 5.8 | |
| PZ04-BKG-9 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.1 | 5.4 | 7.5 | 3.05 | 83.7 | | | | 28 | 0.39 | 0.23 | 0.21 | 0.022 | 0.16 | 0.18 | 0.021 | | 2.9 | 2.7 | 0.091 | 2.5 | 0.3 | 0.01 | 0.010 | 12.0 | 0.050 | 5.6 | 0.066 | 1.6 | 0.1 | 0.9 | 1.8 | |
| | STD. DEV. | 2.5 | 0.2 | 0.8 | 1.70 | 14.4 | | | | | 0.37 | 0.17 | 0.15 | 0.023 | 0.21 | 0.23 | | | | 0.1 | | 1.1 | | | | | | | | | | | | |
| | MIN | 21.6 | 5.3 | 6.9 | 1.10 | 72.9 | | | | 28 | 0.12 | 0.11 | 0.11 | 0.005 | 0.01 | 0.02 | 0.021 | | 2.9 | 2.6 | 0.091 | 1.7 | 0.3 | 0.01 | 0.010 | 12 | 0.050 | 5.6 | 0.066 | 1.6 | 0.069 | 0.94 | 1.8 | |
| | MAX | 25.9 | 5.6 | 8.1 | 4.20 | 100 | | | | 28 | 0.65 | 0.35 | 0.31 | 0.038 | 0.30 | 0.34 | 0.021 | | 2.9 | 2.8 | 0.091 | 3.3 | 0.3 | 0.01 | 0.010 | 12 | 0.050 | 5.6 | 0.066 | 1.6 | 0.069 | 0.94 | 1.8 | |
| PZ05-BKG-9 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.8 | 5.1 | 6.9 | 4.38 | 98.8 | | | | | 4.80 | 1.20 | 1.17 | 0.034 | 3.60 | 3.63 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.8 | 5.1 | 6.9 | 4.38 | 98.8 | | | | | 4.80 | 1.20 | 1.17 | 0.034 | 3.60 | 3.63 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.8 | 5.1 | 6.9 | 4.38 | 98.8 | | | | | 4.80 | 1.20 | 1.17 | 0.034 | 3.60 | 3.63 | | | | | | | | | | | | | | | | | | |
| PZ06-BKG-12 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.1 | 4.7 | 3.0 | 5.41 | 59.4 | | | | | 0.26 | 0.25 | 0.21 | 0.04 | 0.01 | 0.05 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.1 | 4.7 | 3.0 | 5.41 | 59.4 | | | | | 0.26 | 0.25 | 0.21 | 0.04 | 0.01 | 0.05 | | | | | | | | | | | | | | | | | | |
| | MAX | 23.1 | 4.7 | 3.0 | 5.41 | 59.4 | | | | | 0.26 | 0.25 | 0.21 | 0.04 | 0.01 | 0.05 | | | | | | | | | | | | | | | | | | |
| PZ07-D05-7 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 26.3 | 4.7 | 3.0 | 1.45 | 254.8 | | | | | 5.20 | 1.60 | 1.60 | 0.005 | 3.6 | 3.61 | | | | | | 21 | | | | | | | | | | | | |
| | STD. DEV. | 1.4 | 0.0 | | 1.49 | 47.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.3 | 4.7 | 3.0 | 0.39 | 221.6 | | | | | 5.20 | 1.60 | 1.60 | 0.005 | 3.6 | 3.61 | | | | | | 21 | | | | | | | | | | | | |
| | MAX | 27.3 | 4.7 | 3.0 | 2.50 | 288.0 | | | | | 5.20 | 1.60 | 1.60 | 0.005 | 3.6 | 3.61 | | | | | | 21 | | | | | | | | | | | | |
| PZ08-FG7-12 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.6 | 4.8 | 2.0 | 3.33 | 126.9 | | | | | 2.13 | 1.30 | 1.30 | 0.005 | 0.83 | 0.84 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.6 | 4.8 | 2.0 | 3.33 | 126.9 | | | | | 2.13 | 1.30 | 1.30 | 0.005 | 0.83 | 0.84 | | | | | | | | | | | | | | | | | | |
| | MAX | 23.6 | 4.8 | 2.0 | 3.33 | 126.9 | | | | | 2.13 | 1.30 | 1.30 | 0.005 | 0.83 | 0.84 | | | | | | | | | | | | | | | | | | |
| PZ09-I08-5 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.9 | 5.2 | 2.0 | 6.03 | 94.2 | | | | | 1.99 | 1.40 | 1.40 | 0.005 | 0.59 | 0.60 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.9 | 5.2 | 2.0 | 6.03 | 94.2 | | | | | 1.99 | 1.40 | 1.40 | 0.005 | 0.59 | 0.60 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.9 | 5.2 | 2.0 | 6.03 | 94.2 | | | | | 1.99 | 1.40 | 1.40 | 0.005 | 0.59 | 0.60 | | | | | | | | | | | | | | | | | | |
| PZ10-CD6-13 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.6 | 6.0 | 26 | 2.85 | 524.0 | | | | | 7.70 | 2.50 | 2.45 | 0.050 | 5.20 | 5.25 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.6 | 6.0 | 26 | 2.85 | 524.0 | | | | | 7.70 | 2.50 | 2.45 | 0.050 | 5.20 | 5.25 | | | | | | | | | | | | | | | | | | |
| | MAX | 25.6 | 6.0 | 26 | 2.85 | 524.0 | | | | | 7.70 | 2.50 | 2.45 | 0.050 | 5.20 | 5.25 | | | | | | | | | | | | | | | | | | |
| PZ11-E09-10 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 26.7 | 5.5 | 11 | 2.07 | 453.9 | | | | 10 | 21.7 | 2.2 | 1.61 | 0.30 | 20 | 19.8 | | | 2.2 | 1.5 | 0.04 | 36 | 18 | 0.01 | 0.01 | 59 | 0.09 | 34 | 0.29 | 8.9 | 0.23 | 10 | 30 | |
| | STD. DEV. | 1.3 | 0.2 | 1.8 | 0.4 | 0.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.8 | 5.3 | 9 | 1.80 | 453.8 | | | | 10 | 20.3 | 2.1 | 1.61 | 0.10 | 18 | 18.1 | | | 2.2 | 1.5 | 0.04 | 36 | 18 | 0.01 | 0.01 | 59 | 0.09 | 34 | 0.29 | 8.9 | 0.23 | 10 | 30 | |
| | MAX | 27.6 | 5.6 | 12 | 2.33 | 454.0 | | | | 10 | 23.1 | 2.3 | 1.61 | 0.49 | 21 | 21.5 | | | 2.2 | 1.5 | 0.04 | 36 | 18 | 0.01 | 0.01 | 59 | 0.09 | 34 | 0.29 | 8.9 | 0.23 | 10 | 30 | |
| PZ13-F04-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.4 | 5.6 | 7.9 | 2.48 | 125.5 | | | | | 2.15 | 0.75 | 0.71 | 0.037 | 1.40 | 1.44 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.4 | 5.6 | 7.9 | 2.48 | 125.5 | | | | | 2.15 | 0.75 | 0.71 | 0.037 | 1.40 | 1.44 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.4 | 5.6 | 7.9 | 2.48 | 125.5 | | | | | 2.15 | 0.75 | 0.71 | 0.037 | 1.40 | 1.44 | | | | | | | | | | | | | | | | | | |
| PZ14-G13-7 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.5 | 5.8 | 15 | 1.04 | 246.1 | | | | | 7.59 | 0.19 | 0.19 | 0.005 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.5 | 5.8 | 15 | 1.04 | 246.1 | | | | | 7.59 | 0.19 | 0.19 | 0.005 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.5 | 5.8 | 15 | 1.04 | 246.1 | | | | | 7.59 | 0.19 | 0.19 | 0.005 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | | |
| PZ15-A11-6 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 27.1 | 5.3 | 4.9 | 2.8 | 147.5 | | | | | 0.88 | 0.61 | 0.57 | 0.041 | 0.27 | 0.31 | | | | | | 17 | | | | | | | | | | | | |
| | STD. DEV. | 3.3 | 0.1 | | 0.4 | 67.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.8 | 5.2 | 4.9 | 2.5 | 100.0 | | | | | 0.88 | 0.61 | 0.57 | 0.041 | 0.27 | 0.31 | | | | | | 17 | | | | | | | | | | | | |
| | MAX | 29.4 | 5.3 | 4.9 | 3.1 | 195.0 | | | | | 0.88 | 0.61 | 0.57 | 0.041 | 0.27 | 0.31 | | | | | | 17 | | | | | | | | | | | | |



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# Table G.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4$ | B | Ca | Fe | Mg | Mn | K | Na | |
| PZ16-C12-28 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 26.0 | 5.6 | 10.5 | 0.62 | 297.6 | | | | | 1.25 | 1.01 | 0.99 | 0.017 | 0.24 | 0.26 | | | | | | 19 | | | | | | | | | | | | |
| | STD. DEV. | 1.4 | 0.1 | 0.8 | 0.11 | 7.4 | | | | | 1.36 | 1.26 | 1.26 | 0.001 | 0.10 | 0.10 | | | | | | | | | | | | | | | | | | |
| | MIN | 25.1 | 5.5 | 9.9 | 0.50 | 291.8 | | | | | 0.29 | 0.12 | 0.10 | 0.016 | 0.17 | 0.19 | | | | | | 19 | | | | | | | | | | | | |
| | MAX | 27.6 | 5.7 | 11 | 0.70 | 306.0 | | | | | 2.21 | 1.90 | 1.88 | 0.017 | 0.31 | 0.33 | | | | | | 19 | | | | | | | | | | | | |
| PZ17-I15-26 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.5 | 5.1 | 3.6 | 1.53 | 302.7 | | | | | 13.74 | 0.39 | 0.38 | 0.006 | 13.35 | 13.36 | | | 4.0 | 1.0 | | 14 | | | | | | | | | | | | |
| | STD. DEV. | 1.7 | 0.5 | 0.8 | 0.97 | 7.5 | | | | | 4.86 | 0.30 | 0.30 | 0.001 | 5.16 | 5.16 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.1 | 4.8 | 3.0 | 0.52 | 294.1 | | | | | 10.30 | 0.18 | 0.17 | 0.005 | 9.70 | 9.71 | | | 4.0 | 1.0 | | 14 | | | | | | | | | | | | |
| | MAX | 25.4 | 5.7 | 4.1 | 2.46 | 307.1 | | | | | 17.18 | 0.60 | 0.60 | 0.006 | 17.00 | 17.01 | | | 4.0 | 1.0 | | 14 | | | | | | | | | | | | |
| PZ18-R12-26 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.0 | 5.1 | 8.9 | 0.75 | 290.1 | | | | | 15.40 | 3.40 | 3.38 | 0.022 | 12.00 | 12.02 | | | | | | 13 | | | | | | | | | | | | |
| | STD. DEV. | 2.3 | 0.1 | | 0.21 | 53.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.4 | 5.0 | 8.9 | 0.60 | 252.0 | | | | | 15.40 | 3.40 | 3.38 | 0.022 | 12.00 | 12.02 | | | | | | 13 | | | | | | | | | | | | |
| | MAX | 26.6 | 5.1 | 8.9 | 0.89 | 328.1 | | | | | 15.40 | 3.40 | 3.38 | 0.022 | 12.00 | 12.02 | | | | | | 13 | | | | | | | | | | | | |
| PZ19-G10-26 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.5 | 5.1 | 4.0 | 0.84 | 298.1 | | | | | 17.90 | 0.90 | 0.89 | 0.014 | 17.00 | 17.01 | | | | | | 15 | | | | | | | | | | | | |
| | STD. DEV. | 0.6 | 0.1 | | 0.33 | 5.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.1 | 5.0 | 4.0 | 0.60 | 294.0 | | | | | 17.90 | 0.90 | 0.89 | 0.014 | 17.00 | 17.01 | | | | | | 15 | | | | | | | | | | | | |
| | MAX | 23.9 | 5.1 | 4.0 | 1.07 | 302.1 | | | | | 17.90 | 0.90 | 0.89 | 0.014 | 17.00 | 17.01 | | | | | | 15 | | | | | | | | | | | | |
| PZ20-G10-15 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.0 | 5.5 | 15 | 2.29 | 328.1 | | | | | 22.70 | 3.70 | 3.70 | 0.005 | 19.00 | 19.01 | | | | | | 17 | | | | | | | | | | | | |
| | STD. DEV. | 2.5 | 0.2 | | 0.45 | 39.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.2 | 5.3 | 15 | 1.97 | 300.0 | | | | | 22.70 | 3.70 | 3.70 | 0.005 | 19.00 | 19.01 | | | | | | 17 | | | | | | | | | | | | |
| | MAX | 25.7 | 5.6 | 15 | 2.60 | 356.1 | | | | | 22.70 | 3.70 | 3.70 | 0.005 | 19.00 | 19.01 | | | | | | 17 | | | | | | | | | | | | |
| PZ21-E11-26 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.2 | 5.1 | 4.0 | 0.63 | 291.8 | | | | | 9.85 | 0.55 | 0.54 | 0.012 | 9.30 | 9.31 | | | | | | 17 | | | | | | | | | | | | |
| | STD. DEV. | 0.8 | 0.2 | | 0.38 | 5.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.6 | 4.9 | 4.0 | 0.36 | 288.0 | | | | | 9.85 | 0.55 | 0.54 | 0.012 | 9.30 | 9.31 | | | | | | 17 | | | | | | | | | | | | |
| | MAX | 24.8 | 5.2 | 4.0 | 0.90 | 295.6 | | | | | 9.85 | 0.55 | 0.54 | 0.012 | 9.30 | 9.31 | | | | | | 17 | | | | | | | | | | | | |
| PZ22-E11-15 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.4 | 5.3 | 8.9 | 1.36 | 416.0 | | | | | 5.60 | 1.40 | 1.39 | 0.007 | 4.20 | 4.21 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.4 | 5.3 | 8.9 | 1.36 | 416.0 | | | | | 5.60 | 1.40 | 1.39 | 0.007 | 4.20 | 4.21 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.4 | 5.3 | 8.9 | 1.36 | 416.0 | | | | | 5.60 | 1.40 | 1.39 | 0.007 | 4.20 | 4.21 | | | | | | | | | | | | | | | | | | |
| PZ23-D09-27 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.4 | 5.4 | 5.9 | 0.18 | 306.2 | | | | | 8.50 | 1.20 | 1.20 | 0.005 | 7.30 | 7.31 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.4 | 5.4 | 5.9 | 0.18 | 306.2 | | | | | 8.50 | 1.20 | 1.20 | 0.005 | 7.30 | 7.31 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.4 | 5.4 | 5.9 | 0.18 | 306.2 | | | | | 8.50 | 1.20 | 1.20 | 0.005 | 7.30 | 7.31 | | | | | | | | | | | | | | | | | | |
| PZ24-BKG-26 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.9 | 5.0 | 4.1 | 0.63 | 287.7 | | | | 12 | 11.8 | 1.3 | 1.2 | 0.0 | 10.6 | 10.6 | 1.2 | | 2.5 | 0.9 | 0.01 | 17 | 9.10 | 0.01 | 0.01 | 43.00 | 0.050 | 21.0 | 0.11 | 9.7 | 0.2 | 8.9 | 7.7 | |
| | STD. DEV. | 0.7 | 0.1 | 0.1 | 0.12 | 14.5 | | | | | 1.1 | 0.9 | 0.9 | 0.0 | 2.1 | 2.0 | | | 1.6 | 0.2 | | 3 | | | | | | | | | | | | |
| | MIN | 23.1 | 4.9 | 4.0 | 0.50 | 270.9 | | | | 12 | 11.00 | 0.6 | 0.60 | 0.005 | 9.1 | 9.16 | 1.2 | | 1.3 | 0.79 | 0.013 | 15 | 9.1 | 0.01 | 0.010 | 43 | 0.050 | 21 | 0.11 | 9.7 | 0.17 | 8.9 | 7.7 | |
| | MAX | 24.4 | 5.1 | 4.1 | 0.70 | 296.2 | | | | 12 | 12.60 | 1.9 | 1.84 | 0.057 | 12 | 12.01 | 1.2 | | 3.6 | 1.1 | 0.013 | 19 | 9.1 | 0.01 | 0.010 | 43 | 0.050 | 21 | 0.11 | 9.7 | 0.17 | 8.9 | 7.7 | |
| PZ25-A6.5-10 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.0 | 6.0 | 48 | 5.7 | 770.0 | | | | | 22.3 | 2.3 | 2.3 | 0.022 | 20.0 | 20.0 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.0 | 6.0 | 48 | 5.7 | 770.0 | | | | | 22.3 | 2.3 | 2.3 | 0.022 | 20.0 | 20.0 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.0 | 6.0 | 48 | 5.7 | 770.0 | | | | | 22.3 | 2.3 | 2.3 | 0.022 | 20.0 | 20.0 | | | | | | | | | | | | | | | | | | |
| **Blanks** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FB-DI | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 16.8 | 5.9 | 2.0 | 9.00 | 1.3 | | | | | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | | | | | 0.05 | | | | | | | | | | | | |
| | STD. DEV. | 6.6 | 0.3 | 0.0 | 0.63 | 0.2 | | | | | 0.00 | 0.00 | 0.00 | 0.000 | 0.00 | 0.00 | | | | | | | | | | | | | | | | | | |
| | MIN | 12.1 | 5.7 | 2.0 | 8.55 | 1.2 | | | | | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | | | | | 0.05 | | | | | | | | | | | | |
| | MAX | 21.5 | 6.1 | 2.0 | 9.44 | 1.5 | | | | | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | | | | | 0.05 | | | | | | | | | | | | |
| FB-TAP | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 16.6 | 7.3 | 140 | 9.60 | 438.5 | | | | | 0.08 | 0.05 | 0.05 | 0.005 | 0.03 | 0.04 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 9.9 | 0.5 | 0 | 2.08 | 9.2 | | | | | 0.03 | 0.00 | 0.00 | 0.000 | 0.03 | 0.03 | | | | | | | | | | | | | | | | | | |
| | MIN | 9.6 | 7.0 | 140 | 8.13 | 432.0 | | | | | 0.06 | 0.05 | 0.05 | 0.005 | 0.01 | 0.02 | | | | | | | | | | | | | | | | | | |
| | MAX | 23.6 | 7.7 | 140 | 11.07 | 445.0 | | | | | 0.10 | 0.05 | 0.05 | 0.005 | 0.05 | 0.06 | | | | | | | | | | | | | | | | | | |
| Equipment Rinsate | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.7 | 6.7 | 2.0 | 5.04 | 8.2 | | | | | 0.07 | 0.05 | 0.03 | 0.02 | 0.02 | 0.04 | | | | | | 0.05 | | | | | | | | | | | | |
| | STD. DEV. | 9.4 | 0.6 | 0.0 | 2.80 | 6.1 | | | | | 0.01 | 0.00 | 0.01 | 0.015 | 0.01 | 0.03 | | | | | | | | | | | | | | | | | | |
| | MIN | 11.9 | 6.0 | 2.0 | 2.31 | 1.4 | | | | | 0.06 | 0.05 | 0.02 | 0.005 | 0.01 | 0.02 | | | | | | 0.05 | | | | | | | | | | | | |
| | MAX | 28.8 | 7.2 | 2.0 | 7.90 | 13.2 | | | | | 0.08 | 0.05 | 0.05 | 0.026 | 0.03 | 0.06 | | | | | | 0.05 | | | | | | | | | | | | |

Notes:
[1] Total Nitrogen (TN) is a calculated value equal to the sum of TKN and $NO_x$.
[2] Organic Nitrogen (ON) is a calculated value equal to the difference of TKN and $NH_3$.
[3] Total Inorganic Nitrogen (TIN) is a calculated value equal to the sum of $NH_3$ and $NO_x$.
DO - Dissolved oxygen
Gray-shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.
Yellow-shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit, value used for statistical analyses.
Blue-shaded data points indicate the number is greater than reported value.
Orange - shaded data points indicate too many colonies were present. The numberic value represents the dilution factor times the maximum reportable number of colonies.



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# Appendix H: Laboratory Report

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**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**September 9, 2011**
**Work Order: 1105413**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-AA9-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-01** | | | | | | |
| Date/Time Collected | | **06/27/11 08:28** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/27/11 15:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.6 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 08:28 | SDH |
| Water Temperature | °C | 24.5 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 08:28 | SDH |
| Specific conductance | umhos/cm | 752 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 08:28 | SDH |
| Dissolved Oxygen | mg/L | 1.3 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 08:28 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 82 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |
| Sample Description | | **DP-AA9-22** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-02** | | | | | | |
| Date/Time Collected | | **06/27/11 09:04** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/27/11 15:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.2 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 09:04 | SDH |
| Water Temperature | °C | 24.7 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 09:04 | SDH |
| Specific conductance | umhos/cm | 279 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 09:04 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 09:04 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 8.7 | EPA 300.0 | 0.20 | 0.050 | | 06/29/11 17:04 | MEJ |
| Sample Description | | **DP-AA9-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-03** | | | | | | |
| Date/Time Collected | | **06/27/11 09:16** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/27/11 15:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 09:16 | SDH |
| Water Temperature | °C | 24.7 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 09:16 | SDH |
| Specific conductance | umhos/cm | 295 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 09:16 | SDH |
| Dissolved Oxygen | mg/L | 0.7 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 09:16 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 20 | EPA 300.0 | 0.20 | 0.050 | | 06/29/11 17:04 | MEJ |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**September 9, 2011**
**Work Order: 1105413**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-C11-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-04** | | | | | | |
| Date/Time Collected | | **06/27/11 09:38** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/27/11 15:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.8 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 09:38 | SDH |
| Water Temperature | °C | 27.8 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 09:38 | SDH |
| Specific conductance | umhos/cm | 385 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 09:38 | SDH |
| Dissolved Oxygen | mg/L | 3.0 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 09:38 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.090 | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 12 I | EPA 410.4 | 25 | 10 | 07/01/11 10:00 | 07/01/11 15:00 | MMF |
| Chloride | mg/L | 31 | EPA 300.0 | 0.20 | 0.050 | | 06/29/11 15:38 | MEJ |
| Fluoride | mg/L | 0.017 I | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Nitrate (as N) | mg/L | 12 | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 09:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 09:00 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 09:00 | MEJ |
| Sulfate | mg/L | 53 | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 09:00 | MEJ |
| Total Alkalinity | mg/L | 21 | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.9 | EPA 351.2 | 0.20 | 0.05 | 07/07/11 13:56 | 07/07/11 14:48 | SMD |
| Total Organic Carbon | mg/L | 5.5 | SM 5310B | 1.0 | 0.50 | | 07/07/11 12:49 | ARM |
| Nitrate+Nitrite (N) | mg/L | 12 | EPA 300.0 | 0.08 | 0.02 | | 06/29/11 09:00 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.11 | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:14 | 07/11/11 12:27 | VWC |
| Calcium | mg/L | 30 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:33 | VWC |
| Iron | mg/L | 6.6 | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:14 | 07/06/11 17:33 | VWC |
| Magnesium | mg/L | 7.2 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:33 | VWC |
| Manganese | mg/L | 0.31 | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:14 | 07/06/11 17:33 | VWC |
| Potassium | mg/L | 7.0 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:33 | VWC |
| Sodium | mg/L | 31 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:33 | VWC |

**Short Environmental Laboratories**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 5.2 | SM 5310C | 4 | 1 | | 07/19/11 14:30 | CC |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**September 9, 2011**
**Work Order: 1105413**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **STE Lift Station** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-05** | | | | | | |
| Date/Time Collected | | **06/28/11 13:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 22 | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 270 | EPA 410.4 | 25 | 10 | 07/01/11 10:00 | 07/01/11 15:00 | MMF |
| Chloride | mg/L | 72 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |
| Fluoride | mg/L | 6.7 | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Nitrate (as N) | mg/L | 0.10 | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 13:28 | MEJ |
| Orthophosphate as P | mg/L | 9.9 | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Sulfate | mg/L | 22 | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 15:38 | MEJ |
| Total Alkalinity | mg/L | 200 | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 26 | EPA 351.2 | 0.20 | 0.05 | 07/07/11 13:56 | 07/07/11 14:48 | SMD |
| Nitrate+Nitrite (N) | mg/L | 0.10 | EPA 300.0 | 0.08 | 0.02 | | 06/29/11 15:38 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.065 I | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:14 | 07/11/11 12:31 | VWC |
| Calcium | mg/L | 56 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:44 | VWC |
| Iron | mg/L | 0.81 | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:14 | 07/06/11 17:44 | VWC |
| Magnesium | mg/L | 19 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:44 | VWC |
| Manganese | mg/L | 0.040 | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:14 | 07/06/11 17:44 | VWC |
| Potassium | mg/L | 23 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:44 | VWC |
| Sodium | mg/L | 49 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:44 | VWC |
| Sample Description | | **DP-D07-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-06** | | | | | | |
| Date/Time Collected | | **06/28/11 08:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.0 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 08:05 | SDH |
| Water Temperature | °C | 24.4 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 08:05 | SDH |
| Specific conductance | umhos/cm | 539 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 08:05 | SDH |
| Dissolved Oxygen | mg/L | 1.9 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 08:05 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 35 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D08-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-07** | | | | | | |
| Date/Time Collected | | **06/27/11 13:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/27/11 15:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.3 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 13:50 | SDH |
| Water Temperature | °C | 27.4 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 13:50 | SDH |
| Specific conductance | umhos/cm | 411 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 13:50 | SDH |
| Dissolved Oxygen | mg/L | 1.8 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 13:50 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 35 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |
| Sample Description | | **DP-D09-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-08** | | | | | | |
| Date/Time Collected | | **06/27/11 12:38** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/27/11 15:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.4 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 12:38 | SDH |
| Water Temperature | °C | 27.0 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 12:38 | SDH |
| Specific conductance | umhos/cm | 670 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 12:38 | SDH |
| Dissolved Oxygen | mg/L | 1.1 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 12:38 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.027 | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 07/01/11 10:00 | 07/01/11 15:00 | MMF |
| Chloride | mg/L | 47 | EPA 300.0 | 0.20 | 0.050 | | 06/28/11 16:50 | MEJ |
| Fluoride | mg/L | 0.11 | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 10:15 | MEJ |
| Nitrate (as N) | mg/L | 31 | EPA 300.0 | 0.04 | 0.01 | | 06/28/11 16:50 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 06/28/11 16:50 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 10:15 | MEJ |
| Sulfate | mg/L | 74 | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 10:15 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 2.8 | EPA 351.2 | 0.20 | 0.05 | 07/07/11 13:56 | 07/07/11 14:48 | SMD |
| Total Organic Carbon | mg/L | 2.8 | SM 5310B | 1.0 | 0.50 | | 07/07/11 12:49 | ARM |
| Nitrate+Nitrite (N) | mg/L | 31 | EPA 300.0 | 0.08 | 0.02 | | 06/28/11 16:50 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.12 | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:14 | 07/11/11 12:34 | VWC |
| Calcium | mg/L | 52 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:47 | VWC |
| Iron | mg/L | 0.033 I | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:14 | 07/06/11 17:47 | VWC |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D09-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-08** | | | | | | |
| Date/Time Collected | | **06/27/11 12:38** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/27/11 15:00** | | | | | | |
| Magnesium | mg/L | 14 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:47 | VWC |
| Manganese | mg/L | 0.0088 I | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:14 | 07/06/11 17:47 | VWC |
| Potassium | mg/L | 14 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:47 | VWC |
| Sodium | mg/L | 47 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:47 | VWC |
| | | **Short Environmental Laboratories** | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.4 I | SM 5310C | 4 | 1 | | 07/16/11 10:00 | CC |
| Sample Description | | **DP-D09-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-09** | | | | | | |
| Date/Time Collected | | **06/27/11 13:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/27/11 15:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.2 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 13:10 | SDH |
| Water Temperature | °C | 26.2 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 13:10 | SDH |
| Specific conductance | umhos/cm | 461 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 13:10 | SDH |
| Dissolved Oxygen | mg/L | 0.9 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 13:10 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 07/01/11 10:00 | 07/01/11 15:00 | MMF |
| Chloride | mg/L | 31 | EPA 300.0 | 0.20 | 0.050 | | 06/28/11 16:50 | MEJ |
| Fluoride | mg/L | 0.043 | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 10:15 | MEJ |
| Nitrate (as N) | mg/L | 19 | EPA 300.0 | 0.04 | 0.01 | | 06/28/11 16:50 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 06/28/11 16:50 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 10:15 | MEJ |
| Sulfate | mg/L | 59 | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 10:15 | MEJ |
| Total Alkalinity | mg/L | 12 | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 2.5 | EPA 351.2 | 0.20 | 0.05 | 07/07/11 13:56 | 07/07/11 14:48 | SMD |
| Total Organic Carbon | mg/L | 3.2 | SM 5310B | 1.0 | 0.50 | | 07/07/11 12:49 | ARM |
| Nitrate+Nitrite (N) | mg/L | 19 | EPA 300.0 | 0.08 | 0.02 | | 06/28/11 16:50 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.12 | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:14 | 07/11/11 12:38 | VWC |
| Calcium | mg/L | 35 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:51 | VWC |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**September 9, 2011**
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**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D09-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-09** | | | | | | |
| Date/Time Collected | | **06/27/11 13:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/27/11 15:00** | | | | | | |
| Iron | mg/L | 0.045 I | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:14 | 07/06/11 17:51 | VWC |
| Magnesium | mg/L | 9.3 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:51 | VWC |
| Manganese | mg/L | 0.11 | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:14 | 07/06/11 17:51 | VWC |
| Potassium | mg/L | 13 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:51 | VWC |
| Sodium | mg/L | 32 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:51 | VWC |
| | | **Short Environmental Laboratories** | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 3.3 I | SM 5310C | 4 | 1 | | 07/19/11 14:30 | CC |
| Sample Description | | **DP-D11-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-10** | | | | | | |
| Date/Time Collected | | **06/27/11 10:54** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/27/11 15:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.2 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 10:54 | SDH |
| Water Temperature | °C | 26.3 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 10:54 | SDH |
| Specific conductance | umhos/cm | 464 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 10:54 | SDH |
| Dissolved Oxygen | mg/L | 1.1 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 10:54 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 39 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |
| Sample Description | | **DP-D12-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-11** | | | | | | |
| Date/Time Collected | | **06/27/11 10:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/27/11 15:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 10:30 | SDH |
| Water Temperature | °C | 26.2 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 10:30 | SDH |
| Specific conductance | umhos/cm | 487 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 10:30 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 10:30 | SDH |
| **Inorganics** | | | | | | | | |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
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**September 9, 2011**
**Work Order: 1105413**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D12-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-11** | | | | | | |
| Date/Time Collected | | **06/27/11 10:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/27/11 15:00** | | | | | | |
| Ammonia as N | mg/L | 0.46 | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 07/01/11 10:00 | 07/01/11 15:00 | MMF |
| Chloride | mg/L | 37 | EPA 300.0 | 0.20 | 0.050 | | 06/28/11 16:50 | MEJ |
| Fluoride | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 10:15 | MEJ |
| Nitrate (as N) | mg/L | 19 | EPA 300.0 | 0.04 | 0.01 | | 06/28/11 16:50 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 06/28/11 16:50 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 10:15 | MEJ |
| Sulfate | mg/L | 52 | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 10:15 | MEJ |
| Total Alkalinity | mg/L | 5.2 I | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 2.6 | EPA 351.2 | 0.20 | 0.05 | 07/07/11 13:56 | 07/07/11 14:48 | SMD |
| Total Organic Carbon | mg/L | 2.6 | SM 5310B | 1.0 | 0.50 | | 07/07/11 12:49 | ARM |
| Nitrate+Nitrite (N) | mg/L | 19 | EPA 300.0 | 0.08 | 0.02 | | 06/28/11 16:50 | MEJ |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.8 | SM 5310B | 1.0 | 0.50 | 06/28/11 08:30 | 07/28/11 09:29 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.13 | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:14 | 07/11/11 12:41 | VWC |
| Calcium | mg/L | 38 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:54 | VWC |
| Iron | mg/L | 0.044 I | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:14 | 07/06/11 17:54 | VWC |
| Magnesium | mg/L | 9.1 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:54 | VWC |
| Manganese | mg/L | 0.066 | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:14 | 07/06/11 17:54 | VWC |
| Potassium | mg/L | 11 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:54 | VWC |
| Sodium | mg/L | 31 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:54 | VWC |
| Sample Description | | **DP-D7.5-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-12** | | | | | | |
| Date/Time Collected | | **06/29/11 12:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.5 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 12:25 | SDH |
| Water Temperature | °C | 24.4 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 12:25 | SDH |
| Specific conductance | umhos/cm | 483 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 12:25 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 12:25 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 37 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E04-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-13** | | | | | | |
| Date/Time Collected | | **06/28/11 09:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 09:10 | SDH |
| Water Temperature | °C | 26.0 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 09:10 | SDH |
| Specific conductance | umhos/cm | 185 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 09:10 | SDH |
| Dissolved Oxygen | mg/L | 1.6 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 09:10 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 5.6 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |
| Sample Description | | **DP-E07-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-14** | | | | | | |
| Date/Time Collected | | **06/28/11 09:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.5 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 09:05 | SDH |
| Water Temperature | °C | 25.5 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 09:05 | SDH |
| Specific conductance | umhos/cm | 245 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 09:05 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 09:05 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 12 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |
| Sample Description | | **DP-E08-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-15** | | | | | | |
| Date/Time Collected | | **06/28/11 09:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.5 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 09:00 | SDH |
| Water Temperature | °C | 25.8 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 09:00 | SDH |
| Specific conductance | umhos/cm | 348 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 09:00 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 09:00 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 26 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |

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

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**September 9, 2011**
**Work Order: 1105413**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E11-12** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-16** | | | | | | |
| Date/Time Collected | | **06/28/11 08:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 08:50 | SDH |
| Water Temperature | °C | 24.9 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 08:50 | SDH |
| Specific conductance | umhos/cm | 489 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 08:50 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 08:50 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 32 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |
| Sample Description | | **DP-E12-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-17** | | | | | | |
| Date/Time Collected | | **06/28/11 08:20** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 08:20 | SDH |
| Water Temperature | °C | 25.1 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 08:20 | SDH |
| Specific conductance | umhos/cm | 502 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 08:20 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 08:20 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 36 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |
| Sample Description | | **DP-E12-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-18** | | | | | | |
| Date/Time Collected | | **06/28/11 08:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.2 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 08:25 | SDH |
| Water Temperature | °C | 24.7 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 08:25 | SDH |
| Specific conductance | umhos/cm | 462 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 08:25 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 08:25 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 31 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |

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**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**September 9, 2011**
**Work Order: 1105413**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E12-22** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1105413-19** | | | | | | | |
| Date/Time Collected | | **06/28/11 08:30** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | | |
| **Field Parameters** | | | | | | | | | |
| pH | SU | 4.8 | | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 08:30 | SDH |
| Water Temperature | °C | 24.2 | | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 08:30 | SDH |
| Specific conductance | umhos/cm | 328 | | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 08:30 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 08:30 | SDH |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 0.086 | | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 10 | U | EPA 410.4 | 25 | 10 | 07/01/11 10:00 | 07/01/11 15:00 | MMF |
| Chloride | mg/L | 14 | | EPA 300.0 | 0.20 | 0.050 | | 06/29/11 15:38 | MEJ |
| Fluoride | mg/L | 0.010 | U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Nitrate (as N) | mg/L | 11 | | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |
| Nitrite (as N) | mg/L | 0.01 | U | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |
| Orthophosphate as P | mg/L | 0.010 | U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Sulfate | mg/L | 67 | | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 15:38 | MEJ |
| Total Alkalinity | mg/L | 12 | | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.8 | | EPA 351.2 | 0.20 | 0.05 | 07/07/11 13:56 | 07/07/11 14:48 | SMD |
| Total Organic Carbon | mg/L | 2.6 | | SM 5310B | 1.0 | 0.50 | | 07/07/11 12:49 | ARM |
| Nitrate+Nitrite (N) | mg/L | 11 | | EPA 300.0 | 0.08 | 0.02 | | 06/29/11 15:38 | MEJ |
| **Metals** | | | | | | | | | |
| Boron | mg/L | 0.10 | | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:14 | 07/11/11 12:45 | VWC |
| Calcium | mg/L | 30 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:57 | VWC |
| Iron | mg/L | 0.067 | I | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:14 | 07/06/11 17:57 | VWC |
| Magnesium | mg/L | 8.5 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:57 | VWC |
| Manganese | mg/L | 0.19 | | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:14 | 07/06/11 17:57 | VWC |
| Potassium | mg/L | 11 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:57 | VWC |
| Sodium | mg/L | 8.4 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 17:57 | VWC |
| | | **Short Environmental Laboratories** | | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.1 | I | SM 5310C | 4 | 1 | | 07/16/11 10:00 | CC |

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**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**September 9, 2011**
**Work Order: 1105413**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E12-22-D** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1105413-20** | | | | | | | |
| Date/Time Collected | | **06/28/11 08:35** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | | |
| **Field Parameters** | | | | | | | | | |
| pH | SU | 4.8 | | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 08:35 | SDH |
| Water Temperature | °C | 24.2 | | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 08:35 | SDH |
| Specific conductance | umhos/cm | 328 | | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 08:35 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 08:35 | SDH |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 0.10 | | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 14 | I | EPA 410.4 | 25 | 10 | 07/01/11 10:00 | 07/01/11 15:00 | MMF |
| Chloride | mg/L | 13 | | EPA 300.0 | 0.20 | 0.050 | | 06/29/11 15:38 | MEJ |
| Fluoride | mg/L | 0.010 | U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Nitrate (as N) | mg/L | 11 | | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |
| Nitrite (as N) | mg/L | 0.01 | U | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |
| Orthophosphate as P | mg/L | 0.010 | U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Sulfate | mg/L | 66 | | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 15:38 | MEJ |
| Total Alkalinity | mg/L | 6.2 | I | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.7 | | EPA 351.2 | 0.20 | 0.05 | 07/07/11 13:56 | 07/07/11 14:48 | SMD |
| Total Organic Carbon | mg/L | 2.4 | | SM 5310B | 1.0 | 0.50 | | 07/07/11 12:49 | ARM |
| Nitrate+Nitrite (N) | mg/L | 11 | | EPA 300.0 | 0.08 | 0.02 | | 06/29/11 15:38 | MEJ |
| **Metals** | | | | | | | | | |
| Boron | mg/L | 0.096 | I | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:14 | 07/11/11 12:48 | VWC |
| Calcium | mg/L | 30 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:08 | VWC |
| Iron | mg/L | 0.067 | I | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:14 | 07/06/11 18:08 | VWC |
| Magnesium | mg/L | 8.5 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:08 | VWC |
| Manganese | mg/L | 0.20 | | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:14 | 07/06/11 18:08 | VWC |
| Potassium | mg/L | 11 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:08 | VWC |
| Sodium | mg/L | 8.3 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:08 | VWC |
| | | **Short Environmental Laboratories** | | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2 | I | SM 5310C | 4 | 1 | | 07/16/11 10:00 | CC |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E12-28** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-21** | | | | | | |
| Date/Time Collected | | **06/28/11 08:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 08:40 | SDH |
| Water Temperature | °C | 24.2 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 08:40 | SDH |
| Specific conductance | umhos/cm | 320 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 08:40 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 08:40 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |
| Sample Description | | **DP-F04-17** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-22** | | | | | | |
| Date/Time Collected | | **06/28/11 09:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 6.1 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 09:25 | SDH |
| Water Temperature | °C | 25.1 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 09:25 | SDH |
| Specific conductance | umhos/cm | 374 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 09:25 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 09:25 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 21 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |
| Sample Description | | **DP-F04-32** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-23** | | | | | | |
| Date/Time Collected | | **06/28/11 09:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 6.1 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 09:30 | SDH |
| Water Temperature | °C | 24.6 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 09:30 | SDH |
| Specific conductance | umhos/cm | 335 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 09:30 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 09:30 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 5.6 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 18:37 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F08-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-25** | | | | | | |
| Date/Time Collected | | **06/28/11 09:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.3 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 09:40 | SDH |
| Water Temperature | °C | 24.7 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 09:40 | SDH |
| Specific conductance | umhos/cm | 347 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 09:40 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 09:40 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 14 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 18:37 | MEJ |
| Sample Description | | **DP-F08-28** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-26** | | | | | | |
| Date/Time Collected | | **06/28/11 09:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.4 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 09:45 | SDH |
| Water Temperature | °C | 24.3 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 09:45 | SDH |
| Specific conductance | umhos/cm | 324 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 09:45 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 09:45 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 18 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 18:37 | MEJ |
| Sample Description | | **DP-F10-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-27** | | | | | | |
| Date/Time Collected | | **06/28/11 09:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 09:50 | SDH |
| Water Temperature | °C | 25.3 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 09:50 | SDH |
| Specific conductance | umhos/cm | 492 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 09:50 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 09:50 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 31 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F11-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-28** | | | | | | |
| Date/Time Collected | | **06/28/11 09:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 09:55 | SDH |
| Water Temperature | °C | 26.0 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 09:55 | SDH |
| Specific conductance | umhos/cm | 447 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 09:55 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 09:55 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 32 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |
| Sample Description | | **DP-F11-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-29** | | | | | | |
| Date/Time Collected | | **06/28/11 10:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 10:00 | SDH |
| Water Temperature | °C | 24.6 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 10:00 | SDH |
| Specific conductance | umhos/cm | 486 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 10:00 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 10:00 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 34 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |
| Sample Description | | **DP-F11-18** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-30** | | | | | | |
| Date/Time Collected | | **06/28/11 10:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 10:05 | SDH |
| Water Temperature | °C | 24.5 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 10:05 | SDH |
| Specific conductance | umhos/cm | 359 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 10:05 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 10:05 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 19 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 18:37 | MEJ |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F11-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-31** | | | | | | |
| Date/Time Collected | | **06/28/11 10:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 10:10 | SDH |
| Water Temperature | °C | 24.4 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 10:10 | SDH |
| Specific conductance | umhos/cm | 310 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 10:10 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 10:10 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 13 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 18:37 | MEJ |
| Sample Description | | **DP-F11-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-32** | | | | | | |
| Date/Time Collected | | **06/28/11 10:20** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 10:20 | SDH |
| Water Temperature | °C | 24.4 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 10:20 | SDH |
| Specific conductance | umhos/cm | 310 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 10:20 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 10:20 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 18:37 | MEJ |
| Sample Description | | **DP-F11-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-33** | | | | | | |
| Date/Time Collected | | **06/28/11 10:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 10:25 | SDH |
| Water Temperature | °C | 24.3 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 10:25 | SDH |
| Specific conductance | umhos/cm | 331 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 10:25 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 10:25 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 16 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 18:37 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F12-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-34** | | | | | | |
| Date/Time Collected | | **06/28/11 10:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.3 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 10:30 | SDH |
| Water Temperature | °C | 25.3 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 10:30 | SDH |
| Specific conductance | umhos/cm | 500 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 10:30 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 10:30 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 34 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |
| Sample Description | | **DP-F15-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-35** | | | | | | |
| Date/Time Collected | | **06/29/11 12:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.5 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 12:50 | SDH |
| Water Temperature | °C | 24.2 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 12:50 | SDH |
| Specific conductance | umhos/cm | 487 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 12:50 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 12:50 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 34 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |
| Sample Description | | **DP-F15-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-36** | | | | | | |
| Date/Time Collected | | **06/29/11 12:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.6 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 12:55 | SDH |
| Water Temperature | °C | 24.4 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 12:55 | SDH |
| Specific conductance | umhos/cm | 359 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 12:55 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 12:55 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 18 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 18:37 | MEJ |

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**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F15-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-37** | | | | | | |
| Date/Time Collected | | **06/29/11 13:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.3 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 13:00 | SDH |
| Water Temperature | °C | 24.2 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 13:00 | SDH |
| Specific conductance | umhos/cm | 320 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 13:00 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 13:00 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 14 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 18:37 | MEJ |
| Sample Description | | **DP-G07-13** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-38** | | | | | | |
| Date/Time Collected | | **06/28/11 12:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.4 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 12:10 | SDH |
| Water Temperature | °C | 29.9 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 12:10 | SDH |
| Specific conductance | umhos/cm | 255 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 12:10 | SDH |
| Dissolved Oxygen | mg/L | 3.1 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 12:10 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 5.8 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 18:37 | MEJ |
| Sample Description | | **DP-G07-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-39** | | | | | | |
| Date/Time Collected | | **06/28/11 12:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 12:15 | SDH |
| Water Temperature | °C | 25.6 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 12:15 | SDH |
| Specific conductance | umhos/cm | 296 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 12:15 | SDH |
| Dissolved Oxygen | mg/L | 0.8 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 12:15 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 6.3 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 18:37 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-17** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-40** | | | | | | |
| Date/Time Collected | | **06/28/11 12:20** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 12:20 | SDH |
| Water Temperature | °C | 24.5 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 12:20 | SDH |
| Specific conductance | umhos/cm | 337 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 12:20 | SDH |
| Dissolved Oxygen | mg/L | 0.8 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 12:20 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 9.3 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 18:37 | MEJ |
| Sample Description | | **DP-G07-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-41** | | | | | | |
| Date/Time Collected | | **06/28/11 12:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 12:35 | SDH |
| Water Temperature | °C | 24.8 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 12:35 | SDH |
| Specific conductance | umhos/cm | 333 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 12:35 | SDH |
| Dissolved Oxygen | mg/L | 1.3 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 12:35 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 07/01/11 10:00 | 07/01/11 15:00 | MMF |
| Chloride | mg/L | 12 | EPA 300.0 | 0.20 | 0.050 | | 06/29/11 15:38 | MEJ |
| Fluoride | mg/L | 0.016 I | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Nitrate (as N) | mg/L | 8.5 | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Sulfate | mg/L | 77 | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 15:38 | MEJ |
| Total Alkalinity | mg/L | 5.2 I | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 07/07/11 13:56 | 07/07/11 14:48 | SMD |
| Total Organic Carbon | mg/L | 2.3 | SM 5310B | 1.0 | 0.50 | | 07/07/11 12:49 | ARM |
| Nitrate+Nitrite (N) | mg/L | 8.5 | EPA 300.0 | 0.08 | 0.02 | | 06/29/11 15:38 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.068 I | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:14 | 07/11/11 12:52 | VWC |
| Calcium | mg/L | 29 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:11 | VWC |
| Iron | mg/L | 0.045 I | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:14 | 07/06/11 18:11 | VWC |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-41** | | | | | | |
| Date/Time Collected | | **06/28/11 12:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| Magnesium | mg/L | 8.8 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:11 | VWC |
| Manganese | mg/L | 0.17 | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:14 | 07/06/11 18:11 | VWC |
| Potassium | mg/L | 15 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:11 | VWC |
| Sodium | mg/L | 7.4 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:11 | VWC |
| | | **Short Environmental Laboratories** | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.8 I | SM 5310C | 4 | 1 | | 07/16/11 10:00 | CC |
| Sample Description | | **DP-G07-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-42** | | | | | | |
| Date/Time Collected | | **06/28/11 12:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 12:45 | SDH |
| Water Temperature | °C | 24.6 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 12:45 | SDH |
| Specific conductance | umhos/cm | 286 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 12:45 | SDH |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 12:45 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 16 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 18:37 | MEJ |
| Sample Description | | **DP-G07-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-43** | | | | | | |
| Date/Time Collected | | **06/28/11 12:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 12:50 | SDH |
| Water Temperature | °C | 25.0 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 12:50 | SDH |
| Specific conductance | umhos/cm | 325 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 12:50 | SDH |
| Dissolved Oxygen | mg/L | 1.8 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 12:50 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 18:37 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **Trip Blank** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-44** | | | | | | |
| Date/Time Collected | | **06/29/11 13:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 0.050 U | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 18:37 | MEJ |
| Sample Description | | **DP-G09-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-45** | | | | | | |
| Date/Time Collected | | **06/28/11 11:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.4 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 11:50 | SDH |
| Water Temperature | °C | 27.9 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 11:50 | SDH |
| Specific conductance | umhos/cm | 279 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 11:50 | SDH |
| Dissolved Oxygen | mg/L | 2.9 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 11:50 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 10 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |
| Sample Description | | **DP-G11-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-46** | | | | | | |
| Date/Time Collected | | **06/28/11 11:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.6 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 11:45 | SDH |
| Water Temperature | °C | 27.6 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 11:45 | SDH |
| Specific conductance | umhos/cm | 312 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 11:45 | SDH |
| Dissolved Oxygen | mg/L | 1.0 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 11:45 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 21 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**September 9, 2011**
**Work Order: 1105413**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-47** | | | | | | |
| Date/Time Collected | | **06/28/11 10:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.2 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 10:45 | SDH |
| Water Temperature | °C | 26.5 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 10:45 | SDH |
| Specific conductance | umhos/cm | 359 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 10:45 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 10:45 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.037 | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 12 I | EPA 410.4 | 25 | 10 | 07/01/11 10:00 | 07/01/11 15:00 | MMF |
| Chloride | mg/L | 26 | EPA 300.0 | 0.20 | 0.050 | | 06/29/11 15:38 | MEJ |
| Fluoride | mg/L | 0.17 | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Nitrate (as N) | mg/L | 9.4 | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Sulfate | mg/L | 60 | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 15:38 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.4 | EPA 351.2 | 0.20 | 0.05 | 07/07/11 13:56 | 07/07/11 14:48 | SMD |
| Total Organic Carbon | mg/L | 4.6 | SM 5310B | 1.0 | 0.50 | | 07/07/11 12:49 | ARM |
| Nitrate+Nitrite (N) | mg/L | 9.4 | EPA 300.0 | 0.08 | 0.02 | | 06/29/11 15:38 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.060 I | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:14 | 07/11/11 13:03 | VWC |
| Calcium | mg/L | 22 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:15 | VWC |
| Iron | mg/L | 0.81 | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:14 | 07/06/11 18:15 | VWC |
| Magnesium | mg/L | 5.9 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:15 | VWC |
| Manganese | mg/L | 0.15 | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:14 | 07/06/11 18:15 | VWC |
| Potassium | mg/L | 5.6 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:15 | VWC |
| Sodium | mg/L | 23 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:15 | VWC |

**Short Environmental Laboratories**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.2 I | SM 5310C | 4 | 1 | | 07/16/11 10:00 | CC |

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**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**September 9, 2011**
**Work Order: 1105413**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-15** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1105413-48** | | | | | | | |
| Date/Time Collected | | **06/28/11 10:55** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | | |
| **Field Parameters** | | | | | | | | | |
| pH | SU | 4.7 | | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 10:55 | SDH |
| Water Temperature | °C | 25.2 | | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 10:55 | SDH |
| Specific conductance | umhos/cm | 478 | | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 10:55 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 10:55 | SDH |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 0.36 | | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 10 | U | EPA 410.4 | 25 | 10 | 07/01/11 10:00 | 07/01/11 15:00 | MMF |
| Chloride | mg/L | 33 | | EPA 300.0 | 0.20 | 0.050 | | 06/28/11 16:50 | MEJ |
| Fluoride | mg/L | 0.014 | I | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Nitrate (as N) | mg/L | 20 | | EPA 300.0 | 0.04 | 0.01 | | 06/28/11 16:50 | MEJ |
| Nitrite (as N) | mg/L | 0.01 | U | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |
| Orthophosphate as P | mg/L | 0.010 | U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Sulfate | mg/L | 53 | | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 15:38 | MEJ |
| Total Alkalinity | mg/L | 5.2 | I | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 3.4 | | EPA 351.2 | 0.20 | 0.05 | 07/07/11 13:56 | 07/07/11 14:48 | SMD |
| Total Organic Carbon | mg/L | 3.6 | | SM 5310B | 1.0 | 0.50 | | 07/07/11 12:49 | ARM |
| Nitrate+Nitrite (N) | mg/L | 20 | | EPA 300.0 | 0.08 | 0.02 | | 06/29/11 15:38 | MEJ |
| **Metals** | | | | | | | | | |
| Boron | mg/L | 0.062 | I | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:14 | 07/11/11 13:06 | VWC |
| Calcium | mg/L | 35 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:25 | VWC |
| Iron | mg/L | 0.17 | | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:14 | 07/06/11 18:25 | VWC |
| Magnesium | mg/L | 9.1 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:25 | VWC |
| Manganese | mg/L | 0.21 | | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:14 | 07/06/11 18:25 | VWC |
| Potassium | mg/L | 12 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:25 | VWC |
| Sodium | mg/L | 29 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:25 | VWC |

**Short Environmental Laboratories**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Inorganic, Dissolved** | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.1 | I | SM 5310C | 4 | 1 | | 07/16/11 10:00 | CC |

**Hazen and Sawyer**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-48RE1** | | | | | | |
| Date/Time Collected | | **06/28/11 10:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Inorganics** | | | | | | | | |
| Nitrate+Nitrite (N) | mg/L | 20 | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |
| Sample Description | | **DP-G12-18** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-49** | | | | | | |
| Date/Time Collected | | **06/28/11 11:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 11:00 | SDH |
| Water Temperature | °C | 24.6 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 11:00 | SDH |
| Specific conductance | umhos/cm | 443 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 11:00 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 11:00 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 29 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |
| Sample Description | | **DP-G12-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-50** | | | | | | |
| Date/Time Collected | | **06/28/11 11:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 11:10 | SDH |
| Water Temperature | °C | 24.4 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 11:10 | SDH |
| Specific conductance | umhos/cm | 361 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 11:10 | SDH |
| Dissolved Oxygen | mg/L | 0.1 U | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 11:10 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.007 I | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 07/01/11 10:00 | 07/01/11 15:00 | MMF |
| Chloride | mg/L | 14 | EPA 300.0 | 0.20 | 0.050 | | 06/29/11 15:38 | MEJ |
| Fluoride | mg/L | 0.010 I | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Nitrate (as N) | mg/L | 13 | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-50** | | | | | | |
| Date/Time Collected | | **06/28/11 11:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Sulfate | mg/L | 62 | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 15:38 | MEJ |
| Total Alkalinity | mg/L | 7.3 I | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 2.5 | EPA 351.2 | 0.20 | 0.05 | 07/07/11 13:56 | 07/07/11 14:48 | SMD |
| Total Organic Carbon | mg/L | 3.5 | SM 5310B | 1.0 | 0.50 | | 07/07/11 12:49 | ARM |
| Nitrate+Nitrite (N) | mg/L | 13 | EPA 300.0 | 0.08 | 0.02 | | 06/29/11 15:38 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.069 I | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:14 | 07/11/11 13:13 | VWC |
| Calcium | mg/L | 33 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:28 | VWC |
| Iron | mg/L | 0.18 | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:14 | 07/06/11 18:28 | VWC |
| Magnesium | mg/L | 7.6 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:28 | VWC |
| Manganese | mg/L | 0.18 | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:14 | 07/06/11 18:28 | VWC |
| Potassium | mg/L | 15 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:28 | VWC |
| Sodium | mg/L | 12 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:28 | VWC |
| | | **Short Environmental Laboratories** | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2 I | SM 5310C | 4 | 1 | | 07/16/11 10:00 | CC |
| Sample Description | | **DP-G12-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-51** | | | | | | |
| Date/Time Collected | | **06/28/11 11:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 11:30 | SDH |
| Water Temperature | °C | 24.8 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 11:30 | SDH |
| Specific conductance | umhos/cm | 334 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 11:30 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 11:30 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 51 | EPA 410.4 | 25 | 10 | 07/01/11 10:00 | 07/01/11 15:00 | MMF |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 06/29/11 15:38 | MEJ |
| Fluoride | mg/L | 0.19 | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Nitrate (as N) | mg/L | 12 | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |

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**September 9, 2011**
**Work Order: 1105413**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-51** | | | | | | |
| Date/Time Collected | | **06/28/11 11:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Sulfate | mg/L | 59 | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 15:38 | MEJ |
| Total Alkalinity | mg/L | 5.2 I | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 07/07/11 13:56 | 07/07/11 14:48 | SMD |
| Total Organic Carbon | mg/L | 1.8 | SM 5310B | 1.0 | 0.50 | | 07/07/11 12:49 | ARM |
| Nitrate+Nitrite (N) | mg/L | 12 | EPA 300.0 | 0.08 | 0.02 | | 06/29/11 15:38 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.067 I | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:14 | 07/11/11 13:16 | VWC |
| Calcium | mg/L | 27 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:32 | VWC |
| Iron | mg/L | 0.039 I | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:14 | 07/06/11 18:32 | VWC |
| Magnesium | mg/L | 11 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:32 | VWC |
| Manganese | mg/L | 0.18 | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:14 | 07/06/11 18:32 | VWC |
| Potassium | mg/L | 15 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:32 | VWC |
| Sodium | mg/L | 6.7 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:32 | VWC |
| | | **Short Environmental Laboratories** | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.4 I | SM 5310C | 4 | 1 | | 07/19/11 14:30 | CC |
| Sample Description | | **DP-G12-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-52** | | | | | | |
| Date/Time Collected | | **06/28/11 11:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 11:15 | SDH |
| Water Temperature | °C | 24.3 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 11:15 | SDH |
| Specific conductance | umhos/cm | 346 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 11:15 | SDH |
| Dissolved Oxygen | mg/L | 0.1 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 11:15 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 13 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |

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**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-H06-7** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-53** | | | | | | |
| Date/Time Collected | | **06/28/11 13:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.9 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 13:05 | SDH |
| Water Temperature | °C | 30.2 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 13:05 | SDH |
| Specific conductance | umhos/cm | 164 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 13:05 | SDH |
| Dissolved Oxygen | mg/L | 4.7 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 13:05 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 4.5 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |
| Sample Description | | **DP-H09-12** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-54** | | | | | | |
| Date/Time Collected | | **06/28/11 13:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 13:15 | SDH |
| Water Temperature | °C | 25.8 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 13:15 | SDH |
| Specific conductance | umhos/cm | 274 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 13:15 | SDH |
| Dissolved Oxygen | mg/L | 0.8 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 13:15 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 5.6 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |
| Sample Description | | **DP-H10-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-55** | | | | | | |
| Date/Time Collected | | **06/28/11 13:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.6 | DEP FT1100 | 0.1 | 0.1 | | 06/28/11 13:25 | SDH |
| Water Temperature | °C | 28.5 | DEP FT1400 | 0.1 | 0.1 | | 06/28/11 13:25 | SDH |
| Specific conductance | umhos/cm | 228 | DEP FT1200 | 0.1 | 0.1 | | 06/28/11 13:25 | SDH |
| Dissolved Oxygen | mg/L | 5.1 | DEP FT1500 | 0.1 | 0.1 | | 06/28/11 13:25 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.14 | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**September 9, 2011**
**Work Order: 1105413**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-H10-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-55** | | | | | | |
| Date/Time Collected | | **06/28/11 13:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/28/11 15:50** | | | | | | |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 07/05/11 09:30 | 07/05/11 16:35 | MMF |
| Chloride | mg/L | 7.2 | EPA 300.0 | 0.20 | 0.050 | | 06/29/11 15:38 | MEJ |
| Fluoride | mg/L | 0.034 I | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Nitrate (as N) | mg/L | 1.2 | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |
| Nitrite (as N) | mg/L | 0.11 | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 15:38 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 15:38 | MEJ |
| Sulfate | mg/L | 51 | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 15:38 | MEJ |
| Total Alkalinity | mg/L | 17 | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.62 | EPA 351.2 | 0.20 | 0.05 | 07/07/11 13:56 | 07/07/11 14:48 | SMD |
| Total Organic Carbon | mg/L | 4.3 | SM 5310B | 1.0 | 0.50 | | 07/07/11 12:49 | ARM |
| Nitrate+Nitrite (N) | mg/L | 1.4 | EPA 300.0 | 0.08 | 0.02 | | 06/29/11 15:38 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.062 I | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:14 | 07/11/11 13:20 | VWC |
| Calcium | mg/L | 20 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:36 | VWC |
| Iron | mg/L | 4.1 | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:14 | 07/06/11 18:36 | VWC |
| Magnesium | mg/L | 4.7 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:36 | VWC |
| Manganese | mg/L | 0.42 | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:14 | 07/06/11 18:36 | VWC |
| Potassium | mg/L | 9.3 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:36 | VWC |
| Sodium | mg/L | 6.3 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:36 | VWC |
| | | **Short Environmental Laboratories** | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 3.6 I | SM 5310C | 4 | 1 | | 07/19/11 14:30 | CC |
| Sample Description | | **DP-I06-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-56** | | | | | | |
| Date/Time Collected | | **06/29/11 09:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 09:30 | SDH |
| Water Temperature | °C | 24.4 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 09:30 | SDH |
| Specific conductance | umhos/cm | 218 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 09:30 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 09:30 | SDH |
| **Inorganics** | | | | | | | | |

**Hazen and Sawyer**
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**September 9, 2011**
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**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I06-14** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1105413-56** | | | | | | | |
| Date/Time Collected | | **06/29/11 09:30** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | | |
| Ammonia as N | mg/L | 0.005 | U | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 10 | U | EPA 410.4 | 25 | 10 | 07/05/11 09:30 | 07/05/11 16:35 | MMF |
| Chloride | mg/L | 6.0 | | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |
| Fluoride | mg/L | 0.19 | | EPA 300.0 | 0.040 | 0.010 | | 06/30/11 13:06 | MEJ |
| Nitrate (as N) | mg/L | 2.1 | | EPA 300.0 | 0.04 | 0.01 | | 06/30/11 13:06 | MEJ |
| Nitrite (as N) | mg/L | 0.01 | U | EPA 300.0 | 0.04 | 0.01 | | 06/30/11 13:06 | MEJ |
| Orthophosphate as P | mg/L | 0.023 | I | EPA 300.0 | 0.040 | 0.010 | | 06/30/11 13:06 | MEJ |
| Sulfate | mg/L | 62 | | EPA 300.0 | 0.60 | 0.20 | | 06/30/11 13:06 | MEJ |
| Total Alkalinity | mg/L | 6.2 | I | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.55 | | EPA 351.2 | 0.20 | 0.05 | 07/07/11 13:56 | 07/07/11 14:48 | SMD |
| Total Organic Carbon | mg/L | 3.0 | | SM 5310B | 1.0 | 0.50 | | 07/07/11 12:49 | ARM |
| Nitrate+Nitrite (N) | mg/L | 2.1 | | EPA 300.0 | 0.08 | 0.02 | | 06/30/11 13:06 | MEJ |
| **Metals** | | | | | | | | | |
| Boron | mg/L | 0.058 | I | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:14 | 07/11/11 13:23 | VWC |
| Calcium | mg/L | 23 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:39 | VWC |
| Iron | mg/L | 0.024 | I | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:14 | 07/06/11 18:39 | VWC |
| Magnesium | mg/L | 5.0 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:39 | VWC |
| Manganese | mg/L | 0.19 | | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:14 | 07/06/11 18:39 | VWC |
| Potassium | mg/L | 11 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:39 | VWC |
| Sodium | mg/L | 3.1 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:14 | 07/06/11 18:39 | VWC |
| | | **Short Environmental Laboratories** | | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.4 | I | SM 5310C | 4 | 1 | | 07/19/11 14:30 | CC |
| Sample Description | | **DP-I06-20** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1105413-57** | | | | | | | |
| Date/Time Collected | | **06/29/11 09:35** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | | |
| **Field Parameters** | | | | | | | | | |
| pH | SU | 4.9 | | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 09:35 | SDH |
| Water Temperature | °C | 24.1 | | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 09:35 | SDH |
| Specific conductance | umhos/cm | 362 | | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 09:35 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 09:35 | SDH |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I06-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-57** | | | | | | |
| Date/Time Collected | | **06/29/11 09:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 13 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |
| Sample Description | | **DP-I06-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-58** | | | | | | |
| Date/Time Collected | | **06/29/11 09:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 09:40 | SDH |
| Water Temperature | °C | 24.2 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 09:40 | SDH |
| Specific conductance | umhos/cm | 312 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 09:40 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 09:40 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 14 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |
| Sample Description | | **DP-I12-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-59** | | | | | | |
| Date/Time Collected | | **06/29/11 09:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 09:25 | SDH |
| Water Temperature | °C | 26.6 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 09:25 | SDH |
| Specific conductance | umhos/cm | 138 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 09:25 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 09:25 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 4.6 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J08-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-60** | | | | | | |
| Date/Time Collected | | **06/29/11 09:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.9 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 09:50 | SDH |
| Water Temperature | °C | 27.3 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 09:50 | SDH |
| Specific conductance | umhos/cm | 183 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 09:50 | SDH |
| Dissolved Oxygen | mg/L | 3.1 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 09:50 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 4.3 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |
| Sample Description | | **DP-J09-12** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-61** | | | | | | |
| Date/Time Collected | | **06/29/11 10:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 10:00 | SDH |
| Water Temperature | °C | 25.7 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 10:00 | SDH |
| Specific conductance | umhos/cm | 189 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 10:00 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 10:00 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 5.2 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |
| Sample Description | | **DP-J09-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-62** | | | | | | |
| Date/Time Collected | | **06/29/11 10:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.5 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 10:05 | SDH |
| Water Temperature | °C | 24.8 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 10:05 | SDH |
| Specific conductance | umhos/cm | 249 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 10:05 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 10:05 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 7.8 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J09-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-63** | | | | | | |
| Date/Time Collected | | **06/29/11 10:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 10:10 | SDH |
| Water Temperature | °C | 24.1 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 10:10 | SDH |
| Specific conductance | umhos/cm | 368 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 10:10 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 10:10 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 13 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |
| Sample Description | | **DP-J09-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-64** | | | | | | |
| Date/Time Collected | | **06/29/11 10:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.5 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 10:15 | SDH |
| Water Temperature | °C | 24.0 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 10:15 | SDH |
| Specific conductance | umhos/cm | 306 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 10:15 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 10:15 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 13 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |
| Sample Description | | **DP-J12-13** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-65** | | | | | | |
| Date/Time Collected | | **06/29/11 10:20** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.6 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 10:20 | SDH |
| Water Temperature | °C | 24.9 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 10:20 | SDH |
| Specific conductance | umhos/cm | 249 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 10:20 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 10:20 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 5.8 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 09:33 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J12-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-66** | | | | | | |
| Date/Time Collected | | **06/29/11 10:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.6 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 10:25 | SDH |
| Water Temperature | °C | 24.7 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 10:25 | SDH |
| Specific conductance | umhos/cm | 287 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 10:25 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 10:25 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 7.3 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 18:20 | MEJ |
| Sample Description | | **DP-J12-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-67** | | | | | | |
| Date/Time Collected | | **06/29/11 10:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 10:30 | SDH |
| Water Temperature | °C | 24.5 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 10:30 | SDH |
| Specific conductance | umhos/cm | 356 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 10:30 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 10:30 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 12 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 18:20 | MEJ |
| Sample Description | | **DP-J12-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-68** | | | | | | |
| Date/Time Collected | | **06/29/11 10:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 10:35 | SDH |
| Water Temperature | °C | 24.4 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 10:35 | SDH |
| Specific conductance | umhos/cm | 310 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 10:35 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 10:35 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 18:20 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-K10-7** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-69** | | | | | | |
| Date/Time Collected | | **06/29/11 10:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 10:45 | SDH |
| Water Temperature | °C | 27.4 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 10:45 | SDH |
| Specific conductance | umhos/cm | 176 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 10:45 | SDH |
| Dissolved Oxygen | mg/L | 1.3 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 10:45 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 5.2 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 18:20 | MEJ |
| Sample Description | | **DP-K12-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-70** | | | | | | |
| Date/Time Collected | | **06/29/11 10:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 10:40 | SDH |
| Water Temperature | °C | 27.5 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 10:40 | SDH |
| Specific conductance | umhos/cm | 80 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 10:40 | SDH |
| Dissolved Oxygen | mg/L | 0.7 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 10:40 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 2.5 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 18:20 | MEJ |
| Sample Description | | **DP-M07-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-71** | | | | | | |
| Date/Time Collected | | **06/29/11 10:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 10:50 | SDH |
| Water Temperature | °C | 24.5 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 10:50 | SDH |
| Specific conductance | umhos/cm | 366 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 10:50 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 10:50 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 14 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 18:20 | MEJ |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**September 9, 2011**
**Work Order: 1105413**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-M07-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-72** | | | | | | |
| Date/Time Collected | | **06/29/11 10:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 10:55 | SDH |
| Water Temperature | °C | 24.3 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 10:55 | SDH |
| Specific conductance | umhos/cm | 303 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 10:55 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 10:55 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 13 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 18:20 | MEJ |
| Sample Description | | **DP-M12-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-73** | | | | | | |
| Date/Time Collected | | **06/29/11 11:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 11:00 | SDH |
| Water Temperature | °C | 27.0 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 11:00 | SDH |
| Specific conductance | umhos/cm | 177 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 11:00 | SDH |
| Dissolved Oxygen | mg/L | 0.9 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 11:00 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 4.8 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 18:20 | MEJ |
| Sample Description | | **DP-N12-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-74** | | | | | | |
| Date/Time Collected | | **06/29/11 11:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.4 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 11:10 | SDH |
| Water Temperature | °C | 25.4 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 11:10 | SDH |
| Specific conductance | umhos/cm | 177 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 11:10 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 11:10 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 4.8 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 18:20 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-N12-18** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-75** | | | | | | |
| Date/Time Collected | | **06/29/11 11:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 11:15 | SDH |
| Water Temperature | °C | 25.2 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 11:15 | SDH |
| Specific conductance | umhos/cm | 247 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 11:15 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 11:15 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 6.2 | EPA 300.0 | 0.20 | 0.050 | | 07/01/11 18:20 | MEJ |
| Sample Description | | **DP-N12-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-76** | | | | | | |
| Date/Time Collected | | **06/29/11 11:20** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 11:20 | SDH |
| Water Temperature | °C | 24.9 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 11:20 | SDH |
| Specific conductance | umhos/cm | 309 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 11:20 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 11:20 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.005 U | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 07/05/11 09:30 | 07/05/11 16:35 | MMF |
| Chloride | mg/L | 9.4 | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |
| Fluoride | mg/L | 0.20 | EPA 300.0 | 0.040 | 0.010 | | 06/30/11 13:06 | MEJ |
| Nitrate (as N) | mg/L | 5.1 | EPA 300.0 | 0.04 | 0.01 | | 06/30/11 13:06 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 06/30/11 13:06 | MEJ |
| Orthophosphate as P | mg/L | 0.025 I | EPA 300.0 | 0.040 | 0.010 | | 06/30/11 13:06 | MEJ |
| Sulfate | mg/L | 84 | EPA 300.0 | 0.60 | 0.20 | | 06/30/11 13:06 | MEJ |
| Total Alkalinity | mg/L | 5.2 I | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.69 | EPA 351.2 | 0.20 | 0.05 | 07/12/11 11:21 | 07/13/11 09:16 | SMD |
| Nitrate+Nitrite (N) | mg/L | 5.1 | EPA 300.0 | 0.08 | 0.02 | | 06/30/11 13:06 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:21 | 07/08/11 16:26 | VWC |
| Calcium | mg/L | 32 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 18:50 | VWC |
| Iron | mg/L | 0.042 I | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:21 | 07/06/11 18:50 | VWC |
| Magnesium | mg/L | 8.2 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 18:50 | VWC |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-N12-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-76** | | | | | | |
| Date/Time Collected | | **06/29/11 11:20** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| Manganese | mg/L | 0.093 | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:21 | 07/06/11 18:50 | VWC |
| Potassium | mg/L | 15 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 18:50 | VWC |
| Sodium | mg/L | 4.3 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 18:50 | VWC |
| | | **Short Environmental Laboratories** | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1 U | SM 5310C | 4 | 1 | | 07/15/11 15:20 | CC |
| **Inorganics** | | | | | | | | |
| Total Organic Carbon | mg/L | 2.6 I | SM 5310C | 4 | 1 | | 07/19/11 14:30 | CC |
| Sample Description | | **DP-N12-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-77** | | | | | | |
| Date/Time Collected | | **06/29/11 11:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.6 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 11:30 | SDH |
| Water Temperature | °C | 24.7 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 11:30 | SDH |
| Specific conductance | umhos/cm | 354 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 11:30 | SDH |
| Dissolved Oxygen | mg/L | 0.1 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 11:30 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 16 | EPA 300.0 | 0.20 | 0.050 | | 07/05/11 17:25 | MEJ |
| Sample Description | | **DP-N12-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-78** | | | | | | |
| Date/Time Collected | | **06/29/11 11:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 11:35 | SDH |
| Water Temperature | °C | 24.6 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 11:35 | SDH |
| Specific conductance | umhos/cm | 365 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 11:35 | SDH |
| Dissolved Oxygen | mg/L | 0.1 U | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 11:35 | SDH |
| **Inorganics** | | | | | | | | |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-N12-27** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1105413-78** | | | | | | | |
| Date/Time Collected | | **06/29/11 11:35** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | | |
| Ammonia as N | mg/L | 0.005 | U | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 10 | U | EPA 410.4 | 25 | 10 | 07/05/11 09:30 | 07/05/11 16:35 | MMF |
| Chloride | mg/L | 13 | | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |
| Fluoride | mg/L | 0.20 | | EPA 300.0 | 0.040 | 0.010 | | 06/30/11 13:06 | MEJ |
| Nitrate (as N) | mg/L | 9.6 | | EPA 300.0 | 0.04 | 0.01 | | 06/30/11 13:06 | MEJ |
| Nitrite (as N) | mg/L | 0.01 | U | EPA 300.0 | 0.04 | 0.01 | | 06/30/11 13:06 | MEJ |
| Orthophosphate as P | mg/L | 0.022 | I | EPA 300.0 | 0.040 | 0.010 | | 06/30/11 13:06 | MEJ |
| Sulfate | mg/L | 84 | | EPA 300.0 | 0.60 | 0.20 | | 06/30/11 13:06 | MEJ |
| Total Alkalinity | mg/L | 5.2 | I | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.4 | | EPA 351.2 | 0.20 | 0.05 | 07/12/11 11:21 | 07/13/11 09:16 | SMD |
| Nitrate+Nitrite (N) | mg/L | 9.6 | | EPA 300.0 | 0.08 | 0.02 | | 06/30/11 13:06 | MEJ |
| **Metals** | | | | | | | | | |
| Boron | mg/L | 0.050 | U | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:21 | 07/08/11 16:30 | VWC |
| Calcium | mg/L | 32 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:07 | VWC |
| Iron | mg/L | 0.041 | I | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:21 | 07/06/11 19:07 | VWC |
| Magnesium | mg/L | 11 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:07 | VWC |
| Manganese | mg/L | 0.043 | | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:21 | 07/06/11 19:07 | VWC |
| Potassium | mg/L | 22 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:07 | VWC |
| Sodium | mg/L | 5.2 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:07 | VWC |
| | | **Short Environmental Laboratories** | | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.2 | I | SM 5310C | 4 | 1 | | 07/15/11 15:20 | CC |
| **Inorganics** | | | | | | | | | |
| Total Organic Carbon | mg/L | 2.2 | I | SM 5310C | 4 | 1 | | 07/19/11 14:30 | CC |
| Sample Description | | **DP-N12-27-D** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1105413-79** | | | | | | | |
| Date/Time Collected | | **06/29/11 11:40** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | | |
| **Field Parameters** | | | | | | | | | |
| pH | SU | 4.7 | | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 11:40 | SDH |
| Water Temperature | °C | 24.6 | | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 11:40 | SDH |
| Specific conductance | umhos/cm | 365 | | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 11:40 | SDH |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-N12-27-D** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1105413-79** | | | | | | | |
| Date/Time Collected | | **06/29/11 11:40** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | | |
| Dissolved Oxygen | mg/L | 0.1 | U | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 11:40 | SDH |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 0.005 | U | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 10 | U | EPA 410.4 | 25 | 10 | 07/05/11 09:30 | 07/05/11 16:35 | MMF |
| Chloride | mg/L | 13 | | EPA 300.0 | 0.20 | 0.050 | | 06/30/11 13:06 | MEJ |
| Fluoride | mg/L | 0.32 | | EPA 300.0 | 0.040 | 0.010 | | 06/30/11 13:06 | MEJ |
| Nitrate (as N) | mg/L | 9.6 | | EPA 300.0 | 0.04 | 0.01 | | 06/30/11 13:06 | MEJ |
| Nitrite (as N) | mg/L | 0.01 | U | EPA 300.0 | 0.04 | 0.01 | | 06/30/11 13:06 | MEJ |
| Orthophosphate as P | mg/L | 0.012 | I | EPA 300.0 | 0.040 | 0.010 | | 06/30/11 13:06 | MEJ |
| Sulfate | mg/L | 84 | | EPA 300.0 | 0.60 | 0.20 | | 06/30/11 13:06 | MEJ |
| Total Alkalinity | mg/L | 6.2 | I | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | | EPA 351.2 | 0.20 | 0.05 | 07/12/11 11:21 | 07/13/11 09:16 | SMD |
| Nitrate+Nitrite (N) | mg/L | 9.6 | | EPA 300.0 | 0.08 | 0.02 | | 06/30/11 13:06 | MEJ |
| **Metals** | | | | | | | | | |
| Boron | mg/L | 0.050 | U | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:21 | 07/08/11 16:33 | VWC |
| Calcium | mg/L | 31 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:11 | VWC |
| Iron | mg/L | 0.037 | I | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:21 | 07/06/11 19:11 | VWC |
| Magnesium | mg/L | 11 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:11 | VWC |
| Manganese | mg/L | 0.042 | | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:21 | 07/06/11 19:11 | VWC |
| Potassium | mg/L | 22 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:11 | VWC |
| Sodium | mg/L | 5.0 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:11 | VWC |
| | | **Short Environmental Laboratories** | | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.1 | I | SM 5310C | 4 | 1 | | 07/15/11 15:20 | CC |
| **Inorganics** | | | | | | | | | |
| Total Organic Carbon | mg/L | 2.2 | I | SM 5310C | 4 | 1 | | 07/19/11 14:30 | CC |
| Sample Description | | **DP-O10-18** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1105413-80** | | | | | | | |
| Date/Time Collected | | **06/29/11 12:10** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | | |
| **Field Parameters** | | | | | | | | | |
| pH | SU | 4.9 | | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 12:10 | SDH |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**September 9, 2011**
**Work Order: 1105413**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-O10-18** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-80** | | | | | | |
| Date/Time Collected | | **06/29/11 12:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| Water Temperature | °C | 25.1 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 12:10 | SDH |
| Specific conductance | umhos/cm | 335 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 12:10 | SDH |
| Dissolved Oxygen | mg/L | 0.7 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 12:10 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 9.7 | EPA 300.0 | 0.20 | 0.050 | | 07/05/11 17:25 | MEJ |
| Sample Description | | **DP-O10-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-81** | | | | | | |
| Date/Time Collected | | **06/29/11 12:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 12:15 | SDH |
| Water Temperature | °C | 24.7 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 12:15 | SDH |
| Specific conductance | umhos/cm | 366 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 12:15 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 12:15 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 07/05/11 17:25 | MEJ |
| Sample Description | | **DP-Q15-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-82** | | | | | | |
| Date/Time Collected | | **06/29/11 12:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 12:35 | SDH |
| Water Temperature | °C | 25.2 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 12:35 | SDH |
| Specific conductance | umhos/cm | 358 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 12:35 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 12:35 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 13 | EPA 300.0 | 0.20 | 0.050 | | 07/05/11 17:25 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-Q15-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-83** | | | | | | |
| Date/Time Collected | | **06/29/11 12:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 12:40 | SDH |
| Water Temperature | °C | 25.3 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 12:40 | SDH |
| Specific conductance | umhos/cm | 385 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 12:40 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 12:40 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 07/05/11 17:25 | MEJ |
| Sample Description | | **PZ03-H11-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-84** | | | | | | |
| Date/Time Collected | | **06/27/11 12:03** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **01/01/80 00:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.5 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 12:03 | SDH |
| Water Temperature | °C | 28.4 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 12:03 | SDH |
| Specific conductance | umhos/cm | 165 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 12:03 | SDH |
| Dissolved Oxygen | mg/L | 3.0 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 12:03 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 07/05/11 09:30 | 07/05/11 16:35 | MMF |
| Chloride | mg/L | 6.2 | EPA 300.0 | 0.20 | 0.050 | | 06/29/11 10:15 | MEJ |
| Fluoride | mg/L | 0.14 | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 10:15 | MEJ |
| Nitrate (as N) | mg/L | 0.85 | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 10:15 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 09:00 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 10:15 | MEJ |
| Sulfate | mg/L | 44 | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 10:15 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.34 | EPA 351.2 | 0.20 | 0.05 | 07/12/11 11:21 | 07/13/11 09:16 | SMD |
| Nitrate+Nitrite (N) | mg/L | 0.85 | EPA 300.0 | 0.08 | 0.02 | | 06/29/11 10:15 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:21 | 07/08/11 16:43 | VWC |
| Calcium | mg/L | 11 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:14 | VWC |
| Iron | mg/L | 0.022 I | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:21 | 07/06/11 19:14 | VWC |
| Magnesium | mg/L | 2.7 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:14 | VWC |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ03-H11-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-84** | | | | | | |
| Date/Time Collected | | **06/27/11 12:03** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **01/01/80 00:00** | | | | | | |
| Manganese | mg/L | 0.052 | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:21 | 07/06/11 19:14 | VWC |
| Potassium | mg/L | 4.8 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:14 | VWC |
| Sodium | mg/L | 5.8 | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:14 | VWC |
| | | **Short Environmental Laboratories** | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 3.4 I | SM 5310C | 4 | 1 | | 07/21/11 09:36 | CC |
| **Inorganics** | | | | | | | | |
| Total Organic Carbon | mg/L | 4.8 | SM 5310C | 4 | 1 | | 07/19/11 14:30 | CC |
| Sample Description | | **PZ04-BKG-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-85** | | | | | | |
| Date/Time Collected | | **06/27/11 08:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.6 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 08:40 | SDH |
| Water Temperature | °C | 25.9 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 08:40 | SDH |
| Specific conductance | umhos/cm | 100 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 08:40 | SDH |
| Dissolved Oxygen | mg/L | 4.2 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 08:40 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 3.3 | EPA 300.0 | 0.20 | 0.050 | | 07/05/11 17:25 | MEJ |
| Sample Description | | **PZ07-D05-7** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-86** | | | | | | |
| Date/Time Collected | | **06/27/11 11:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 11:40 | SDH |
| Water Temperature | °C | 27.3 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 11:40 | SDH |
| Specific conductance | umhos/cm | 288 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 11:40 | SDH |
| Dissolved Oxygen | mg/L | 2.5 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 11:40 | SDH |
| **Inorganics** | | | | | | | | |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ07-D05-7** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1105413-86** | | | | | | | |
| Date/Time Collected | | **06/27/11 11:40** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | | | | | | | | |
| Chloride | mg/L | 21 | | EPA 300.0 | 0.20 | 0.050 | | 07/05/11 17:25 | MEJ |
| Sample Description | | **PZ11-E09-10** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1105413-87** | | | | | | | |
| Date/Time Collected | | **06/27/11 11:00** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **01/01/80 00:00** | | | | | | | |
| **Field Parameters** | | | | | | | | | |
| pH | SU | 5.3 | | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 11:00 | SDH |
| Water Temperature | °C | 27.6 | | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 11:00 | SDH |
| Specific conductance | umhos/cm | 454 | | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 11:00 | SDH |
| Dissolved Oxygen | mg/L | 1.8 | | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 11:00 | SDH |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 0.10 | | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 10 | U | EPA 410.4 | 25 | 10 | 07/05/11 09:30 | 07/05/11 16:35 | MMF |
| Chloride | mg/L | 36 | | EPA 300.0 | 0.20 | 0.050 | | 06/28/11 16:50 | MEJ |
| Fluoride | mg/L | 0.038 | I | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 10:15 | MEJ |
| Nitrate (as N) | mg/L | 18 | | EPA 300.0 | 0.04 | 0.01 | | 06/28/11 16:50 | MEJ |
| Nitrite (as N) | mg/L | 0.01 | U | EPA 300.0 | 0.04 | 0.01 | | 06/29/11 09:00 | MEJ |
| Orthophosphate as P | mg/L | 0.010 | U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 10:15 | MEJ |
| Sulfate | mg/L | 59 | | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 10:15 | MEJ |
| Total Alkalinity | mg/L | 9.4 | | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 2.3 | | EPA 351.2 | 0.20 | 0.05 | 07/12/11 11:21 | 07/13/11 09:16 | SMD |
| Nitrate+Nitrite (N) | mg/L | 18 | | EPA 300.0 | 0.08 | 0.02 | | 06/29/11 09:00 | MEJ |
| **Metals** | | | | | | | | | |
| Boron | mg/L | 0.093 | I | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:21 | 07/08/11 16:47 | VWC |
| Calcium | mg/L | 34 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:18 | VWC |
| Iron | mg/L | 0.29 | | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:21 | 07/06/11 19:18 | VWC |
| Magnesium | mg/L | 8.9 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:18 | VWC |
| Manganese | mg/L | 0.23 | | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:21 | 07/06/11 19:18 | VWC |
| Potassium | mg/L | 10 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:18 | VWC |
| Sodium | mg/L | 30 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:18 | VWC |

**Short Environmental Laboratories**

**Inorganic, Dissolved**

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ11-E09-10** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1105413-87** | | | | | | | |
| Date/Time Collected | | **06/27/11 11:00** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **01/01/80 00:00** | | | | | | | |
| | | **Short Environmental Laboratories** | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.5 | I | SM 5310C | 4 | 1 | | 07/21/11 09:36 | CC |
| **Inorganics** | | | | | | | | | |
| Total Organic Carbon | mg/L | 2.2 | I | SM 5310C | 4 | 1 | | 07/19/11 14:30 | CC |
| Sample Description | | **PZ11-E09-10-D** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1105413-88** | | | | | | | |
| Date/Time Collected | | **06/27/11 11:05** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **01/01/80 00:00** | | | | | | | |
| **Field Parameters** | | | | | | | | | |
| pH | SU | 5.3 | | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 11:05 | SDH |
| Water Temperature | °C | 27.6 | | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 11:05 | SDH |
| Specific conductance | umhos/cm | 454 | | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 11:05 | SDH |
| Dissolved Oxygen | mg/L | 1.8 | | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 11:05 | SDH |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 0.13 | | EPA 350.1 | 0.010 | 0.005 | | 07/11/11 11:13 | SMD |
| Chemical Oxygen Demand | mg/L | 10 | U | EPA 410.4 | 25 | 10 | 07/05/11 09:30 | 07/05/11 16:35 | MMF |
| Chloride | mg/L | 35 | | EPA 300.0 | 0.20 | 0.050 | | 06/28/11 16:50 | MEJ |
| Fluoride | mg/L | 0.020 | I | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 10:15 | MEJ |
| Nitrate (as N) | mg/L | 18 | | EPA 300.0 | 0.04 | 0.01 | | 06/28/11 16:50 | MEJ |
| Orthophosphate as P | mg/L | 0.010 | U | EPA 300.0 | 0.040 | 0.010 | | 06/29/11 10:15 | MEJ |
| Sulfate | mg/L | 62 | | EPA 300.0 | 0.60 | 0.20 | | 06/29/11 10:15 | MEJ |
| Total Alkalinity | mg/L | 9.4 | | SM 2320B | 8.0 | 2.0 | | 07/02/11 12:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 2.2 | | EPA 351.2 | 0.20 | 0.05 | 07/12/11 11:21 | 07/13/11 09:16 | SMD |
| Nitrate+Nitrite (N) | mg/L | 18 | | EPA 300.0 | 0.04 | 0.01 | | 06/28/11 16:50 | MEJ |
| **Metals** | | | | | | | | | |
| Boron | mg/L | 0.095 | I | EPA 200.7 | 0.10 | 0.050 | 07/05/11 16:21 | 07/08/11 16:50 | VWC |
| Calcium | mg/L | 35 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:21 | VWC |
| Iron | mg/L | 0.26 | | EPA 200.7 | 0.10 | 0.020 | 07/05/11 16:21 | 07/06/11 19:21 | VWC |
| Magnesium | mg/L | 9.3 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:21 | VWC |
| Manganese | mg/L | 0.22 | | EPA 200.7 | 0.010 | 0.0010 | 07/05/11 16:21 | 07/06/11 19:21 | VWC |
| Potassium | mg/L | 11 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:21 | VWC |
| Sodium | mg/L | 32 | | EPA 200.7 | 0.050 | 0.010 | 07/05/11 16:21 | 07/06/11 19:21 | VWC |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ11-E09-10-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-88** | | | | | | |
| Date/Time Collected | | **06/27/11 11:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **01/01/80 00:00** | | | | | | |
| | | **Short Environmental Laboratories** | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.6 I | SM 5310C | 4 | 1 | | 07/21/11 09:36 | CC |
| **Inorganics** | | | | | | | | |
| Total Organic Carbon | mg/L | 2.7 I | SM 5310C | 4 | 1 | | 07/19/11 14:30 | CC |
| Sample Description | | **PZ11-E09-10-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-88RE1** | | | | | | |
| Date/Time Collected | | **06/27/11 11:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **01/01/80 00:00** | | | | | | |
| **Inorganics** | | | | | | | | |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 06/28/11 16:50 | MEJ |
| Nitrate+Nitrite (N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 06/28/11 16:50 | MEJ |
| Sample Description | | **PZ15-A11-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-89** | | | | | | |
| Date/Time Collected | | **06/27/11 10:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.3 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 10:40 | SDH |
| Water Temperature | °C | 29.4 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 10:40 | SDH |
| Specific conductance | umhos/cm | 195 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 10:40 | SDH |
| Dissolved Oxygen | mg/L | 3.1 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 10:40 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 17 | EPA 300.0 | 0.20 | 0.050 | | 07/05/11 17:25 | MEJ |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ16-C12-28** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-90** | | | | | | |
| Date/Time Collected | | **06/27/11 10:32** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.5 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 10:32 | SDH |
| Water Temperature | °C | 25.1 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 10:32 | SDH |
| Specific conductance | umhos/cm | 306 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 10:32 | SDH |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 10:32 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 19 | EPA 300.0 | 0.20 | 0.050 | | 07/05/11 17:25 | MEJ |
| Sample Description | | **PZ17-I15-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-91** | | | | | | |
| Date/Time Collected | | **06/27/11 12:39** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 12:39 | SDH |
| Water Temperature | °C | 25.4 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 12:39 | SDH |
| Specific conductance | umhos/cm | 307 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 12:39 | SDH |
| Dissolved Oxygen | mg/L | 1.6 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 12:39 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 14 | EPA 300.0 | 0.20 | 0.050 | | 07/05/11 17:25 | MEJ |
| Sample Description | | **PZ18-R12-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-92** | | | | | | |
| Date/Time Collected | | **06/27/11 13:02** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 13:02 | SDH |
| Water Temperature | °C | 26.6 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 13:02 | SDH |
| Specific conductance | umhos/cm | 252 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 13:02 | SDH |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 13:02 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 13 | EPA 300.0 | 0.20 | 0.050 | | 07/05/11 17:25 | MEJ |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**September 9, 2011**
**Work Order: 1105413**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ19-G10-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-93** | | | | | | |
| Date/Time Collected | | **06/27/11 09:31** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 09:31 | SDH |
| Water Temperature | °C | 23.9 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 09:31 | SDH |
| Specific conductance | umhos/cm | 294 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 09:31 | SDH |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 09:31 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 07/05/11 17:25 | MEJ |
| Sample Description | | **PZ20-G10-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-94** | | | | | | |
| Date/Time Collected | | **06/27/11 09:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.3 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 09:05 | SDH |
| Water Temperature | °C | 25.7 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 09:05 | SDH |
| Specific conductance | umhos/cm | 300 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 09:05 | SDH |
| Dissolved Oxygen | mg/L | 2.6 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 09:05 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 17 | EPA 300.0 | 0.20 | 0.050 | | 07/06/11 02:29 | MEJ |
| Sample Description | | **PZ21-E11-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-95** | | | | | | |
| Date/Time Collected | | **06/27/11 09:56** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 09:56 | SDH |
| Water Temperature | °C | 24.8 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 09:56 | SDH |
| Specific conductance | umhos/cm | 288 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 09:56 | SDH |
| Dissolved Oxygen | mg/L | 0.9 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 09:56 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 17 | EPA 300.0 | 0.20 | 0.050 | | 07/06/11 02:29 | MEJ |

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**Tampa, FL 33619**

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**Work Order: 1105413**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ24-BKG-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-96** | | | | | | |
| Date/Time Collected | | **06/27/11 08:29** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 06/27/11 08:29 | SDH |
| Water Temperature | °C | 24.4 | DEP FT1400 | 0.1 | 0.1 | | 06/27/11 08:29 | SDH |
| Specific conductance | umhos/cm | 296 | DEP FT1200 | 0.1 | 0.1 | | 06/27/11 08:29 | SDH |
| Dissolved Oxygen | mg/L | 0.7 | DEP FT1500 | 0.1 | 0.1 | | 06/27/11 08:29 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 19 | EPA 300.0 | 0.20 | 0.050 | | 07/06/11 02:29 | MEJ |
| Sample Description | | **EQ Blank** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1105413-97** | | | | | | |
| Date/Time Collected | | **06/29/11 13:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **06/30/11 07:30** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 6.8 | DEP FT1100 | 0.1 | 0.1 | | 06/29/11 13:15 | SDH |
| Water Temperature | °C | 28.8 | DEP FT1400 | 0.1 | 0.1 | | 06/29/11 13:15 | SDH |
| Specific conductance | umhos/cm | 10 | DEP FT1200 | 0.1 | 0.1 | | 06/29/11 13:15 | SDH |
| Dissolved Oxygen | mg/L | 4.9 | DEP FT1500 | 0.1 | 0.1 | | 06/29/11 13:15 | SDH |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 0.050 U | EPA 300.0 | 0.20 | 0.050 | | 07/06/11 02:29 | MEJ |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BF12918 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BF12918-BLK1)** | | | | | Prepared & Analyzed: 06/29/11 | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BF12918-BS1)** | | | | | Prepared & Analyzed: 06/29/11 | | | | | |
| Nitrite (as N) | 1.39 | 0.04 | 0.01 | mg/L | 1.4 | | 99 | 85-115 | | |
| Orthophosphate as P | 0.944 | 0.040 | 0.010 | mg/L | 0.90 | | 105 | 85-115 | | |
| Nitrate (as N) | 1.61 | 0.04 | 0.01 | mg/L | 1.7 | | 95 | 85-115 | | |
| Sulfate | 8.64 | 0.60 | 0.20 | mg/L | 9.0 | | 96 | 85-115 | | |
| Fluoride | 0.841 | 0.040 | 0.010 | mg/L | 0.90 | | 93 | 85-115 | | |
| Chloride | 2.75 | 0.20 | 0.050 | mg/L | 3.0 | | 92 | 85-115 | | |
| **LCS Dup (BF12918-BSD1)** | | | | | Prepared & Analyzed: 06/29/11 | | | | | |
| Nitrate (as N) | 1.62 | 0.04 | 0.01 | mg/L | 1.7 | | 95 | 85-115 | 0.6 | 200 |
| Nitrite (as N) | 1.43 | 0.04 | 0.01 | mg/L | 1.4 | | 102 | 85-115 | 3 | 200 |
| Sulfate | 8.76 | 0.60 | 0.20 | mg/L | 9.0 | | 97 | 85-115 | 1 | 200 |
| Chloride | 2.87 | 0.20 | 0.050 | mg/L | 3.0 | | 96 | 85-115 | 4 | 200 |
| Orthophosphate as P | 0.968 | 0.040 | 0.010 | mg/L | 0.90 | | 108 | 85-115 | 3 | 200 |
| Fluoride | 0.845 | 0.040 | 0.010 | mg/L | 0.90 | | 94 | 85-115 | 0.5 | 200 |
| **Matrix Spike (BF12918-MS1)** | | **Source: 1105413-48** | | | Prepared & Analyzed: 06/29/11 | | | | | |
| Nitrate (as N) | 19.2 +O | 0.04 | 0.01 | mg/L | 1.7 | 19.8 | NR | 85-115 | | |
| Nitrite (as N) | 1.43 | 0.04 | 0.01 | mg/L | 1.4 | ND | 102 | 85-115 | | |
| Sulfate | 62.6 | 0.60 | 0.20 | mg/L | 9.0 | 52.9 | 108 | 85-115 | | |
| Orthophosphate as P | 0.871 | 0.040 | 0.010 | mg/L | 0.90 | ND | 97 | 85-115 | | |
| Chloride | 34.8 +O | 0.20 | 0.050 | mg/L | 3.0 | 32.7 | 70 | 80-120 | | |
| Fluoride | 0.867 | 0.040 | 0.010 | mg/L | 0.90 | 0.0143 | 95 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BF12918 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BF12918-MS2)** | | **Source: 1104499-02** | | | Prepared & Analyzed: 06/29/11 | | | | | |
| Chloride | 56.7 +O | 0.20 | 0.050 | mg/L | 3.0 | 57.1 | NR | 80-120 | | |
| Nitrite (as N) | 1.37 | 0.04 | 0.01 | mg/L | 1.4 | ND | 98 | 85-115 | | |
| Sulfate | 31.7 | 0.60 | 0.20 | mg/L | 9.0 | 22.3 | 104 | 85-115 | | |
| Orthophosphate as P | 2.78 +O | 0.040 | 0.010 | mg/L | 0.90 | 2.20 | 64 | 85-115 | | |
| Nitrate (as N) | 11.0 | 0.04 | 0.01 | mg/L | 1.7 | 9.09 | 112 | 85-115 | | |
| Fluoride | 1.06 | 0.040 | 0.010 | mg/L | 0.90 | 0.104 | 106 | 85-115 | | |
| **Batch BF12920 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BF12920-BLK1)** | | | | | Prepared & Analyzed: 06/29/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BF12920-BS1)** | | | | | Prepared & Analyzed: 06/29/11 | | | | | |
| Chloride | 3.29 | 0.20 | 0.050 | mg/L | 3.0 | | 110 | 85-115 | | |
| **LCS Dup (BF12920-BSD1)** | | | | | Prepared & Analyzed: 06/29/11 | | | | | |
| Chloride | 3.30 | 0.20 | 0.050 | mg/L | 3.0 | | 110 | 85-115 | 0.3 | 200 |
| **Matrix Spike (BF12920-MS1)** | | **Source: 1105643-04** | | | Prepared & Analyzed: 06/29/11 | | | | | |
| Chloride | 56.9 | 0.20 | 0.050 | mg/L | 30 | 26.3 | 102 | 80-120 | | |
| **Matrix Spike (BF12920-MS2)** | | **Source: 1105413-07** | | | Prepared & Analyzed: 06/29/11 | | | | | |
| Chloride | 41.0 +O | 0.20 | 0.050 | mg/L | 3.0 | 34.9 | 203 | 80-120 | | |
| **Batch BF13004 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BF13004-BLK1)** | | | | | Prepared & Analyzed: 06/30/11 | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BF13004 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS (BF13004-BS1)** | | | | | Prepared & Analyzed: 06/30/11 | | | | | |
| Nitrate (as N) | 1.71 | 0.04 | 0.01 | mg/L | 1.7 | | 101 | 85-115 | | |
| Fluoride | 0.962 | 0.040 | 0.010 | mg/L | 0.90 | | 107 | 85-115 | | |
| Chloride | 3.00 | 0.20 | 0.050 | mg/L | 3.0 | | 100 | 85-115 | | |
| Sulfate | 9.12 | 0.60 | 0.20 | mg/L | 9.0 | | 101 | 85-115 | | |
| Orthophosphate as P | 0.907 | 0.040 | 0.010 | mg/L | 0.90 | | 101 | 85-115 | | |
| Nitrite (as N) | 1.42 | 0.04 | 0.01 | mg/L | 1.4 | | 101 | 85-115 | | |
| **LCS Dup (BF13004-BSD1)** | | | | | Prepared & Analyzed: 06/30/11 | | | | | |
| Orthophosphate as P | 0.944 | 0.040 | 0.010 | mg/L | 0.90 | | 105 | 85-115 | 4 | 200 |
| Nitrate (as N) | 1.71 | 0.04 | 0.01 | mg/L | 1.7 | | 101 | 85-115 | 0 | 200 |
| Fluoride | 0.959 | 0.040 | 0.010 | mg/L | 0.90 | | 107 | 85-115 | 0.3 | 200 |
| Sulfate | 9.10 | 0.60 | 0.20 | mg/L | 9.0 | | 101 | 85-115 | 0.2 | 200 |
| Chloride | 2.99 | 0.20 | 0.050 | mg/L | 3.0 | | 100 | 85-115 | 0.3 | 200 |
| Nitrite (as N) | 1.40 | 0.04 | 0.01 | mg/L | 1.4 | | 100 | 85-115 | 1 | 200 |
| **Matrix Spike (BF13004-MS1)** | | **Source: 1105413-88** | | | Prepared & Analyzed: 06/30/11 | | | | | |
| Fluoride | 12.2 | 0.040 | 0.010 | mg/L | 9.0 | 4.00 | 91 | 85-115 | | |
| Sulfate | 142 | 0.60 | 0.20 | mg/L | 90 | 54.1 | 98 | 85-115 | | |
| Orthophosphate as P | 8.94 | 0.040 | 0.010 | mg/L | 9.0 | 0.175 | 97 | 85-115 | | |
| Nitrate (as N) | 35.1 | 0.04 | 0.01 | mg/L | 17 | 17.8 | 102 | 85-115 | | |
| Nitrite (as N) | 13.7 | 0.04 | 0.01 | mg/L | 14 | ND | 98 | 85-115 | | |
| Chloride | 65.0 | 0.20 | 0.050 | mg/L | 30 | 34.9 | 100 | 80-120 | | |
| **Matrix Spike (BF13004-MS2)** | | **Source: 1105748-07** | | | Prepared & Analyzed: 06/30/11 | | | | | |
| Fluoride | 1.49 | 0.040 | 0.010 | mg/L | 0.90 | 0.660 | 92 | 85-115 | | |
| Chloride | 28.5 | 0.20 | 0.050 | mg/L | 3.0 | 25.1 | 113 | 80-120 | | |
| Nitrite (as N) | 1.26 | 0.04 | 0.01 | mg/L | 1.4 | ND | 90 | 85-115 | | |
| Orthophosphate as P | 0.973 | 0.040 | 0.010 | mg/L | 0.90 | 0.125 | 94 | 85-115 | | |
| Nitrate (as N) | 2.09 | 0.04 | 0.01 | mg/L | 1.7 | 0.219 | 110 | 85-115 | | |
| Sulfate | 88.1 +O | 0.60 | 0.20 | mg/L | 9.0 | 81.5 | 73 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BF13005 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BF13005-BLK1)** | | | | | Prepared & Analyzed: 06/30/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BF13005-BS1)** | | | | | Prepared & Analyzed: 06/30/11 | | | | | |
| Chloride | 2.90 | 0.20 | 0.050 | mg/L | 3.0 | | 97 | 85-115 | | |
| **LCS Dup (BF13005-BSD1)** | | | | | Prepared & Analyzed: 06/30/11 | | | | | |
| Chloride | 2.92 | 0.20 | 0.050 | mg/L | 3.0 | | 97 | 85-115 | 0.7 | 200 |
| **Matrix Spike (BF13005-MS1)** | | **Source: 1105413-32** | | | Prepared & Analyzed: 06/30/11 | | | | | |
| Chloride | 17.9 | 0.20 | 0.050 | mg/L | 3.0 | 14.7 | 107 | 80-120 | | |
| **Matrix Spike (BF13005-MS2)** | | **Source: 1105413-43** | | | Prepared & Analyzed: 06/30/11 | | | | | |
| Chloride | 17.9 | 0.20 | 0.050 | mg/L | 3.0 | 14.6 | 110 | 80-120 | | |
| **Batch BF13023 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BF13023-BLK1)** | | | | | Prepared & Analyzed: 06/30/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BF13023-BS1)** | | | | | Prepared & Analyzed: 06/30/11 | | | | | |
| Chloride | 2.98 | 0.20 | 0.050 | mg/L | 3.0 | | 99 | 85-115 | | |
| **LCS Dup (BF13023-BSD1)** | | | | | Prepared & Analyzed: 06/30/11 | | | | | |
| Chloride | 2.99 | 0.20 | 0.050 | mg/L | 3.0 | | 100 | 85-115 | 0.3 | 200 |
| **Matrix Spike (BF13023-MS1)** | | **Source: 1105413-07** | | | Prepared & Analyzed: 06/30/11 | | | | | |
| Chloride | 65.5 | 0.20 | 0.050 | mg/L | 30 | 34.9 | 102 | 80-120 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BF13023 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BF13023-MS2)** | | **Source: 1105413-22** | | | Prepared & Analyzed: 06/30/11 | | | | | |
| Chloride | 23.9 | 0.20 | 0.050 | mg/L | 3.0 | 21.4 | 83 | 80-120 | | |
| **Batch BG10102 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BG10102-BLK1)** | | | | | Prepared & Analyzed: 07/01/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BG10102-BS1)** | | | | | Prepared & Analyzed: 07/01/11 | | | | | |
| Chloride | 2.85 | 0.20 | 0.050 | mg/L | 3.0 | | 95 | 85-115 | | |
| **LCS Dup (BG10102-BSD1)** | | | | | Prepared & Analyzed: 07/01/11 | | | | | |
| Chloride | 2.91 | 0.20 | 0.050 | mg/L | 3.0 | | 97 | 85-115 | 2 | 200 |
| **Matrix Spike (BG10102-MS1)** | | **Source: 1105413-53** | | | Prepared & Analyzed: 07/01/11 | | | | | |
| Chloride | 7.69 | 0.20 | 0.050 | mg/L | 3.0 | 4.54 | 105 | 80-120 | | |
| **Matrix Spike (BG10102-MS2)** | | **Source: 1105413-65** | | | Prepared & Analyzed: 07/01/11 | | | | | |
| Chloride | 8.87 | 0.20 | 0.050 | mg/L | 3.0 | 5.81 | 102 | 80-120 | | |
| **Batch BG10108 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BG10108-BLK1)** | | | | | Prepared: 06/30/11 Analyzed: 07/01/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BG10108-BS1)** | | | | | Prepared: 06/30/11 Analyzed: 07/01/11 | | | | | |
| Chloride | 3.09 | 0.20 | 0.050 | mg/L | 3.0 | | 103 | 85-115 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BG10108 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS Dup (BG10108-BSD1)** | | | | | Prepared: 06/30/11 Analyzed: 07/01/11 | | | | | |
| Chloride | 3.07 | 0.20 | 0.050 | mg/L | 3.0 | | 102 | 85-115 | 0.6 | 200 |
| **Matrix Spike (BG10108-MS1)** | | **Source: 1105771-02** | | | Prepared: 06/30/11 Analyzed: 07/01/11 | | | | | |
| Chloride | 0.050 U,+O | 0.20 | 0.050 | mg/L | 3.0 | 15400 | NR | 80-120 | | |
| **Matrix Spike (BG10108-MS2)** | | **Source: 1105413-75** | | | Prepared: 06/30/11 Analyzed: 07/01/11 | | | | | |
| Chloride | 9.22 | 0.20 | 0.050 | mg/L | 3.0 | 6.18 | 101 | 80-120 | | |
| **Batch BG10201 - alkalinity** | | | | | | | | | | |
| **Blank (BG10201-BLK1)** | | | | | Prepared & Analyzed: 07/02/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BG10201-BLK2)** | | | | | Prepared & Analyzed: 07/02/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BG10201-BS1)** | | | | | Prepared & Analyzed: 07/02/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **LCS (BG10201-BS2)** | | | | | Prepared & Analyzed: 07/02/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **Matrix Spike (BG10201-MS1)** | | **Source: 1105413-04** | | | Prepared & Analyzed: 07/02/11 | | | | | |
| Total Alkalinity | 150 | 8.0 | 2.0 | mg/L | 120 | 21 | 100 | 80-120 | | |
| **Matrix Spike (BG10201-MS2)** | | **Source: 1105413-84** | | | Prepared & Analyzed: 07/02/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | ND | 100 | 80-120 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BG10201 - alkalinity** | | | | | | | | | | |
| **Matrix Spike Dup (BG10201-MSD1)** | | **Source: 1105413-04** | | | Prepared & Analyzed: 07/02/11 | | | | | |
| Total Alkalinity | 150 | 8.0 | 2.0 | mg/L | 120 | 21 | 100 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BG10201-MSD2)** | | **Source: 1105413-84** | | | Prepared & Analyzed: 07/02/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | ND | 100 | 80-120 | 0 | 26 |
| **Batch BG10516 - COD prep** | | | | | | | | | | |
| **Blank (BG10516-BLK1)** | | | | | Prepared & Analyzed: 07/01/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BG10516-BS1)** | | | | | Prepared & Analyzed: 07/01/11 | | | | | |
| Chemical Oxygen Demand | 47 | 25 | 10 | mg/L | 50 | | 94 | 90-110 | | |
| **Matrix Spike (BG10516-MS1)** | | **Source: 1105413-04** | | | Prepared & Analyzed: 07/01/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | 12 | 86 | 85-115 | | |
| **Matrix Spike Dup (BG10516-MSD1)** | | **Source: 1105413-04** | | | Prepared & Analyzed: 07/01/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | 12 | 86 | 85-115 | 0 | 32 |
| **Batch BG10524 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BG10524-BLK1)** | | | | | Prepared: 06/30/11 Analyzed: 07/05/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BG10524-BS1)** | | | | | Prepared: 06/30/11 Analyzed: 07/05/11 | | | | | |
| Chloride | 2.75 | 0.20 | 0.050 | mg/L | 3.0 | | 92 | 85-115 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BG10524 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS Dup (BG10524-BSD1)** | | | | | Prepared: 06/30/11 Analyzed: 07/05/11 | | | | | |
| Chloride | 2.89 | 0.20 | 0.050 | mg/L | 3.0 | | 96 | 85-115 | 5 | 200 |
| **Matrix Spike (BG10524-MS1)** | | **Source: 1105413-80** | | | Prepared: 06/30/11 Analyzed: 07/05/11 | | | | | |
| Chloride | 13.0 | 0.20 | 0.050 | mg/L | 3.0 | 9.73 | 109 | 80-120 | | |
| **Matrix Spike (BG10524-MS2)** | | **Source: 1105413-93** | | | Prepared: 06/30/11 Analyzed: 07/05/11 | | | | | |
| Chloride | 18.3 | 0.20 | 0.050 | mg/L | 3.0 | 15.3 | 100 | 80-120 | | |
| **Batch BG10525 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BG10525-BLK1)** | | | | | Prepared & Analyzed: 07/06/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BG10525-BS1)** | | | | | Prepared & Analyzed: 07/06/11 | | | | | |
| Chloride | 3.22 | 0.20 | 0.050 | mg/L | 3.0 | | 107 | 85-115 | | |
| **LCS Dup (BG10525-BSD1)** | | | | | Prepared & Analyzed: 07/06/11 | | | | | |
| Chloride | 2.88 | 0.20 | 0.050 | mg/L | 3.0 | | 96 | 85-115 | 11 | 200 |
| **Matrix Spike (BG10525-MS1)** | | **Source: 1105695-03** | | | Prepared & Analyzed: 07/06/11 | | | | | |
| Chloride | 1,120 | 0.20 | 0.050 | mg/L | 300 | 812 | 103 | 80-120 | | |
| **Matrix Spike (BG10525-MS2)** | | **Source: 1105728-03** | | | Prepared & Analyzed: 07/06/11 | | | | | |
| Chloride | 26.4 +O | 0.20 | 0.050 | mg/L | 3.0 | 24.8 | 53 | 80-120 | | |
| **Batch BG10535 - COD prep** | | | | | | | | | | |
| **Blank (BG10535-BLK1)** | | | | | Prepared & Analyzed: 07/05/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BG10535 - COD prep** | | | | | | | | | | |
| **LCS (BG10535-BS1)** | | | | | Prepared & Analyzed: 07/05/11 | | | | | |
| Chemical Oxygen Demand | 49 | 25 | 10 | mg/L | 50 | | 98 | 90-110 | | |
| **Matrix Spike (BG10535-MS1)** | | **Source: 1105775-01** | | | Prepared & Analyzed: 07/05/11 | | | | | |
| Chemical Oxygen Demand | 1,700 | 25 | 10 | mg/L | 1000 | 810 | 87 | 85-115 | | |
| **Matrix Spike Dup (BG10535-MSD1)** | | **Source: 1105775-01** | | | Prepared & Analyzed: 07/05/11 | | | | | |
| Chemical Oxygen Demand | 1,700 | 25 | 10 | mg/L | 1000 | 810 | 87 | 85-115 | 0 | 32 |
| **Batch BG10704 - TOC prep** | | | | | | | | | | |
| **Blank (BG10704-BLK1)** | | | | | Prepared & Analyzed: 07/07/11 | | | | | |
| Total Organic Carbon | 0.860 I | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BG10704-BS1)** | | | | | Prepared & Analyzed: 07/07/11 | | | | | |
| Total Organic Carbon | 10.4 | 1.0 | 0.50 | mg/L | 10 | | 104 | 90-110 | | |
| **Matrix Spike (BG10704-MS1)** | | **Source: 1105413-04** | | | Prepared & Analyzed: 07/07/11 | | | | | |
| Total Organic Carbon | 14.0 | 1.0 | 0.50 | mg/L | 10 | 5.46 | 85 | 85-115 | | |
| **Matrix Spike Dup (BG10704-MSD1)** | | **Source: 1105413-04** | | | Prepared & Analyzed: 07/07/11 | | | | | |
| Total Organic Carbon | 13.8 | 1.0 | 0.50 | mg/L | 10 | 5.46 | 83 | 85-115 | 1 | 10 |
| **Batch BG10731 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BG10731-BLK1)** | | | | | Prepared & Analyzed: 07/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BG10731 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **LCS (BG10731-BS1)** | | | | | Prepared & Analyzed: 07/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.73 | 0.20 | 0.05 | mg/L | 2.5 | | 108 | 90-110 | | |
| **Matrix Spike (BG10731-MS1)** | | **Source: 1105678-03** | | | Prepared & Analyzed: 07/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 4.19 | 0.20 | 0.05 | mg/L | 2.5 | 1.20 | 118 | 80-120 | | |
| **Matrix Spike Dup (BG10731-MSD1)** | | **Source: 1105678-03** | | | Prepared & Analyzed: 07/07/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.85 | 0.20 | 0.05 | mg/L | 2.5 | 1.20 | 104 | 80-120 | 8 | 20 |
| **Batch BG11108 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BG11108-BLK1)** | | | | | Prepared & Analyzed: 07/11/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **Blank (BG11108-BLK2)** | | | | | Prepared & Analyzed: 07/11/11 | | | | | |
| Ammonia as N | 0.005 U | 0.010 | 0.005 | mg/L | | | | | | |
| **LCS (BG11108-BS1)** | | | | | Prepared & Analyzed: 07/11/11 | | | | | |
| Ammonia as N | 0.49 | 0.010 | 0.005 | mg/L | 0.50 | | 98 | 90-110 | | |
| **LCS (BG11108-BS2)** | | | | | Prepared & Analyzed: 07/11/11 | | | | | |
| Ammonia as N | 0.50 | 0.010 | 0.005 | mg/L | 0.50 | | 100 | 90-110 | | |
| **Matrix Spike (BG11108-MS1)** | | **Source: 1105678-01** | | | Prepared & Analyzed: 07/11/11 | | | | | |
| Ammonia as N | 0.48 | 0.010 | 0.005 | mg/L | 0.50 | 0.029 | 90 | 90-110 | | |
| **Matrix Spike (BG11108-MS2)** | | **Source: 1105715-07** | | | Prepared & Analyzed: 07/11/11 | | | | | |
| Ammonia as N | 0.54 | 0.010 | 0.005 | mg/L | 0.50 | 0.055 | 98 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BG11108 - Ammonia by SEAL** | | | | | | | | | | |
| **Matrix Spike Dup (BG11108-MSD1)** | | **Source: 1105678-01** | | | Prepared & Analyzed: 07/11/11 | | | | | |
| Ammonia as N | 0.47 | 0.010 | 0.005 | mg/L | 0.50 | 0.029 | 89 | 90-110 | 2 | 10 |
| **Matrix Spike Dup (BG11108-MSD2)** | | **Source: 1105715-07** | | | Prepared & Analyzed: 07/11/11 | | | | | |
| Ammonia as N | 0.53 | 0.010 | 0.005 | mg/L | 0.50 | 0.055 | 95 | 90-110 | 3 | 10 |
| **Batch BG11209 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BG11209-BLK1)** | | | | | Prepared: 07/12/11 Analyzed: 07/13/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BG11209-BS1)** | | | | | Prepared: 07/12/11 Analyzed: 07/13/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.36 | 0.20 | 0.05 | mg/L | 2.5 | | 93 | 90-110 | | |
| **Matrix Spike (BG11209-MS1)** | | **Source: 1105689-07** | | | Prepared: 07/12/11 Analyzed: 07/13/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.96 | 0.20 | 0.05 | mg/L | 2.5 | 0.685 | 90 | 80-120 | | |
| **Matrix Spike Dup (BG11209-MSD1)** | | **Source: 1105689-07** | | | Prepared: 07/12/11 Analyzed: 07/13/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.12 | 0.20 | 0.05 | mg/L | 2.5 | 0.685 | 96 | 80-120 | 5 | 20 |

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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BH10118 - DOC prep** | | | | | | | | | | |
| **Blank (BH10118-BLK1)** | | | | | Prepared: 06/28/11 Analyzed: 07/07/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BH10118-BS1)** | | | | | Prepared: 06/28/11 Analyzed: 07/07/11 | | | | | |
| Dissolved Organic Carbon | 10.6 | 1.0 | 0.50 | mg/L | 10 | | 106 | 90-110 | | |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BG10532 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BG10532-BLK1)** | | | | | Prepared & Analyzed: 07/06/11 | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Potassium | 0.058 | 0.050 | 0.010 | mg/L | | | | | | |
| Iron | 0.020 U | 0.10 | 0.020 | mg/L | | | | | | |
| Sodium | 0.012 I | 0.050 | 0.010 | mg/L | | | | | | |
| Calcium | 0.017 I | 0.050 | 0.010 | mg/L | | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| Magnesium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| **LCS (BG10532-BS1)** | | | | | Prepared & Analyzed: 07/06/11 | | | | | |
| Manganese | 0.39 | 0.010 | 0.0010 | mg/L | 0.40 | | 98 | 85-115 | | |
| Calcium | 21 | 0.050 | 0.010 | mg/L | 20 | | 106 | 85-115 | | |
| Boron | 0.37 | 0.10 | 0.050 | mg/L | 0.40 | | 93 | 85-115 | | |
| Sodium | 21 | 0.050 | 0.010 | mg/L | 20 | | 105 | 85-115 | | |
| Potassium | 20 | 0.050 | 0.010 | mg/L | 20 | | 100 | 85-115 | | |
| Magnesium | 21 | 0.050 | 0.010 | mg/L | 20 | | 105 | 85-115 | | |
| Iron | 8.3 | 0.10 | 0.020 | mg/L | 8.0 | | 103 | 85-115 | | |
| **Matrix Spike (BG10532-MS1)** | | **Source: 1105187-01** | | | Prepared: 07/06/11 Analyzed: 07/07/11 | | | | | |
| Boron | )00,000,000 +O | 0.10 | 0.050 | mg/L | 0.40 | 00000000 | 0 | 70-130 | | |
| Sodium | 550 +O | 0.050 | 0.010 | mg/L | 20 | 560 | NR | 70-130 | | |
| Manganese | 0.77 | 0.010 | 0.0010 | mg/L | 0.40 | 0.37 | 100 | 70-130 | | |
| Calcium | 150 | 0.050 | 0.010 | mg/L | 20 | 130 | 85 | 70-130 | | |
| Potassium | 48 | 0.050 | 0.010 | mg/L | 20 | 28 | 98 | 70-130 | | |
| Iron | 15 | 0.10 | 0.020 | mg/L | 8.0 | 7.0 | 101 | 70-130 | | |
| Magnesium | 61 | 0.050 | 0.010 | mg/L | 20 | 43 | 93 | 70-130 | | |
| **Matrix Spike (BG10532-MS2)** | | **Source: 1105413-19** | | | Prepared & Analyzed: 07/06/11 | | | | | |
| Sodium | 28 | 0.050 | 0.010 | mg/L | 20 | 8.4 | 97 | 70-130 | | |
| Calcium | 47 | 0.050 | 0.010 | mg/L | 20 | 30 | 87 | 70-130 | | |
| Boron | 0.49 | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 97 | 70-130 | | |
| Manganese | 0.59 | 0.010 | 0.0010 | mg/L | 0.40 | 0.19 | 99 | 70-130 | | |
| Magnesium | 28 | 0.050 | 0.010 | mg/L | 20 | 8.5 | 98 | 70-130 | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 11 | 92 | 70-130 | | |
| Iron | 8.1 | 0.10 | 0.020 | mg/L | 8.0 | 0.067 | 100 | 70-130 | | |

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| Analyte | Result | | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BG10532 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | | |
| **Matrix Spike Dup (BG10532-MSD1)** | | | **Source: 1105187-01** | | | Prepared & Analyzed: 07/06/11 | | | | | |
| Sodium | 540 | +O | 0.050 | 0.010 | mg/L | 20 | 560 | NR | 70-130 | 2 | 30 |
| Magnesium | 59 | | 0.050 | 0.010 | mg/L | 20 | 43 | 81 | 70-130 | 4 | 30 |
| Potassium | 44 | | 0.050 | 0.010 | mg/L | 20 | 28 | 82 | 70-130 | 7 | 30 |
| Calcium | 140 | | 0.050 | 0.010 | mg/L | 20 | 130 | 60 | 70-130 | 3 | 30 |
| Iron | 14 | | 0.10 | 0.020 | mg/L | 8.0 | 7.0 | 88 | 70-130 | 8 | 30 |
| Boron | )00,000,000 | +O | 0.10 | 0.050 | mg/L | 0.40 | 00000000 | 0 | 70-130 | 0 | 30 |
| Manganese | 0.74 | | 0.010 | 0.0010 | mg/L | 0.40 | 0.37 | 94 | 70-130 | 3 | 30 |
| **Matrix Spike Dup (BG10532-MSD2)** | | | **Source: 1105413-19** | | | Prepared: 07/06/11 Analyzed: 07/07/11 | | | | | |
| Boron | 0.50 | | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 99 | 70-130 | 2 | 30 |
| Sodium | 29 | | 0.050 | 0.010 | mg/L | 20 | 8.4 | 104 | 70-130 | 5 | 30 |
| Potassium | 32 | | 0.050 | 0.010 | mg/L | 20 | 11 | 105 | 70-130 | 8 | 30 |
| Calcium | 50 | | 0.050 | 0.010 | mg/L | 20 | 30 | 100 | 70-130 | 6 | 30 |
| Manganese | 0.63 | | 0.010 | 0.0010 | mg/L | 0.40 | 0.19 | 108 | 70-130 | 6 | 30 |
| Magnesium | 30 | | 0.050 | 0.010 | mg/L | 20 | 8.5 | 107 | 70-130 | 6 | 30 |
| Iron | 8.8 | | 0.10 | 0.020 | mg/L | 8.0 | 0.067 | 110 | 70-130 | 9 | 30 |
| **Batch BG10534 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | | |
| **Blank (BG10534-BLK1)** | | | | | | Prepared: 07/05/11 Analyzed: 07/06/11 | | | | | |
| Potassium | 0.010 | U | 0.050 | 0.010 | mg/L | | | | | | |
| Magnesium | 0.092 | | 0.050 | 0.010 | mg/L | | | | | | |
| Manganese | 0.0010 | U | 0.010 | 0.0010 | mg/L | | | | | | |
| Calcium | 0.011 | I | 0.050 | 0.010 | mg/L | | | | | | |
| Sodium | 0.018 | I | 0.050 | 0.010 | mg/L | | | | | | |
| Iron | 0.036 | I | 0.10 | 0.020 | mg/L | | | | | | |
| Boron | 0.050 | U | 0.10 | 0.050 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BG10534 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **LCS (BG10534-BS1)** | | | | | Prepared: 07/05/11 Analyzed: 07/06/11 | | | | | |
| Iron | 8.4 | 0.10 | 0.020 | mg/L | 8.0 | | 105 | 85-115 | | |
| Calcium | 21 | 0.050 | 0.010 | mg/L | 20 | | 107 | 85-115 | | |
| Boron | 0.38 | 0.10 | 0.050 | mg/L | 0.40 | | 96 | 85-115 | | |
| Magnesium | 21 | 0.050 | 0.010 | mg/L | 20 | | 106 | 85-115 | | |
| Sodium | 21 | 0.050 | 0.010 | mg/L | 20 | | 107 | 85-115 | | |
| Manganese | 0.42 | 0.010 | 0.0010 | mg/L | 0.40 | | 105 | 85-115 | | |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | | 103 | 85-115 | | |
| **Matrix Spike (BG10534-MS1)** | | **Source: 1105413-76** | | | Prepared: 07/05/11 Analyzed: 07/07/11 | | | | | |
| Boron | 0.45 | 0.10 | 0.050 | mg/L | 0.40 | ND | 112 | 70-130 | | |
| Potassium | 36 | 0.050 | 0.010 | mg/L | 20 | 15 | 106 | 70-130 | | |
| Magnesium | 30 | 0.050 | 0.010 | mg/L | 20 | 8.2 | 108 | 70-130 | | |
| Sodium | 25 | 0.050 | 0.010 | mg/L | 20 | 4.3 | 104 | 70-130 | | |
| Calcium | 54 | 0.050 | 0.010 | mg/L | 20 | 32 | 109 | 70-130 | | |
| Manganese | 0.52 | 0.010 | 0.0010 | mg/L | 0.40 | 0.093 | 107 | 70-130 | | |
| Iron | 8.8 | 0.10 | 0.020 | mg/L | 8.0 | 0.042 | 110 | 70-130 | | |
| **Matrix Spike (BG10534-MS2)** | | **Source: 1105519-04** | | | Prepared: 07/05/11 Analyzed: 07/06/11 | | | | | |
| Manganese | 0.43 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0078 | 105 | 70-130 | | |
| Sodium | 56 | 0.050 | 0.010 | mg/L | 20 | 37 | 95 | 70-130 | | |
| Magnesium | 40 | 0.050 | 0.010 | mg/L | 20 | 20 | 102 | 70-130 | | |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | 0.14 | 104 | 70-130 | | |
| Potassium | 25 | 0.050 | 0.010 | mg/L | 20 | 4.8 | 103 | 70-130 | | |
| Calcium | 77 | 0.050 | 0.010 | mg/L | 20 | 55 | 108 | 70-130 | | |
| Boron | 0.55 | 0.10 | 0.050 | mg/L | 0.40 | 0.15 | 100 | 70-130 | | |
| **Matrix Spike Dup (BG10534-MSD1)** | | **Source: 1105413-76** | | | Prepared: 07/05/11 Analyzed: 07/06/11 | | | | | |
| Sodium | 25 | 0.050 | 0.010 | mg/L | 20 | 4.3 | 105 | 70-130 | 0.1 | 30 |
| Potassium | 36 | 0.050 | 0.010 | mg/L | 20 | 15 | 107 | 70-130 | 0.3 | 30 |
| Manganese | 0.52 | 0.010 | 0.0010 | mg/L | 0.40 | 0.093 | 108 | 70-130 | 0.5 | 30 |
| Calcium | 53 | 0.050 | 0.010 | mg/L | 20 | 32 | 103 | 70-130 | 2 | 30 |
| Magnesium | 30 | 0.050 | 0.010 | mg/L | 20 | 8.2 | 107 | 70-130 | 0.4 | 30 |
| Boron | 0.45 | 0.10 | 0.050 | mg/L | 0.40 | ND | 111 | 70-130 | 0.7 | 30 |
| Iron | 8.9 | 0.10 | 0.020 | mg/L | 8.0 | 0.042 | 111 | 70-130 | 0.9 | 30 |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**September 9, 2011**
**Work Order: 1105413**
**Revised Report**

**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BG10534 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Matrix Spike Dup (BG10534-MSD2)** | | **Source: 1105519-04** | | | Prepared: 07/05/11 Analyzed: 07/06/11 | | | | | |
| Iron | 8.4 | 0.10 | 0.020 | mg/L | 8.0 | 0.14 | 103 | 70-130 | 0.7 | 30 |
| Sodium | 57 | 0.050 | 0.010 | mg/L | 20 | 37 | 99 | 70-130 | 2 | 30 |
| Calcium | 78 | 0.050 | 0.010 | mg/L | 20 | 55 | 112 | 70-130 | 1 | 30 |
| Potassium | 25 | 0.050 | 0.010 | mg/L | 20 | 4.8 | 101 | 70-130 | 2 | 30 |
| Boron | 0.54 | 0.10 | 0.050 | mg/L | 0.40 | 0.15 | 98 | 70-130 | 1 | 30 |
| Magnesium | 41 | 0.050 | 0.010 | mg/L | 20 | 20 | 105 | 70-130 | 1 | 30 |
| Manganese | 0.43 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0078 | 104 | 70-130 | 0.3 | 30 |

**Hazen and Sawyer**
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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **BLK (BATCH-BLK1 (Water))** | | | | | Prepared & Analyzed: | | | | | |
| Dissolved Organic Carbon | 0.5 U | 1 | 0.5 | mg/L | | | | 0-0 | | 0 |
| **BS (BATCH-BS1 (Water))** | | | | | Prepared & Analyzed: | | | | | |
| Dissolved Organic Carbon | 0.5 U | 1 | 0.5 | mg/L | | | | 90-110 | | 10 |
| **MS (BATCH-MS1 (Water))** | | | | | Prepared & Analyzed: | | | | | |
| Dissolved Organic Carbon | 0.5 U | 1 | 0.5 | mg/L | | | | 85-125 | | 25 |
| **MSD (BATCH-MSD1 (Water))** | | | | | Prepared & Analyzed: | | | | | |
| Dissolved Organic Carbon | 0.5 U | 1 | 0.5 | mg/L | | | | 85-125 | | 25 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **BLK (BATCH-BLK1 (Water))** | | | | | Prepared & Analyzed: | | | | | |
| Total Organic Carbon | 0.5 U | 1 | 0.5 | mg/L | | | | 0-0 | | 0 |
| **BS (BATCH-BS1 (Water))** | | | | | Prepared & Analyzed: | | | | | |
| Total Organic Carbon | 0.5 U | 1 | 0.5 | mg/L | | | | 90-110 | | |
| **MS (BATCH-MS1 (Water))** | | | | | Prepared & Analyzed: | | | | | |
| Total Organic Carbon | 0.5 U | 1 | 0.5 | mg/L | | | | 85-115 | | 10 |
| **MSD (BATCH-MSD1 (Water))** | | | | | Prepared & Analyzed: | | | | | |
| Total Organic Carbon | 0.5 U | 1 | 0.5 | mg/L | | | | 85-115 | | 10 |

**Hazen and Sawyer**
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## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

+O Matrix spike source sample was over the reccommended range for the method.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1105413

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Chloride | 1LP, Cool Total Alkalinity, F, $NO_3$, OP, $SO_4$ | 250mL P, $H_2SO_4$ TKN, Nox, $NH_3$, COD | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Cd, K, Fe, Mg, Na | Field Temperature | Field pH | Field Conductivity | Field DO | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-AA9-14 | 6/27/11 | 8:28 | GW | | X | 1 | | | | | | 24.5 | 4.60 | 752 | 1.32 | | | | | |
| 02 | DP-AA9-22 | 6/27/11 | 9:04 | GW | | X | 1 | | | | | | 24.7 | 5.19 | 279 | 0.26 | 279 | | | | |
| 03 | DP-AA9-27 | 6/27/11 | 9:16 | GW | | X | 1 | | | | | | 24.7 | 5.08 | 295 | 0.67 | | | | | |
| 04 | DP-C11-8 | 6/27/11 | 9:38 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 27.8 | 5.83 | 385 | 3.05 | | | | | |
| 05 | ~~DP-D07-6~~ 11054B-054 STE LIFT STA | ~~6/28-11~~ | ~~1350~~ | GW | | X | | 1 | 1 | ✓ | 2 | 1 | ~~Dry~~ | ~~Dry~~ | ~~Dry~~ | ~~Dry~~ | 6-28-11 | | | | |
| 06 | DP-D07-9 | 06/28/11 | 0805 | GW | | X | 1 | | | | | | 24.4 | 4.04 | 539 | 1.86 | | | | | |
| 07 | DP-D08-9 | 6/27/11 | 13:50 | GW | | X | 1 | | | | | | 27.4 | 5.33 | 411 | 1.75 | | | | | |
| 08 | DP-D09-8 | 6/27/11 | 12:38 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 27.0 | 4.38 | 670 | 1.09 | | | | | |
| 09 | DP-D09-15 | 6/27/11 | 13:10 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 26.2 | 5.19 | 461 | 0.88 | | | | | |
| 10 | DP-D11-11 | 6/27/11 | 10:54 | GW | | X | 1 | | | | | | 26.3 | 5.23 | 464 | 1.06 | | | | | |
| 11 | DP-D12-11 | 6/27/11 | 10:30 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 26.2 | 4.94 | 487 | 0.34 | | | | | |
| 12 | DP-D7.5-14 | 6/29/11 | 1225 | GW | | X | 1 | | | | | | 24.4 | 4.5 | 483.3 | 0.43 | | | | | |

| Containers Prepared/ Relinquished: | Date/Time: 1950 06-23-11 | Received: | Date/Time: 1000 6-24-11 |
|---|---|---|---|
| Relinquished: | Date/Time: 1500 6-27-11 | Received: | Date/Time: 1500 6-27-11 |
| Relinquished: | Date/Time: 1550 6-28-11 | Received: | Date/Time: |
| Relinquished: | Date/Time: 0730 6-30-11 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace? Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks:

**1105413**

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1105413

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Chloride | 1LP, Cool Total Alkalinity, F, $NO_3$, OP, $SO_4$ | 250mL P, $H_2SO_4$ TKN, Nox, $NH_3$, COD | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Cd, K, Fe, Mg, Na | Field Temperature | Field pH | Field Conductivity | Field DO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | DP-F08-20 | 062811 | 0940 | GW | | X | 1 | | | | | | 24.7 | 5.3 | 347.0 | 0.45 |
| 26 | DP-F08-28 | 062811 | 0945 | GW | | X | 1 | | | | | | 24.3 | 5.4 | 323.7 | 0.26 |
| 27 | DP-F10-11 | 062811 | 0950 | GW | | X | 1 | | | | | | 25.3 | 4.9 | 492.2 | 0.38 |
| 28 | DP-F11-11 | 062811 | 0955 | GW | | X | 1 | | | | | | 26.0 | 4.8 | 447.0 | 0.31 |
| 29 | DP-F11-15 | 062811 | 1000 | GW | | X | 1 | | | | | | 24.6 | 4.7 | 486.5 | 0.15 |
| 30 | DP-F11-18 | 062811 | 1005 | GW | | X | 1 | | | | | | 24.5 | 5.0 | 359.3 | 0.33 |
| 31 | DP-F11-21 | 062811 | 1010 | GW | | X | 1 | | | | | | 24.4 | 4.9 | 310.1 | 0.37 |
| 32 | DP-F11-24 | 062811 | 1020 | GW | | X | 1 | | | | | | 24.4 | 4.8 | 310.4 | 0.23 |
| 33 | DP-F11-27 | 062811 | 1025 | GW | | X | 1 | | | | | | 24.3 | 4.9 | 331.3 | 0.18 |
| 34 | DP-F12-10 | 062811 | 1030 | GW | | X | 1 | | | | | | 25.3 | 4.3 | 500 | 0.16 |
| 35 | DP-F15-14 | 62911 | 1250 | GW | | X | 1 | | | | | | 24.2 | 4.5 | 486.9 | 0.28 |
| 36 | DP-F15-20 | 62911 | 1255 | GW | | X | 1 | | | | | | 24.4 | 4.6 | 359.2 | 0.24 |

| Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 1450 062811 | Received: | Date/Time: 1000 62411 |
| Relinquished: | Date/Time: 1550 62811 | Received: | Date/Time: |
| Relinquished: | Date/Time: 730 63011 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace? Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks:

**1105413**

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

Chain of Custody

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project No. 1105413

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Chloride | 1LP, Cool Total Alkalinity, F, $NO_3$, OP, $SO_4$ | 250mL P, $H_2SO_4$ TKN, Nox, $NH_3$, COD | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Cd, K, Fe, Mg, Na | Field Temperature | Field pH | Field Conductivity | Field DO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | DP-E04-8 | 062811 | 0910 | GW | | X | 1 | | | | | | 26.0 | 4.7 | 185.1 | 1.59 |
| 14 | DP-E07-10 | 062811 | 0905 | GW | | X | 1 | | | | | | 25.5 | 4.5 | 245.2 | 0.24 |
| 15 | DP-E08-8 | 062811 | 0900 | GW | | X | 1 | | | | | | 25.8 | 4.5 | 348.3 | 0.28 |
| 16 | DP-E11-12 | 062811 | 0850 | GW | | X | 1 | | | | | | 24.9 | 5.0 | 488.6 | 0.28 |
| 17 | DP-E12-10 | 062811 | 0820 | GW | | X | 1 | | | | | | 25.1 | 4.9 | 502 | 0.29 |
| 18 | DP-E12-15 | 062811 | 0825 | GW | | X | 1 | | | | | | 24.7 | 5.2 | 462.4 | 0.37 |
| 19 | DP-E12-22 | 062811 | 0830 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 24.2 | 4.8 | 328.2 | 0.35 |
| 20 | DP-E12-22-D | 062811 | 0835 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 24.2 | 4.8 | 328.2 | 0.35 |
| 21 | DP-E12-28 | 062811 | 0840 | GW | | X | 1 | | | | | | 24.2 | 4.8 | 320.2 | 0.34 |
| 22 | DP-F04-17 | 062811 | 0925 | GW | | X | 1 | | | | | | 25.1 | 6.1 | 573.8 | 0.33 |
| 23 | DP-F04-32 | 062811 | 0930 | GW | | X | 1 | | | | | | 24.6 | 6.1 | 335.3 | 0.26 |
| 24 | DP-F05-5 | 062811 | 0935 | GW | | X | 1 | | | | | | Dry | Dry | Dry | Dry |

| | | | |
|---|---|---|---|
| Containers Prepared/ Relinquished: HH | Date/Time: 1445 6 23 11 | Received: | Date/Time: 1000 6 24 11 |
| Relinquished: | Date/Time: 1350 6 28 11 | Received: | Date/Time: |
| Relinquished: | Date/Time: 730 6 30 11 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

| | |
|---|---|
| Seal intact? | Y N (N/A) |
| Samples intact upon arrival? | (Y) N N/A |
| Received on ice? Temp_____ | (Y) N N/A |
| Proper preservatives indicated? | (Y) N N/A |
| Rec'd within holding time? | (Y) N N/A |
| Volatiles rec'd w/out headspace? | Y N (N/A) |
| Proper containers used? | (Y) N N/A |

Instructions / Remarks:

**1105413**

Add Bromide to
DP-F04-17
DP-F04-32

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No 1105413

Client Name: Hazen and Sawyer

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Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Chloride | 1LP, Cool Total Alkalinity, F, $NO_3$, OP, $SO_4$ | 250mL P, $H_2SO_4$ TKN, Nox, $NH_3$, COD | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Cd, K, Fe, Mg, Na | Field Temperature | Field pH | Field Conductivity | Field DO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 37 | DP-F15-26 | 62911 | 1300 | GW | | X | 1 | | | | | | 24.2 | 4.3 | 320.3 | 0.24 |
| 38 | DP-G07-13 | 062811 | 1210 | GW | | X | 1 | | | | | | 24.9 | 5.4 | 255.0 | 3.13 |
| 39 | DP-G07-15 | 062811 | 1215 | GW | | X | 1 | | | | | | 25.6 | 5.0 | 295.5 | 0.83 |
| 40 | DP-G07-17 | 062811 | 1220 | GW | | X | 1 | | | | | | 24.5 | 5.0 | 337.3 | 0.77 |
| 41 | DP-G07-21 | 062811 | 1235 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 24.8 | 5.1 | 333.4 | 1.32 |
| 42 | DP-G07-24 | 062811 | 1245 | GW | | X | 1 | | | | | | 24.6 | 4.9 | 285.5 | 0.63 |
| 43 | DP-G07-27 | 062811 | 1250 | GW | | X | 1 | | | | | | 25.0 | 5.0 | 325.4 | 1.75 |
| 44 | ~~DP-G08-5~~ Trip Blank 6/29 1105413-44A 1330 | ~~062811~~ | ~~1200~~ | GW | | X | 1 | | | | | | ~~Dry~~ | ~~Dry~~ | ~~Dry~~ | ~~Dry~~ |
| 45 | DP-G09-11 | 062811 | 1150 | GW | | X | 1 | | | | | | 27.9 | 5.4 | 274.1 | 2.87 |
| 46 | DP-G11-8 | 062811 | 1145 | GW | | X | 1 | | | | | | 27.6 | 4.6 | 312.0 | 1.05 |
| 47 | DP-G12-9 | 062811 | 1045 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 26.5 | 4.22 | 358.9 | 0.24 |
| 48 | DP-G12-15 | 062811 | 1055 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 25.2 | 4.7 | 477.7 | 0.20 |

SH 062911

| Relinquished | Date/Time | Received | Date/Time |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 1450 062311 | Received: | Date/Time: 1000 62411 |
| Relinquished: | Date/Time: 1550 62611 | Received: | Date/Time: |
| Relinquished: | Date/Time: 730 63011 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace? Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks:

1105413

DP-G08-5 Bottle used for trip blank. Per 6/29/11 1330 Josephin

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1105413

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Chloride | 1LP, Cool Total Alkalinity, F, $NO_3$, OP, $SO_4$ | 250mL P, $H_2SO_4$ TKN, Nox, $NH_3$, COD | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Cd, K, Fe, Mg, Na | Field Temperature | Field pH | Field Conductivity | Field DO | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | DP-G12-18 | 06 28 11 | 1100 | GW | | X | 1 | | | | | | 24.6 | 4.8 | 443.2 | 0.24 | | | | | |
| 50 | DP-G12-21 | 06 28 11 | 1110 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 24.4 | 4.9 | 361.3 | 0.10 | | | | | |
| 51 | DP-G12-~~21~~ 24 | 06 28 11 | 1115 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 24.3 | 4.8 | 345.8 | 0.12 | | | | | |
| 52 | DP-G12-~~21~~ 27 | 06 28 11 | 1130 | GW | | X | 1 | 1 | 1 | 1 | 2 | 1 | 24.8 | 4.8 | 334.3 | 0.20 | | | | | |
| 53 | DP-H06-7 | 06 28 11 | 1305 | GW | | X | 1 | | | | | | ~~Dry~~ | ~~Dry~~ | ~~Dry~~ | ~~Dry~~ | Temp 30.2 | pH 5.9 | cond 164.3 | do 4.66 | |
| 54 | DP-H09-12 | 06 28 11 | 1315 | GW | | X | 1 | | | | | | 25.8 | 5.0 | 274.7 | 0.76 | | | | | |
| 55 | DP-H10-11 | 06 28 11 | 1325 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 28.5 | 5.6 | 228.5 | 5.68 | | | | | |
| 56 | DP-I06-14 | 6 29 11 | 930 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 24.4 | 4.7 | 217.5 | 0.27 | | | | | |
| 57 | DP-I06-20 | 6 29 11 | 935 | GW | | X | 1 | | | | | | 24.1 | 4.9 | 361.4 | 0.33 | | | | | |
| 58 | DP-I06-26 | 6 29 11 | 940 | GW | | X | 1 | | | | | | 24.2 | 5.0 | 312.4 | 0.25 | | | | | |
| 59 | DP-I12-6 | 6 29 11 | 925 | GW | | X | 1 | | | | | | 26.6 | 4.7 | 138.0 | 0.43 | | | | | |
| 60 | DP-J08-6 | 6 29 11 | 950 | GW | | X | 1 | | | | | | 27.3 | 5.9 | 182.8 | 3.12 | well water only | | | | |

| Containers Prepared/ Relinquished: | Date/Time: 1450 6 23 11 | Received: | Date/Time: ice 6 24 11 |
|---|---|---|---|
| Relinquished: | Date/Time: 1550 6 28 11 | Received: | Date/Time: |
| Relinquished: | Date/Time: 730 6 30 11 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace? Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks:

**1105413**

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1105413

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Chloride | 1LP, Cool Total Alkalinity, F, $NO_3$, OP, $SO_4$ | 250mL P, $H_2SO_4$ TKN, Nox, $NH_3$, COD | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Cd, K, Fe, Mg, Na | Field Temperature | Field pH | Field Conductivity | Field DO | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 61 | DP-J09-12 | 6/29/11 | 1000 | GW | | X | 1 | | | | | | 25.7 | 4.8 | 189.1 | 0.37 | | | | | |
| 62 | DP-J09-14 | 6/29/11 | 1005 | GW | | X | 1 | | | | | | 24.8 | 4.5 | 249.3 | 0.26 | | | | | |
| 63 | DP-J09-20 | 6/29/11 | 1010 | GW | | X | 1 | | | | | | 24.1 | 4.7 | 368.2 | 0.20 | | | | | |
| 64 | DP-J09-26 | 6/29/11 | 1015 | GW | | X | 1 | | | | | | 24.0 | 4.5 | 306.4 | 0.21 | | | | | |
| 65 | DP-J12-13 | 6/29/11 | 1020 | GW | | X | 1 | | | | | | 24.9 | 4.6 | 249.2 | 0.27 | | | | | |
| 66 | DP-J12-15 | 6/29/11 | 1025 | GW | | X | 1 | | | | | | 24.7 | 4.6 | 287.0 | 0.24 | | | | | |
| 67 | DP-J12-20 | 6/29/11 | 1030 | GW | | X | 1 | | | | | | 24.5 | 4.9 | 355.8 | 0.41 | | | | | |
| 68 | DP-J12-27 | 6/29/11 | 1035 | GW | | X | 1 | | | | | | 24.4 | 4.7 | 310.1 | 0.19 | | | | | |
| 69 | DP-K10-7 | 6/29/11 | 1045 | GW | | X | 1 | | | | | | 27.4 | 5.1 | 175.6 | 1.30 | well + Dry | | | | |
| 70 | DP-K12-5 | 6/29/11 | 1040 | GW | | X | 1 | | | | | | 27.5 | 4.7 | 80.3 | 0.71 | | | | | |
| 71 | DP-M07-21 | 6/29/11 | 1050 | GW | | X | 1 | | | | | | 24.5 | 4.9 | 366.1 | 0.27 | | | | | |
| 72 | DP-M07-27 | 6/29/11 | 1055 | GW | | X | 1 | | | | | | 24.3 | 5.0 | 302.9 | 0.18 | | | | | |

| Relinquished | Date/Time | Received | Date/Time |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 1450 6/29/11 | Received: | Date/Time: 1000 6/29/11 |
| Relinquished: | Date/Time: 1550 6/28/11 | Received: | Date/Time: |
| Relinquished: | Date/Time: 730 6/30/11 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace? Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks:

1105413

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1105413

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Chloride | 1LP, Cool Total Alkalinity, F, $NO_3$, OP, $SO_4$ | 250mL P, $H_2SO_4$ TKN, Nox, $NH_3$, COD | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Cd, K, Fe, Mg, Na | Field Temperature | Field pH | Field Conductivity | Field DO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 73 | DP-M12-10 | 6/29/11 | 1100 | GW | | X | 1 | | | | | | 27.0 | 5.1 | 176.8 | 0.84 |
| 74 | DP-N12-14 | 6/29/11 | 1110 | GW | | X | 1 | | | | | | 25.4 | 4.4 | 177.2 | 0.18 |
| 75 | DP-N12-18 | 6/29/11 | 1115 | GW | | X | 1 | | | | | | 25.2 | 4.7 | 246.9 | 0.32 |
| 76 | DP-N12-21 | 6/29/11 | 1120 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 24.9 | 4.8 | 309.2 | 0.20 |
| 77 | DP-N12-24 | 6/29/11 | 1130 | GW | | X | 1 | | | | | | 24.7 | 4.6 | 354.2 | 0.13 |
| 78 | DP-N12-27 | 6/29/11 | 1135 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 24.6 | 4.7 | 364.4 | 0.10 |
| 79 | DP-N12-27-D | 6/29/11 | 1140 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 24.6 | 4.7 | 364.9 | 0.10 |
| 80 | DP-O10-18 | 6/29/11 | 1210 | GW | | X | 1 | | | | | | 25.1 | 4.9 | 335.4 | 0.69 |
| 81 | DP-O10-24 | 6/29/11 | 1215 | GW | | X | 1 | | | | | | 24.7 | 4.7 | 366.1 | 0.31 |
| 82 | DP-Q15-21 | 6/29/11 | 1235 | GW | | X | 1 | | | | | | 25.2 | 4.8 | 357.8 | 0.32 |
| 83 | DP-Q15-26 | 6/29/11 | 1240 | GW | | X | 1 | | | | | | 25.3 | 4.8 | 384.9 | 0.35 |
| 84 | PZ03-H11-6 | 06/27/11 | 1705 | GW | | X | | 1 | 1 | 1 | 2 | 1 | 78.1 | 4.5 | 164.9 | 3.01 |

| Relinquished | Date/Time | Received | Date/Time |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 1450 6-23-11 | Received: | Date/Time: 1000 6 24 11 |
| Relinquished: | Date/Time: 1845 6 28 11 | Received: | Date/Time: |
| Relinquished: | Date/Time: 730 6 30 11 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace? Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks:

1105413

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Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1105413

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Chloride | 1LP, Cool Total Alkalinity, F, $NO_3$, OP, $SO_4$ | 250mL P, $H_2SO_4$ TKN, Nox, $NH_3$, COD | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Cd, K, Fe, Mg, Na | Field Temperature | Field pH | Field Conductivity | Field DO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 85 | PZ04-BKG-9 | 062711 | 0840 | GW | | X | 1 | | | | | | 25.9 | 5.6 | 110.2 | 4.25 |
| 86 | PZ07-D05-7 | 062711 | 1140 | GW | | X | 1 | | | | | | [illegible] | 4.7 | 287.5 | 2.50 |
| 87 | PZ11-E09-10 | 062711 | 1100 | GW | | X | | 1 | 1 | 1 | 2 | 1 | [illegible] | 5.3 | 453.9 | 1.77 |
| 88 | PZ11-E09-10-D | 062711 | 1105 | GW | | X | | 1 | 1 | 1 | 2 | 1 | [illegible] | 5.3 | 453.9 | 1.77 |
| 89 | PZ15-A11-6 | 062711 | 1040 | GW | | X | 1 | | | | | | [illegible] | 5.26 | 195.1 | 3.13 |
| 90 | PZ16-C12-28 | 062711 | 1032 | GW | | X | 1 | | | | | | 25.1 | 5.5 | 305.9 | 0.47 |
| 91 | PZ17-I15-26 | 062711 | 1239 | GW | | X | 1 | | | | | | 25.4 | 4.9 | 307.3 | 1.60 |
| 92 | PZ18-R12-26 | 062711 | 1302 | GW | | X | 1 | | | | | | 26.6 | 5.1 | 251.9 | 0.57 |
| 93 | PZ19-G10-26 | 062711 | 0931 | GW | | X | 1 | | | | | | 23.9 | 5.0 | 294.4 | 0.65 |
| 94 | PZ20-G10-15 | 062711 | 0905 | GW | | X | 1 | | | | | | 25.7 | 5.3 | 300.3 | 2.61 |
| 95 | PZ21-E11-26 | 062711 | 0956 | GW | | X | 1 | | | | | | 24.6 | 4.9 | 287.6 | 0.87 |
| 96 | PZ24-BKG-26 | 062711 | 0829 | GW | | X | 1 | | | | | | 24.4 | 4.9 | 295.6 | 0.73 |

| Relinquished | Date/Time | Received | Date/Time |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 1450 06.27.11 | Received: | Date/Time: 1000 6 24 11 |
| Relinquished: | Date/Time: 1530 6 28 11 | Received: | Date/Time: |
| Relinquished: | Date/Time: 730 6 30 11 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace? Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks:

**1105413**

Chain of Custody xls
Rev Date 11/19/01

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1105413

| Client Name | Contact / Phone: |
|---|---|
| Hazen and Sawyer | |
| Project Name / Location: GCREC Mound Groundwater Analyses | |
| Samplers: (Signature) | |

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool Chloride | 1LP, Cool Total Alkalinity, F, $NO_3$, OP, $SO_4$ | 250mL P, $H_2SO_4$ TKN, Nox, $NH_3$, COD | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Cd, K, Fe, Mg, Na | Field Temperature | Field pH | Field Conductivity | Field DO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 97 | ~~PZ25-A06~~ 10 EQ Blank 62911 | ~~[illegible]~~ | 1315 ~~N/A~~ | GW | | X | 1 | | | | | | ~~[illegible]~~ | ~~[illegible]~~ | ~~[illegible]~~ | ~~[illegible]~~ |
| | 1105413-97A | | | | | | | | | | | | 28.8 | 6.8 | 9.8 | 4.90 |
| | ~~H054B-05A STE~~ ~~Lift Station~~ | 06/28/11 | 1350 | | | | | | | | | | | | | |
| | | | | | | | 06-28-11 | | | | | | | | | |

| Containers Prepared/ Relinquished: | Date/Time: 1450 06-23-11 | Received: | Date/Time: 1000 62911 |
|---|---|---|---|
| Relinquished: | Date/Time: 1550 6 28 11 | Received: | Date/Time: |
| Relinquished: | Date/Time: 730 6 30 11 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

| | |
|---|---|
| Seal intact? | Y N N/A |
| Samples intact upon arrival? | Y N N/A |
| Received on ice? Temp_____ | Y N N/A |
| Proper preservatives indicated? | Y N N/A |
| Rec'd within holding time? | Y N N/A |
| Volatiles rec'd w/out headspace? | Y N N/A |
| Proper containers used? | Y N N/A |

Instructions / Remarks:

1105413
PZ25-A06-10 Bottle used for EQ Blank. per Josephine
62911 1315

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Rev Date 11/19/01

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 06.27.11 | SAL Project # | 1105413 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ15-A11-6 | Sample ID | 89 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | 6.35 | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | 7.50 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.069 | 1/4 WELL VOLUME | 0.017 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 1006 | PURGE TIME END | | TOTAL PURGED | | | |
| INST. ID | | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-5 | SAL-SAM-02 | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1009 | 0.30 | 0.30 | 0.10 | Dry | 5.76 | 29.4 | 1951 | 3.13 | | cloudy | none |
| 1012 | 0.30 | 0.60 | | | | | | | | | |
| 1015 | 0.30 | 0.90 | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | SAMPLER(S) SIGNATURES: | | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | ~~1016~~ 1040 | SAMPLING ENDED | ~~1016~~ 1040 | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | clear | | | | | | | | |
| COMMENTS | well went dry let recover enough to grab sample. + took readings per Josefin. would not recover in sufficient amount of time to get all readings. | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 062711 | SAL Project # | 1105413 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ24-BKG-26-D | Sample ID | 96 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 2.0 | WELL CAPACITY (gal/ft) | 0.16 | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | 10.82 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 30.3 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 3.17 | 1/4 WELL VOLUME | 0.79 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | 0815 | PURGE TIME END | 0828 | TOTAL PURGED | 6.5 |
| INST. ID | | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-3 | SAL-SAM-02 | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0822 | 3.5 | 3.5 | 0.50 | 12.2 | 4.9 | 24.4 | 295.9 | 0.91 | 146 | clear | none |
| 0825 | 1.5 | 5.0 | \| | \| | 4.9 | 24.4 | 296.0 | 0.84 | 144 | \| | \| |
| 0828 | 1.5 | 6.5 | \| | \| | 4.9 | 24.4 | 295.6 | 0.73 | 141 | \| | \| |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 0829 | SAMPLING ENDED | 0829 | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | clear | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

| | | | |
|---|---|---|---|
| Reviewed By: | | Date: | |

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 062711 | SAL Project # | 1105413 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ20-G10-15 | Sample ID | 94 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | 8.08 | PURGE PUMP CODE (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 19.04 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.21 | 1/4 WELL VOLUME | 0.054 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 0855 | PURGE TIME END | 0904 | TOTAL PURGED | 0.90 |

| INST. ID | | | | | SAL-SAM-63-04 | SAL-SAM-65-04 | SAL-SAM-63-4 | SAL-SAM-55-I | SAL-SAM-0-2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (µS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0858 | 0.30 | 0.30 | 0.10 | 13.62 | 5.4 | 25.8 | 299.4 | 2.54 | 230 SH | Brown | None |
| 0901 | 0.30 | 0.60 | | | 5.4 | 25.7 | 299.9 | 2.60 | 225 SH | | |
| 0904 | 0.30 | 0.90 | | | 5.3 | 25.7 | 300.3 | 2.61 SH | 228 SH | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | SAMPLER(S) SIGNATURES: | | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | 0905 | SAMPLING ENDED | 0905 | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | clear | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 062711 | SAL Project # | 1105413 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ04-BKG-9 | Sample ID | 85 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | 7.90 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.1 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.072 | 1/4 WELL VOLUME | 0.018 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 0830 | PURGE TIME END | 0839 | TOTAL PURGED | 0.90 |
| INST. ID | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-3 | SAL-SAM-02 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0833 | 0.30 | 0.30 | 0.10 | 8.75 | 5.6 | 100.1 | 25.9 | 4.60 | 163 | [illegible] | none |
| 0836 | 0.30 | 0.60 | \| | \| | 5.6 | 99.6 | 25.9 | 4.31 | 161 | \| | \| |
| 0839 | 0.30 | 0.90 | \| | \| | 5.6 | 100.2 | 25.9 | 4.25 | 161 | \| | \| |
| | | (JH) 6-28-11 | | | | switch | 6-28-11 | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | [signature] | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | 0840 | SAMPLING ENDED | 0840 | FIELD CLEANED | Y (N) | CLEANING STEPS | |
| FIELD FILTERED? | (Y) N | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | Clear | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled: | 062711 | SAL Project # | 1105413 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ19-G10-26 | Sample ID | 93 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 2.0 | WELL CAPACITY (gal/ft) | 0.1632 | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | 7.95 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 30.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 3.59 | 1/4 WELL VOLUME | 0.89 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | 0907 | PURGE TIME END | 0931 | TOTAL PURGED | 5.75 |
| INST. ID | | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-3 | SAL-SAM-02 | | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0922 | 3.75 | 3.75 | 0.25 | 10.63 | 5.0 | 24.1 | 239.7 | 0.71 | 42.3 | Cloudy | None |
| 0926 | 1.0 | 4.75 | | 10.63 | 5.0 | 24.0 | 293.5 | 0.70 | 40.1 | | |
| 0930 | 1.0 | 5.75 | | 10.63 | 5.0 | 23.9 | 294.4 | 0.65 | 38.3 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SH SAL | | | | SAMPLER(S) SIGNATURES: | | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | 0931 | SAMPLING ENDED | 0931 | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | clear | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 062711 | SAL Project # | 1105413 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ21-E11-26 | Sample ID | 95 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 2.0 | WELL CAPACITY (gal/ft) | 0.1632 | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | 7.45 | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | 21.5 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 2.21 | 1/4 WELL VOLUME | 0.55 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 0940 | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-3 | SAL-SAM-0 2 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0949 | 2.25 | 2.25 | 0.75 | 9.63 | 5.0 | 24.8 | 284.5 | 1.16 | 23.8 | clear | none |
| 0952 | 0.75 | 3.00 | \| | \| | 4.9 | 24.6 | 284.6 | 0.99 | 25.6 | \| | \| |
| 0955 | 0.75 | 3.75 | \| | \| | 4.9 | 24.6 | 287.6 | 0.87 | 28.3 | \| | \| |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 0956 | SAMPLING ENDED | 0956 | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | clear | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 06/11 | SAL Project # | 1105413 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ16-C12-28 | Sample ID | 90 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | 3.93 | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | 79.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.50 | 1/4 WELL VOLUME | 0.12 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 1020 | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-3 | SAL-SAM-0-2 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1025 | 0.50 | 0.50 | 0.10 | N/A | 5.6 | 25.0 | 295.2 | 0.79 | 64.6 | Cloudy | None |
| 1028 | 0.30 | 0.80 | 0.10 | \| | 5.5 | 25.1 | 301.6 | 0.62 | 63.1 | \| | |
| 1031 | 0.30 | 1.10 | 0.10 | \| | 5.5 | 25.1 | 305.3 | 0.47 | 60.8 | \| | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 1032 | SAMPLING ENDED | 1032 | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | Clear | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 062711 | SAL Project # | 1105413 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ07-D05-7 | Sample ID | 86 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 7.44 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.02 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.09 | 1/4 WELL VOLUME | 0.02 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 1130 | PURGE TIME END | 1139 | TOTAL PURGED | 0.90 | |
| INST. ID | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-3 | SAL-SAM-0-2 | | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1133 | 0.30 | 0.30 | 0.16 | 8.73 | 4.7 | 27.2 | 287.8 | 3.29 | 13.33 | clear | none |
| 1136 | 0.30 | 0.60 | \| | 8.73 | 4.7 | 27.3 | 288.0 | 2.71 | 10.46 | \| | \| |
| 1139 | 0.30 | 0.90 | \| | 8.73 | 4.7 | 27.3 | 287.5 | 2.50 | 9.18 | \| | \| |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 1140 | SAMPLING ENDED | 1140 | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | clear | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 062711 | SAL Project # | 1105413 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ03-H11-6 | Sample ID | 84 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | .75 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | 7.34 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.05 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.10 | 1/4 WELL VOLUME | 0.02 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 1253 | PURGE TIME END | 1202 | TOTAL PURGED | 0.90 |

| INST. ID | | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-3 | SAL-SAM-02 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1156 | 0.30 | 0.30 | 0.10 | 8.85 | 4.5 | 28.9 | 168.3 | 3.01 | 6.34 | clear | A |
| 1159 | 0.30 | 0.60 | | 8.85 | 4.5 | 28.3 | 166.7 | 3.03 | 3.89 | | |
| 1202 | 0.30 | 0.90 | | 8.85 | 4.5 | 28.4 | 164.9 | 3.01 | 2.64 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | S+L | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 1203 | SAMPLING ENDED | 1203 | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | clear | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 062711 | SAL Project # | 1105413 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ17-I15-26 | Sample ID | 91 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.15 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | 8.42 | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | 30.05 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.43 | 1/4 WELL VOLUME | 0.10 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 1227 | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-3 | SAL-SAM-02 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1232 | 0.30 | 0.50 | 0.10 | N/A | 4.9 | 25.5 | 307.2 | 1.9 | 68.9 | cloudy | none |
| 1235 | 0.30 | 0.80 | \| | \| | 4.9 | 25.4 | 307.3 | 1.80 | 67.3 | \| | \| |
| 1238 | 0.30 | 1.10 | \| | \| | 4.9 | 25.4 | 307.3 | 1.60 | 65.5 | \| | \| |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 1239 | SAMPLING ENDED | 1239 | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 062711 | SAL Project # | 1105413 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ18-R12-26 | Sample ID | 92 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | 2.56 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 7.95 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.45 | 1/4 WELL VOLUME | 0.11 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 1250 | PURGE TIME END | 1301 | TOTAL PURGED | 1.10 |
| INST. ID | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-3 | SAL-SAM-2 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1255 | 0.50 | 0.50 | 0.10 | N/A | 5.1 | 26.8 | 252.1 | 0.71 | 635.0 | Brown | None |
| 1255 | 0.30 | 0.80 | \| | \| | 5.1 | 26.6 | 251.8 | 0.79 | 397.0 | \| | \| |
| 1301 | 0.30 | 1.10 | \| | \| | 5.1 | 26.6 | 251.9 | 0.59 | 260.0 | \| | \| |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 1302 | SAMPLING ENDED | 1302 | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | Clear | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 062711 | SAL Project # | 1105413 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | ~~PZ23-D09-27~~ EQ Blank | Sample ID | 97 | GPS LAT | |
| | | | | GPS LONG | |

PZ23

## PURGING DATA

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | 12.71 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 13.60 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.0173 | 1/4 WELL VOLUME | 0.0045 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | 1320 | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63- | SAL-SAM-55- | SAL-SAM-0 | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1323 | 0.30 | 0.30 | 0.10 | | | | | | | | |
| 1326 | 0.30 | 0.60 | 1 | | DRY | | | | | | |
| 1329 | 0.30 | 0.90 | 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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | N/A | SAMPLING ENDED | N/A | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (μm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | | | | | | | | | |
| COMMENTS | Dry would not recover | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

## GROUNDWATER SAMPLING LOG

| | | | | | |
|---|---|---|---|---|---|
| Client Name: | Hazen and Sawyer | Location: | | Contact: | Josefin Edeback-Hurst, PE |
| | | | | Phone: | 813-630-4498 |
| Date Sampled | 06-27-11 | SAL Project # | 1105413 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ11-E09-10 | Sample ID | 87 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK To UNK | Static Depth to Water (Feet) | 4.25 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.9 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.111 | 1/4 WELL VOLUME | 0.02 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 1050 | PURGE TIME END | 1059 | TOTAL PURGED | 0.90 |

| INST. ID | | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-3 | SAL-SAM-02 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1053 | 0.30 | 0.30 | 0.10 | N/A | 5.3 | 27.6 | 451.6 | 1.92 | 9.36 | clear | v.m |
| 1056 | 0.30 | 0.60 | | | 5.3 | 27.6 | 452.7 | 1.81 | 9.61 | | |
| 1059 | 0.30 | 0.90 | | | 5.3 | 27.6 | 453.9 | 1.77 | 8.77 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | 1100 | SAMPLING ENDED | 1100 | FIELD CLEANED | Y (N) | CLEANING STEPS | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | (Y) N | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | Clear | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

FLORIDA DEPARTMENT OF HEALTH

# Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task C.22

## GCREC Mound Data Summary Report No. 4

## Revised Progress Report

January 2012

4423-001


HAZEN AND SAWYER
Environmental Engineers & Scientists

In association with

SCHOOL OF MINES 1874 COLORADO

AET
Applied Environmental Technology

OTIS ENVIRONMENTAL CONSULTANTS, LLC

# Florida Onsite Sewage Nitrogen Reduction Strategies Study

## TASK C.22
## REVISED PROGRESS REPORT

## GCREC Mound
## Data Summary Report No. 4

**Prepared for:**

Florida Department of Health
Division of Environmental Health
Bureau of Onsite Sewage Programs
4042 Bald Cypress Way Bin #A-08
Tallahassee, FL 32399-1713

FDOH Contract CORCL

**January 2012**

**Prepared by:**

HAZEN AND SAWYER
Environmental Engineers & Scientists

In Association With:

SCHOOL OF MINES
1874
COLORADO

# GCREC Mound Monitoring
# Data Summary Report No. 4

## 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 data summary report documents data that was collected from the fourth GCREC mound monitoring and sampling event which was conducted September 26, 2011 through September 28, 2011. The sample event report was submitted as Sample Event Report No. 4, October 2011 as deliverable under Task C.21. 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 in 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. Wastewater from the GCREC research offices and onsite dormitories flow to an existing

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onsite sewage treatment and disposal system (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 $ft^2$ of infiltrative area (design hydraulic loading rate of 0.65 $gpd/ft^2$) with each half of the drainfield receiving alternating doses.

## 3.2 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 A 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 B provides summary tables of the average monthly recorded meteorological data.

**Table 1**
**Meteorological Data Daily Averages Measured September 21, 2011 – September 28, 2011**

| 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/day) | Wind Speed Avg 10m (mph) | ET (in/day) |
|---|---|---|---|---|---|---|---|---|
| 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 |

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### 3.3 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 ¾-in., 1¼-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 ¾-in. diameter PVC standpipe piezometer. A complete list of all installed drive points and standpipe piezometers are included in Appendix C.

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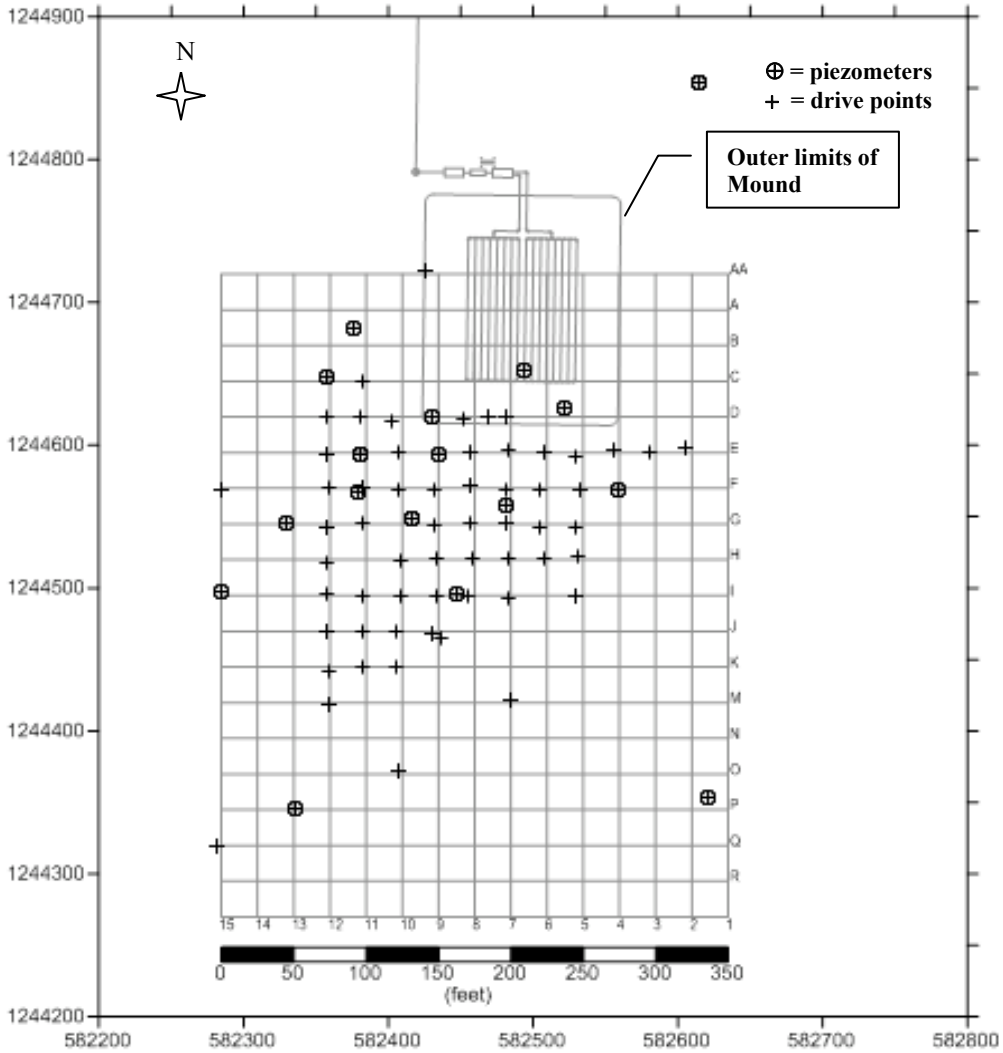


**Figure 1**
**Schematic of GCREC Monitoring Network (UTM coordinates are used)**
**⊕ denotes piezometers and + denotes drive points**

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

**Figure 3**
**Installed ¾" Diameter PVC Standpipe Piezometer**

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## 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 (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 2010 drilling event. Whenever this proved impossible, estimations were made.

## 3.5 Groundwater Elevation Measurements

Groundwater level measurements are used to determine hydraulic gradients and directions of flow. 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 (the sample was clear and pH and conductivity readings had stabilized) 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 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)

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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 flow-cell device as groundwater was being pumped. All samples were analyzed by the laboratory for total alkalinity, chloride, total Kjeldahl nitrogen (TKN-N), ammonia nitrogen ($NH_3$-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. For the STE sample, total suspended solids (TSS), total solids (TS), and carbonaceous biochemical oxygen demand (CBOD5) 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.

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**Table 2**
**Analytical Parameters, Method of Analysis, and Detection Limits**

| Analytical Parameter | Method of Analysis | Laboratory Detection Limit |
|---|---|---|
| Total Alkalinity as $CaCO_3$ | SM 2320B | 2 mg/L |
| Total Suspended Solids (TSS) | SM 2540D | 1 mg/L |
| Total Solids (TS) | SM 2540B | 10 mg/L |
| Carbonaceous Biochemical Oxygen Demand (CBOD5) | SM 5210B | 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 |

## 3.7 Data Management

To allow for a better visualization of the data collected at the site the mapping program **Surfer** was utilized. **Surfer** is a grid-based mapping program that interpolates irregularly spaced XYZ data into a regularly spaced grid. Although there are several methods used in **Surfer** to fill in areas where data is missing, the Kriging method was used as the output gave the most informative graphs. Of note, it is important to realize that the output is based on the program interpolation between known data points, and thus should not be assumed to illustrate reality, but instead an approximation. Furthermore, because **Surfer** cannot project a 3-dimensional view of concentrations with depth, the parameter concentrations from the different sampling locations were compiled into horizontal "slices" of similar depth and then plotted as a planar view, thus allowing the different "slices" to be compared.

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# 4.0 Results

## 4.1 Soil Characteristics

During the instrumentation of the mound, continuous 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 results of the analysis are presented in Table 3. Although the four shallow soil cores (CD6.5, E9, F4, and near A9) show some variability in soil over the site, a general soil profile trend is present. The top few inches at the site are typically a darker, slightly brown or red fine, silty soil, followed by a light-colored, grey and/or pale yellow fine sand. Mottling is commonly visible between 4 to 5 feet below the ground surface. The continuous soil core from G10 shows the spodic layer (black fine sand with a coffee-like texture). The spodic layer is approximately 3.3 feet thick at that location, and the soil below the spodic layer is a light or yellowish brown, fine to medium sand (Table 3). Similar observations were made during the November 2010 drilling event. The Hawthorne clay is considered a confining layer at the site and lies approximately 27 to 30 feet below the ground surface.

During the installation of the shallow drive points in the summer of 2010, the top elevations of the spodic layer was determined at several locations as the installation was done primarily with handheld methods. Efforts were made to determine the elevation and thickness of the spodic layer during the November drilling event; however, this proved to be quite difficult as it was near impossible for the drill operators to “feel” when the auger first hit the hard layer and second when it broke through it; hence the depth and thickness of the spodic layer at the new well locations was estimated at that time to be approximately 6 feet below the ground surface with a thickness of approximately 5.5 to 8.5 feet. After the November drilling event, handheld methods were used to better determine the actual elevation of the spodic layer at several additional sites. Table 4 summarizes the locations at which the top elevation of the spodic layer was determined by handheld methods. At all other locations, this elevation was estimated. Figure 4 illustrates a **Surfer** plot of the top elevation of the spodic layer at the site based on both actual and estimated elevations, while Figure 5 illustrates the same but using only elevations verified by handheld methods. Although variations are present, the general trend follows that of the ground surface and that of the groundwater.

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**Table 3**
**June 2010 Small Direct Push Rig (6620 GeoprobeTM)**
**Soil Core Descriptions**

| Grid Location | Identifier | Surface Elevation (ft) | Depth bgs (ft) | Description |
|---|---|---|---|---|
| CD6.5 | PZ10-CD6-13 | 129.51 | 0-0.4' | Grass/fill |
| | | | 0.4-0.9' | Gray fine sand with yellow and white mottles |
| | | | 0.9-6.6' | Uniform yellow fine grain sand |
| | | | 6.5' | Saturation |
| | | | 6.6-6.7' | Dark brown (10YR 3/3) fine sand |
| | | | 6.7-10.7' | Light gray (5Y 7/2) fine sand |
| | | | 10.7-11.5' | Dark brown (10YR 3/3) fine sand |
| | | | 11.5-12.3' | Yellow (5Y 7/6) fine sand |
| | | | 12.3-13.45' | Light gray (5Y 7/2) fine sand |
| | | | 13.45-16.1' | Spodic horizon, dark brown (7.5YR 3/3) fine sand |
| | | | 16.1-17.4' | Brown (7.5YR 4/4) fine sand |
| E9 | PZ11-E09-10 | 124.06 | 0-2.2' | A Horizon top soil |
| | | | 2.2-2.7' | Pale yellow (5Y 7/3) fine sand with mottles |
| | | | 2.7-5.8' | Yellowish brown (10YR 5/4) fine sand |
| | | | 5.8-6.9' | Very dark brown (7.5YR 2.5/3) fine sand |
| | | | 6.1' | Saturation |
| | | | 6.9-10.3' | Medium brown (10YR 5/3) fine sand |
| | | | 10.3-15' | Spodic horizon, black (10YR 2/1) fine sand |
| F4 | PZ13-F04-8 | 124.42 | 0-4.2' | A Horizon top soil |
| | | | 4.2-4.7' | Pale yellow (5Y 8/4) fine sand with mottles |
| | | | 4.7-13.5' | Spodic horizon, dark brown sand |
| | | | 6.3' | Saturation |
| Westside of Mound Near A9 | | ~129 | 0-7.4' | Mound sand with some mottles |
| | | | 7.4-8.4' | Dark oxidized sand |
| | | | 8.4' | Saturation |
| | | | 8.4-9.4' | Saturated very pale brown fine sand |
| | | | 9.4-10' | Spodic horizon, dark brown fine sand |
| | | | 10-12' | Dark yellowish brown (10YR 4/6) fine sand |
| | | | 12-15' | Dark brown fine sand |

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**Table 3 (cont.)**
**June 2010 Small Direct Push Rig (6620 GeoprobeTM)**
**Soil Core Descriptions**

| Grid Location | Identifier | Surface Elevation (ft) | Depth bgs (ft) | Description |
|---|---|---|---|---|
| G10 | PZ12 Abandoned | 123.55 | 0-1.2’ | A Horizon top soil |
| | | | 1.2-2.8’ | White (10YR 8/2) fine sand |
| | | | 2.8-6.1’ | Spodic horizon, black fine sand |
| | | | 6.1-9’ | Brown (10YR 4/3) fine sand |
| | | | 9’ | Saturation |
| | | | 9-10.1’ | Gray (5Y 5/1) fine sand with black mottles |
| | | | 10.1-13.9’ | Black (5Y 2.5/1) fine sand |
| | | | 13.9-16.6’ | Light yellowish brown (10YR 6/4) uniform fine sand |
| | | | 16.6-19’ | Medium sand poorly sorted, well rounded (3mm diameter) with mottles |
| | | | 19-23’ | Pale brown (10YR 6/3) uniform fine sand |
| | | | 23-27.5’ | Very pale brown (10YR 7/3) very fine sand |
| | | | 27.5-27.9’ | Poorly sorted coarse sand |
| | | | 27.9-30.0’ | Greenish gray (Gley1 6/5GY) clay, Hawthorn confining layer |

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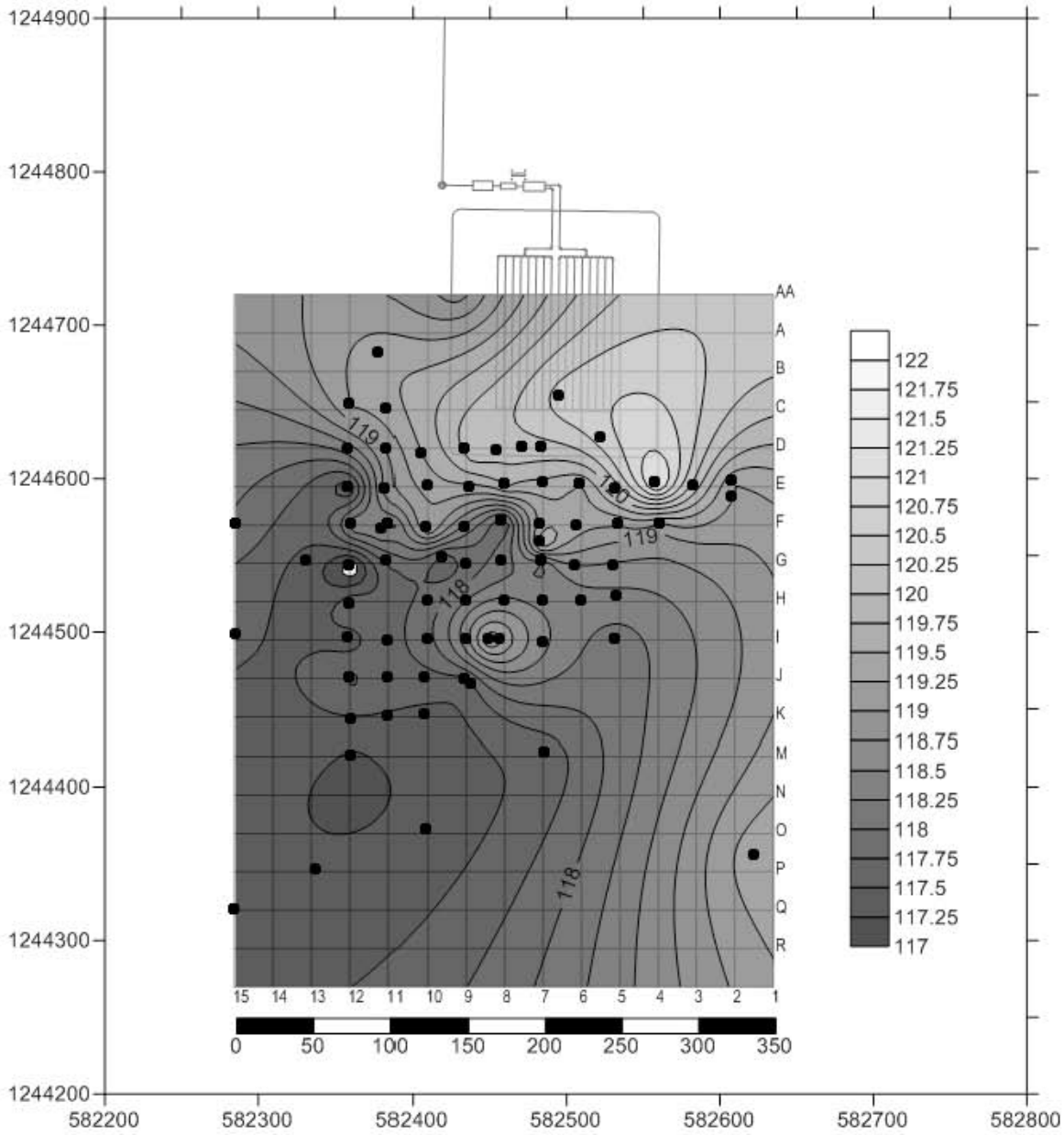


**Figure 4**

**Surfer plot illustrating the top elevation of the spodic layer based on both verified elevations and estimated elevations. The dots represent the locations used for the graph.**

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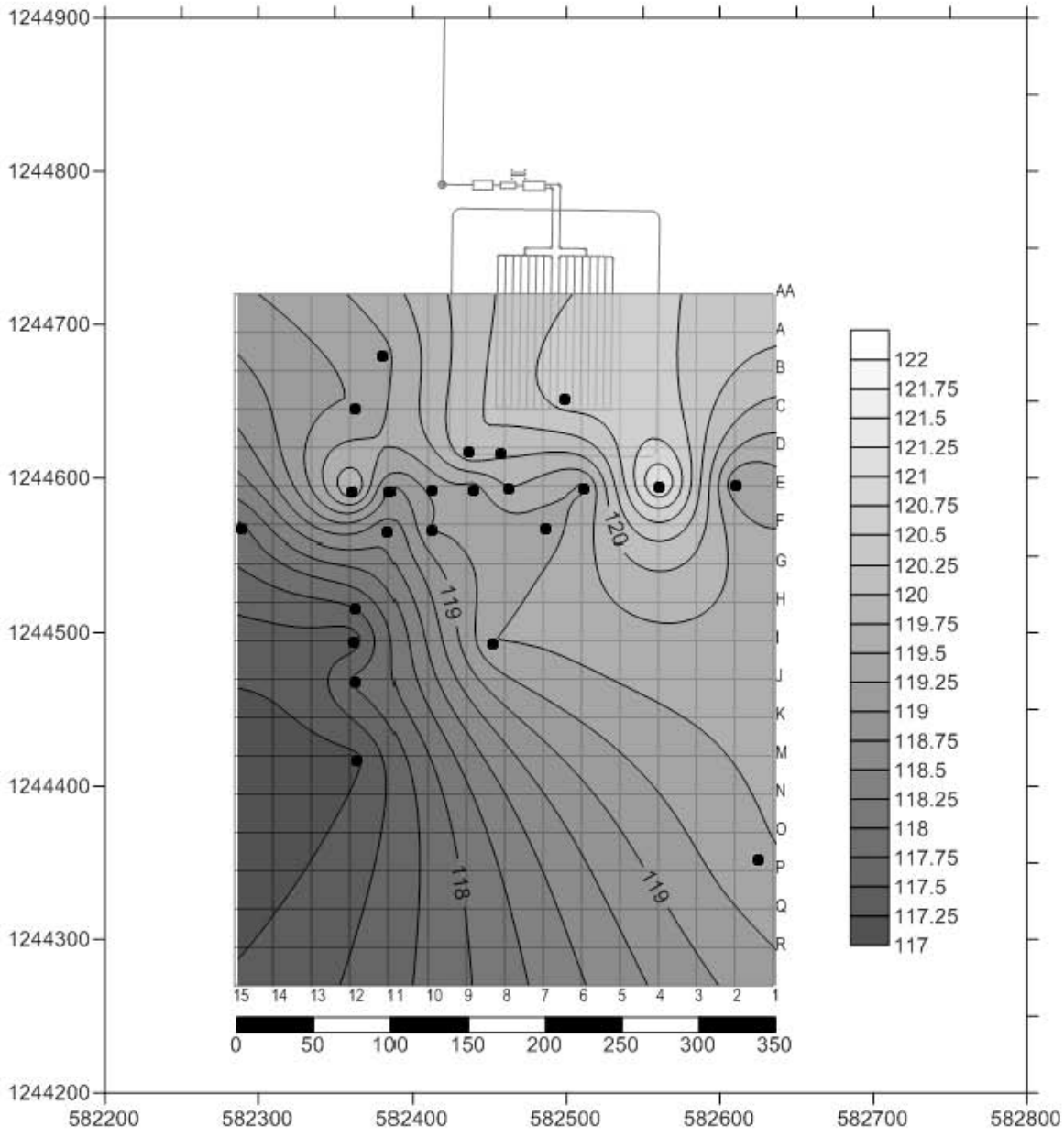


**Figure 5**

**Surfer plot illustrating the top elevation of the spodic layer as verified by hand methods. The dots represent the locations where the elevations were measured.**

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**Table 4**
**The Top Elevation of the Spodic Layer as Determined by Hand Methods**

| Location | Elevation | Location | Elevation |
|---|---|---|---|
| D8 | 120.06 | PZ01-BKG | 123.37 |
| D9 | 120.08 | PZ02-PQ1.75 | 119.46 |
| E2 | 119.26 | PZ03-H11 | 118.54 |
| E4 | 121.35 | PZ04-BKG | 120.62 |
| E6 | 119.46 | PZ05-BKG | 121.34 |
| E8 | 119.77 | PZ06-BKG | 125.50 |
| E10 | 119.34 | PZ09-I8 | 119.50 |
| F3 | 120.06 | PZ10-CD6 | 120.62 |
| F7 | 119.41 | PZ11-E9 | 119.40 |
| F10 | 119.27 | PZ15-A11 | 119.42 |
| F15 | 117.96 | PZ16-C12 | 119.26 |
| H12 | 117.77 | PZ21-E11 | 118.91 |
| I12 | 117.38 | PZ25-A6.5 | 120.13 |
| J12 | 117.80 | | |
| N12 | 117.20 | | |

The G10 continuous soil cores and soil samples from grid locations O10 and E06 were submitted to the University of Florida IFAS Analytical Services Laboratories and University of Florida SWS Mineralogy Core Laboratory for analysis. The soil samples were analyzed for pH, organic matter, cation exchange capacity (CEC), ammonia, nitrate, TKN, phosphorus, potassium, calcium, magnesium, and sodium concentrations as well as particle size distribution summarized in Table 5. The complete soil data set is included Appendix D.

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**Table 5**
**Soil Grain Size Distribution in Percent (%)**

| Grid ID | Depth Bgs (ft) | Sand Fractions (%) | | | | | Total (%) | | | | Texture Class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Very Fine | Fine | Medium | Coarse | Very Coarse | Sand | Silt | Clay | Other | |
| | | 0.05-0.1 mm | 0.25-0.1 mm | 0.25-0.5 mm | 0.5-1.0 mm | 1.0-2.0 mm | 0.05-2 mm | 0.002-0.05 mm | <0.002 mm | >2 mm | |
| 010 | 0-1.57 | 9.9 | 48.0 | 29.4 | 6.7 | 1.4 | 95.2 | * | * | 0.4 | sand |
| | 1.57-2.49 | 10.6 | 50.8 | 26.8 | 6.9 | 2.0 | 98.1 | * | * | 0.2 | sand |
| | 2.49-3.58 | 12.3 | 49.5 | 25.8 | 6.3 | 1.3 | 95.6 | 2.6 | 1.8 | 0.1 | Sand |
| | 3.58-5.1 | 12.0 | 49.1 | 24.9 | 6.7 | 1.8 | 95.0 | 4.3 | 0.7 | 0.2 | sand |
| | 5.1-5.6 | 7.3 | 42.4 | 25.1 | 7.4 | 2.4 | 84.1 | 3.4 | 12.5 | 0.6 | loamy sand |
| | 5.6-6.2 | 5.8 | 39.9 | 25.1 | 7.8 | 3.2 | 81.8 | 2.2 | 16.1 | 0.9 | sandy loam |
| E06 | 0-2.4 | 11.0 | 48.7 | 28.3 | 5.5 | 1.1 | 94.6 | 3.9 | 1.5 | 0.2 | sand |
| | 2.4-2.9 | 12.4 | 47.0 | 22.7 | 4.9 | 1.3 | 88.1 | 11.4 | 0.5 | 0.2 | sand |
| | 2.8-3.9 | 11.6 | 49.5 | 27.4 | 7.2 | 2.0 | 97.5 | 2.5 | 0.0 | 0.2 | sand |
| | 2.9-4 | 12.7 | 50.5 | 24.8 | 5.3 | 1.0 | 94.3 | 4.3 | 1.4 | 0.2 | sand |
| | 4-4.35 | 12.8 | 50.3 | 25.7 | 6.6 | 1.3 | 96.9 | 2.8 | 0.3 | 0.3 | sand |
| | 4.35-4.85 | 9.4 | 47.0 | 26.9 | 7.3 | 2.6 | 93.1 | 5.2 | 1.7 | 1.3 | sand |
| | 4.85-5.35 | 5.8 | 46.6 | 26.9 | 6.1 | 2.4 | 88.3 | 6.2 | 5.5 | 1.4 | sand |
| | 6-8 | 5.2 | 48.0 | 32.2 | 6.2 | 1.0 | 93.0 | 4.1 | 2.9 | 0.2 | sand |
| G10 | 0-1.2 | 11.9 | 47.6 | 27.8 | 5.9 | 1.1 | 94.7 | 3.2 | 2.1 | 0.2 | sand |
| | 1.2-2.8 | 10.0 | 46.7 | 27.2 | 6.9 | 1.5 | 92.3 | 3.6 | 4.1 | 0.6 | sand |
| | 2.8-6.1 | 11.7 | 46.6 | 27.4 | 7.0 | 1.4 | 94.0 | 4.3 | 1.6 | 0.3 | sand |
| | 6.1-9 | 8.9 | 49.8 | 26.2 | 3.9 | 1.1 | 90.1 | 8.8 | 1.1 | 0.8 | sand |
| | 9-10.1 | 7.2 | 44.1 | 34.4 | 6.0 | 0.8 | 92.6 | 6.5 | 0.9 | 0.1 | sand |
| | 10.1-13.9 | 3.1 | 37.5 | 45.9 | 5.6 | 0.7 | 92.4 | 6.2 | 1.4 | 0.0 | sand |
| | 13.9-16.6 | 2.5 | 33.7 | 48.3 | 7.1 | 1.0 | 92.8 | 3.2 | 3.9 | 0.3 | sand |
| | 16.6-19 | 2.3 | 14.2 | 54.3 | 19.3 | 2.2 | 92.0 | 5.4 | 2.6 | 1.3 | sand |
| | 19-23 | 1.7 | 40.4 | 46.8 | 5.3 | 0.4 | 94.7 | 1.9 | 3.4 | 0.5 | sand |
| | 23-27.5 | 4.2 | 76.2 | 6.4 | 0.4 | 0.1 | 87.5 | 8.2 | 4.2 | 0.2 | sand |
| | 27.5-27.9 | 4.5 | 44.7 | 11.2 | 7.1 | 10.9 | 79.5 | 3.5 | 17.0 | 41.2 | sandy loam |
| | 27.9-30 | | | | | | | | | n/a | n/a |

* Clay and silt values were not within acceptable limits.

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## 4.2 Groundwater Levels

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. Figures 6 through 9 illustrate the surficial groundwater contours as measured within the standpipe piezometers on dates representative of the four sample events (December 9, 2010, April 1, 2011, June 28, 2011 and October 10, 2011). The groundwater level measured within PZ18-R12 was omitted from the plots (Figures 6 through 9), because the reading as compared to the surrounding points appears to be in

error. The reason for this is unknown, but spatial location and/or reference elevation are suspect. PZ18-R12 location and survey elevation will therefore be checked. Table 6 shows the actual measured water levels. During the fourth sample event (September 26, 2011), the water table elevation was only measured for the piezometers that were sampled. An adequate number of data points were not collected to create an accurate groundwater contour map in Surfer. Therefore, a full round of readings were taken October 10, 2011 to represent the groundwater contours for this sample event. Based on the output illustrated in these plots the direction of flow is generally to the southwest, and the gradient is estimated to range from 0.0047 to 0.011. Clearly variations in gradient are apparent in Figure 6 through 9 across the site as well as between seasons. A summary of all recorded groundwater elevations taken at the standpipe piezometers within the grid is presented in Appendix E.

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**Table 6**
**Standpipe Piezometer Groundwater Level Measured**

| Identification/ Location | Approximate Grid Location | Water Table Elevation[1] (ft) | | | | |
|---|---|---|---|---|---|---|
| | | Dec 9, 2010 | April 1, 2011 | June 28, 2011 | Sept 26, 2011 | Oct 10, 2011 |
| PZ01-BKG-9 | Not shown | 122.97 | 124.62 | 121.73 | | 124.71 |
| PZ02-PQ1.75-9 | OP-1.5 | 118.52 | 120.37 | 118.80 | | 120.23 |
| PZ03-H11-6 | F-11 | 119.21 | 121.24 | 119.74 | 120.75 | 121.17 |
| PZ04-BKG-9 | North of Grid | 121.76 | 120.73 | 121.11 | 122.99 | 123.84 |
| PZ05-BKG-9 | Not shown | 121.53 | 123.32 | | | 123.09 |
| PZ07-D5-7 | D-5.5 | 120.22 | 122.63 | 120.26 | 121.63 | 122.47 |
| PZ08-FG7-6 | FG-7 | 119.65 | 121.98 | 119.93 | | 121.85 |
| PZ09-I8-5 | I-8.5 | 119.15 | 121.39 | 119.63 | | |
| PZ10-CD6-13 | BC-6.5 | 120.37 | 122.92 | 120.40 | | 122.61 |
| PZ11-E9-10 | E-9 | 119.57 | 121.91 | 119.96 | 121.21 | 121.85 |
| PZ13-F4-8 | F-4 | 120.16 | 122.45 | 120.15 | | 122.29 |
| PZ14-G13-7 | G-13 | 118.72 | 120.28 | 119.26 | 121.36 | 120.39 |
| PZ15-A11-6 | AB-11.5 | 119.77 | 121.96 | 119.88 | 120.89 | 121.91 |
| PZ16-C12-28 | C-12 | 119.37 | 121.36 | 119.63 | 119.39 | 121.31 |
| PZ17-I15-26 | I-15 | 118.26 | 120.10 | 118.93 | 119.38 | |
| PZ18-R12-26 | P-13 | 118.22[2*] | 119.99[2*] | 119.28[2*] | 120.70[2*] | 119.85[2*] |
| PZ19-G10-26 | G-10 | 119.18 | 121.35 | 119.60 | 120.76 | 121.25 |
| PZ20-G10-15 | G-10 | 119.17 | 121.37 | 119.62 | 120.72 | 121.29 |
| PZ21-E11-26 | E-11 | 119.22 | 121.27 | 119.58 | | 121.23 |
| PZ22-E11-15 | E-11 | 119.21 | 121.28 | 119.57 | | 121.22 |
| PZ23-D9-27 | D-9 | 119.64 | 121.90 | 119.85 | 122.71 | 121.82 |
| PZ24-BKG-26 | North of Grid | 121.46 | 126.30 | 120.80 | 122.04 | 123.47 |
| PZ26-EF2 | EF-2 | | | 120.78 | | |

Note:
[1]If blank – no data was collected
[2]* indicates that data was eliminated from data set due to suspected error in spatial location or elevation.

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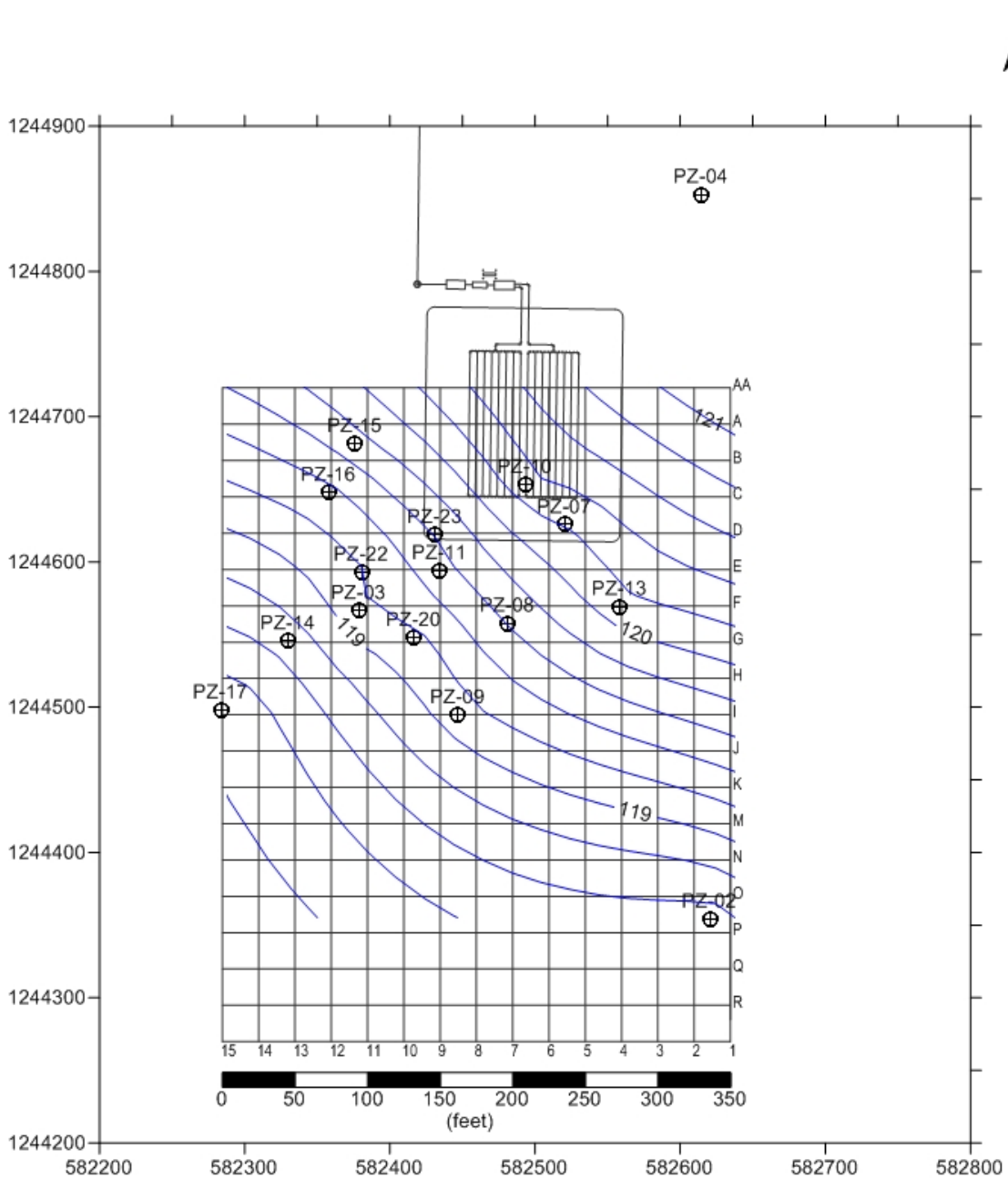


**Figure 6**

**Surficial Groundwater Contours on December 9, 2010, representative of SE No. 1**

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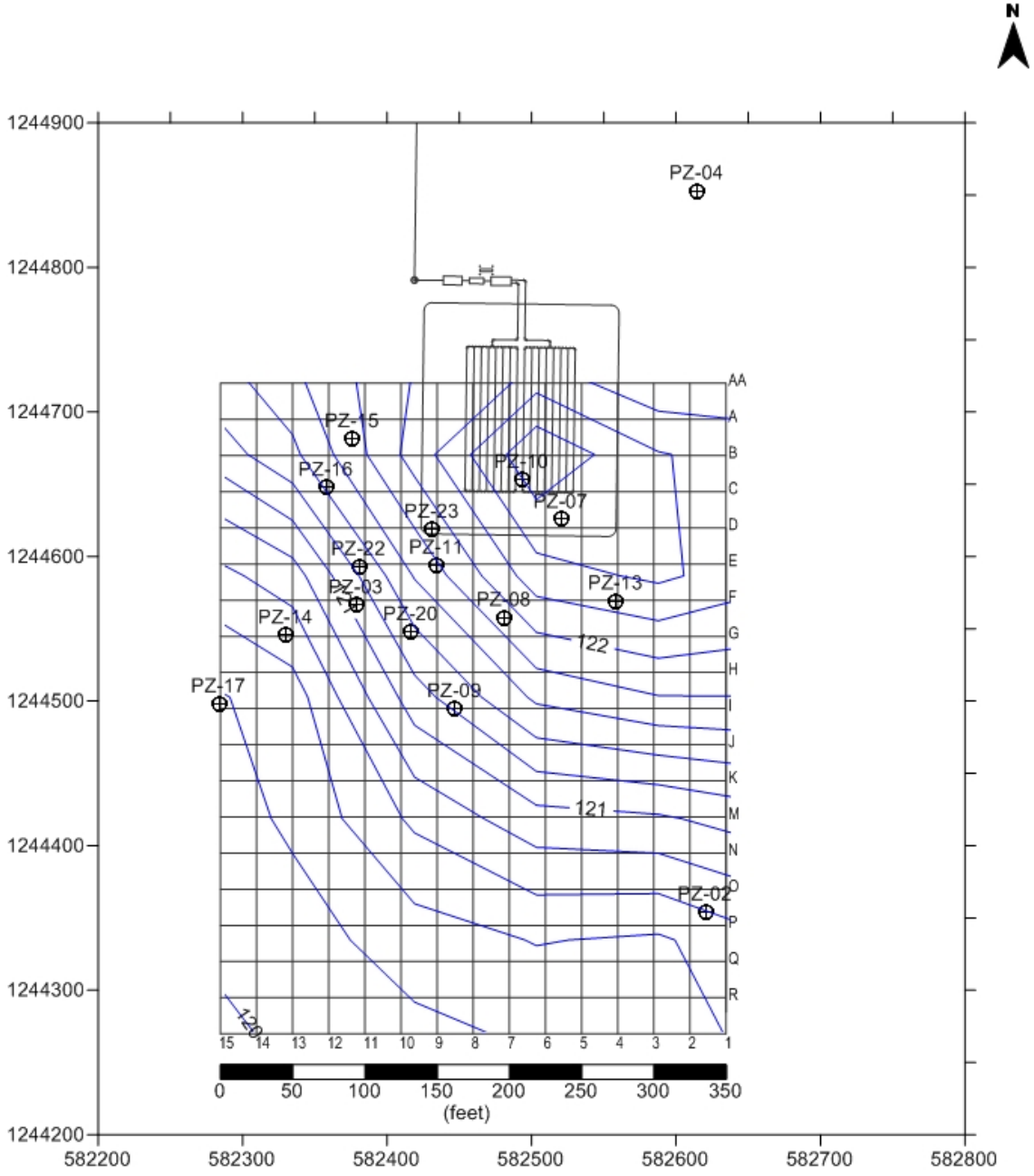


**Figure 7**
**Surficial Groundwater Contours on April 1, 2011, representative of SE No. 2**

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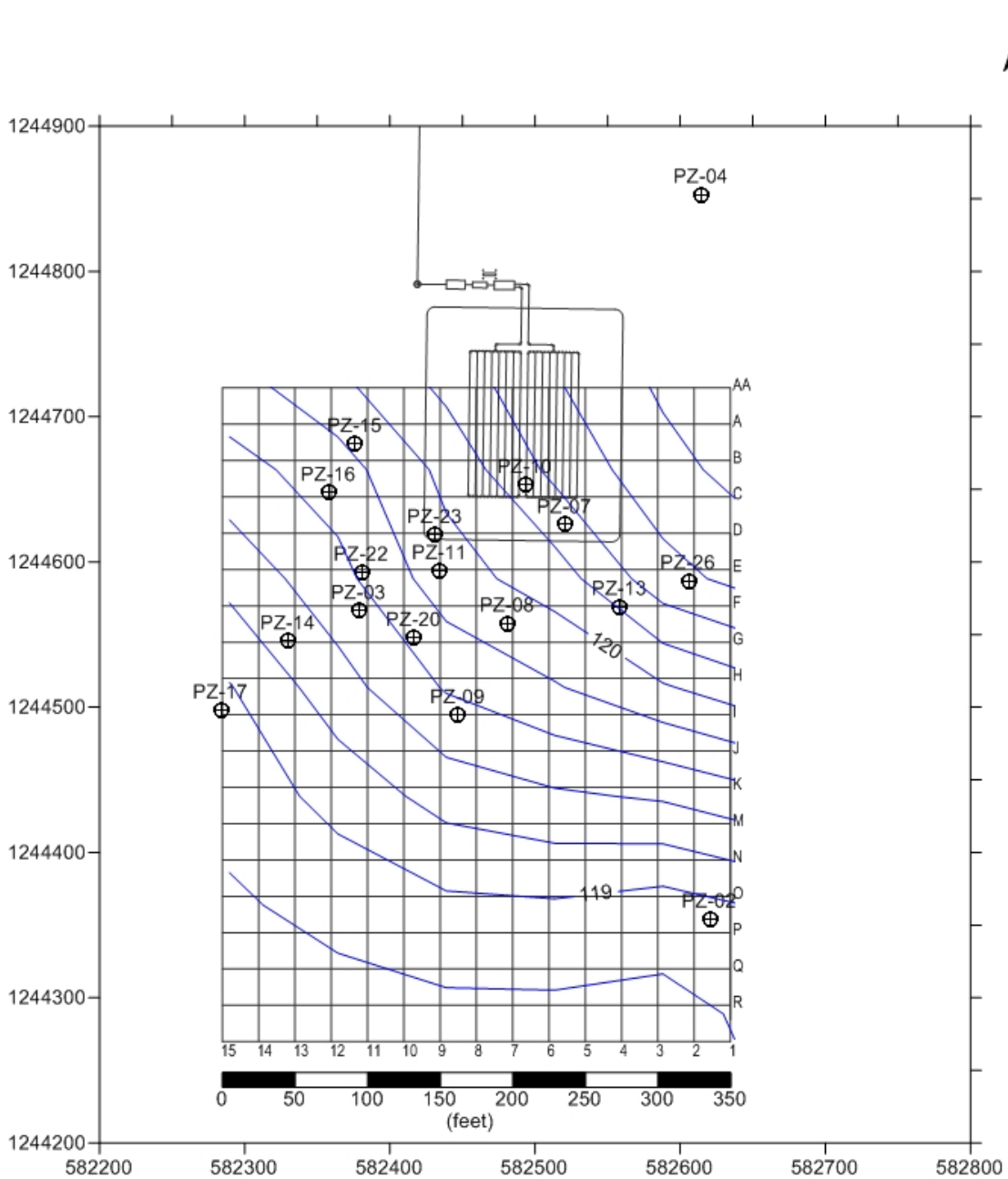


**Figure 8**
**Surficial Groundwater Contours on June 28, 2011, representative of SE No. 3**

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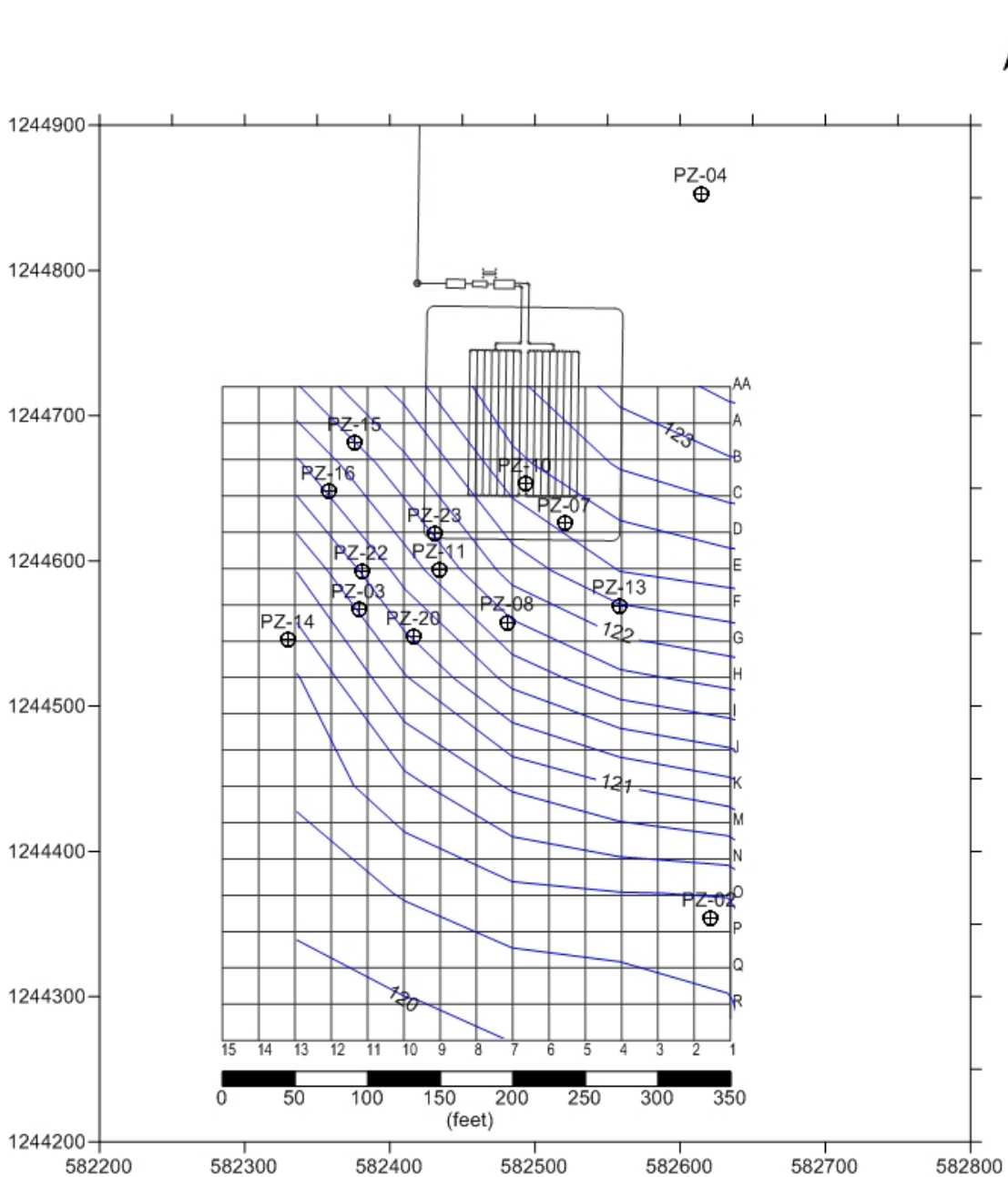


**Figure 9**

**Surficial Groundwater Contours on October 10, 2011, representative of SE No. 4**

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## 4.3 Water Quality Analyses

### 4.3.1 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 F.

### 4.3.2 Correlations

Correlations between various parameters were conducted to determine if for example the NOX concentration could be estimated in the absence of actual field data. Such estimates can then provide insight into expected nitrogen removal or can be used to approximate a difficult to obtain parameter value. Based on the data collected to date, the relationships between specific conductance and the concentration of chloride and NOX have an observed strong correlation. Figure 10 illustrates the correlation between specific conductance and the concentration of chloride based on the September data. Figure 11 illustrates the correlation between the concentrations of specific conductance and NOX.

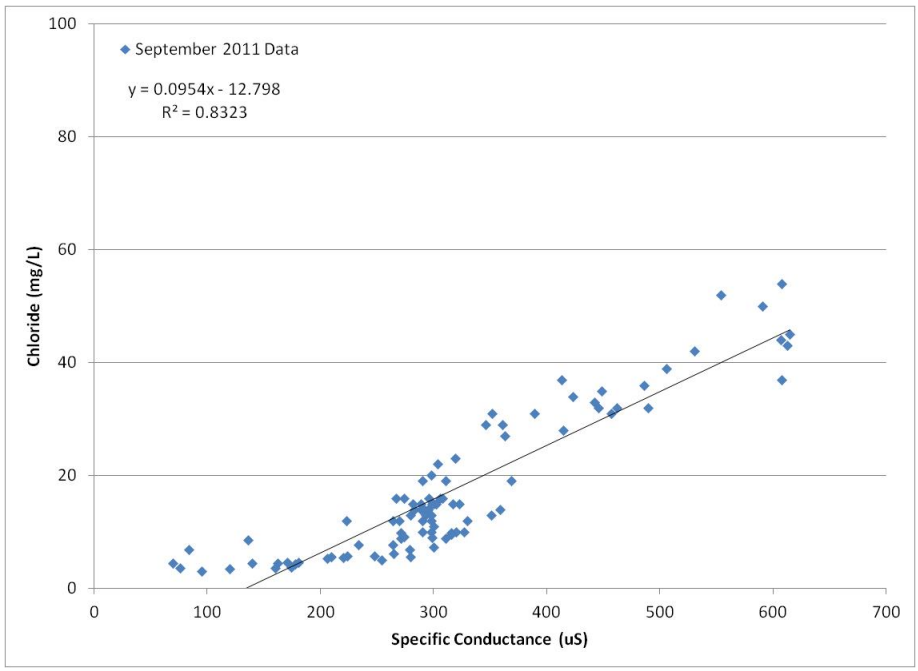


**Figure 10**
**Correlation Between the Specific Conductance (uS) and Concentrations of Chloride (mg/L)**

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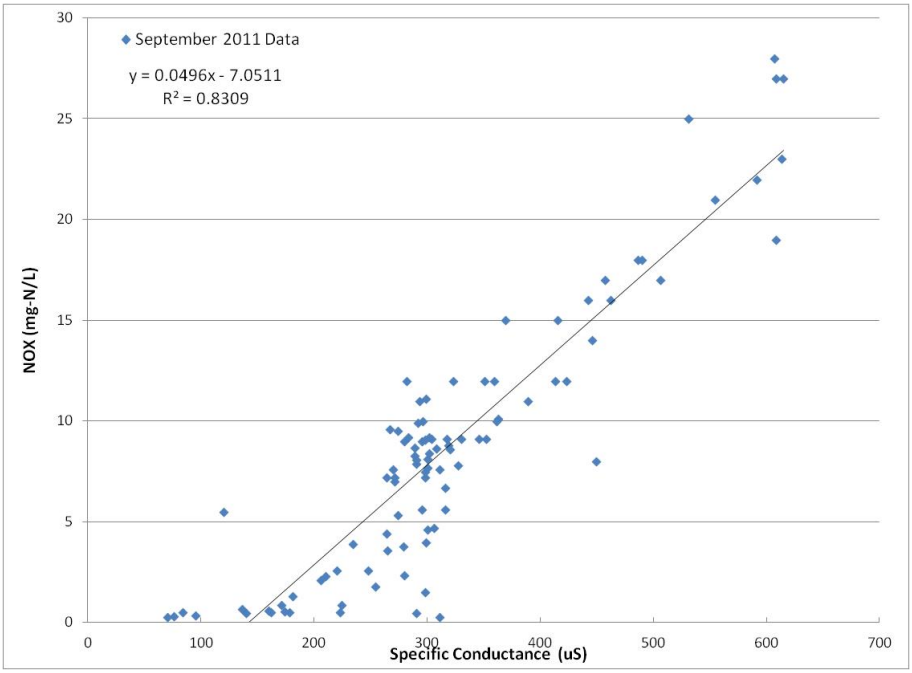


**Figure 11**
**Correlation Between the Specific Conductance (uS) and Concentrations of NOX (mg-N/L)**

### 4.3.3 Analytical Parameters

In addition to measuring field parameters, all samples were analyzed for chloride. Some of the samples were additionally analyzed for: total alkalinity (as $CaCO_3$), total Kjeldahl nitrogen (TKN-N), ammonia nitrogen (NH3-N), and nitrate/nitrite nitrogen (NOX-N), total organic carbon (TOC), dissolved organic carbon (DOC), chemical oxygen demand (COD), and cations and anions. The September sampling event again provides further insight into the existing nitrogen plume. The complete water quality analytical results for Sample Event No. 4 are listed in Table 1, Appendix F, and the statistical summary of the water quality is presented in Table 1, Appendix G. The laboratory report containing the raw analytical data is included in Appendix H.

### 4.3.4 Nitrate/Nitrite Concentrations with Depth

Although care was taken to install the drive points at specific depths (e.g. 5, 7 and 9 feet below ground surface [bgs] in June of 2010, and 14, 21 and 27 feet bgs during the November 2010 drilling event), the points are located at different elevations ranging from 92.85 feet to 120.82 feet. **Surfer** is an excellent tool for contour mapping; however, it

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cannot project a 3-dimensional view of concentrations with depth. Therefore the concentrations of parameters were “lumped” from the different sampling locations into “slices” of similar depth, allowing the different “slices” to be compared.

Samples were collected at 61 locations during the December 2010 sampling event. Based on the distribution of points with depth, four “slices” were chosen for the December 2010 data. The bottom three slices were separated into five-foot intervals, and the top group was divided into a ten-foot interval as that group comprises primarily drive points within the spodic layer. A **Surfer** schematic illustrating the “slices” of NOX concentration with depth from December 9, 2010 is presented in Figure 12. For the March, June and September 2011 sampling events, samples were collected at 144, 89 and 94, locations respectively. There were a sufficient number of locations to split the data into five “slices” separated into five-foot intervals as shown in Figures 13 through 15. The schematic in Figure 13 provides the most detailed view of NOX extent, as it had the most sample locations. For the June sample event, NOX was analyzed for only at limited locations; however, the chloride concentrations were collected from the majority of the drive point locations. Therefore, a schematic of the chloride plume in Surfer was created (Figure 14) for this sample event.

Similar to the chloride results in the June sampling event, the NOX results (Figure 15) from the September sampling event show that the plume appears to be confined in a southwesterly direction from the center of the mound. The lowest concentrations are at the deeper depths. The highest concentrations were found at 105-115 feet above sea level close to the mound from approximately AA9 and north along the 9-transect (Figure 15).

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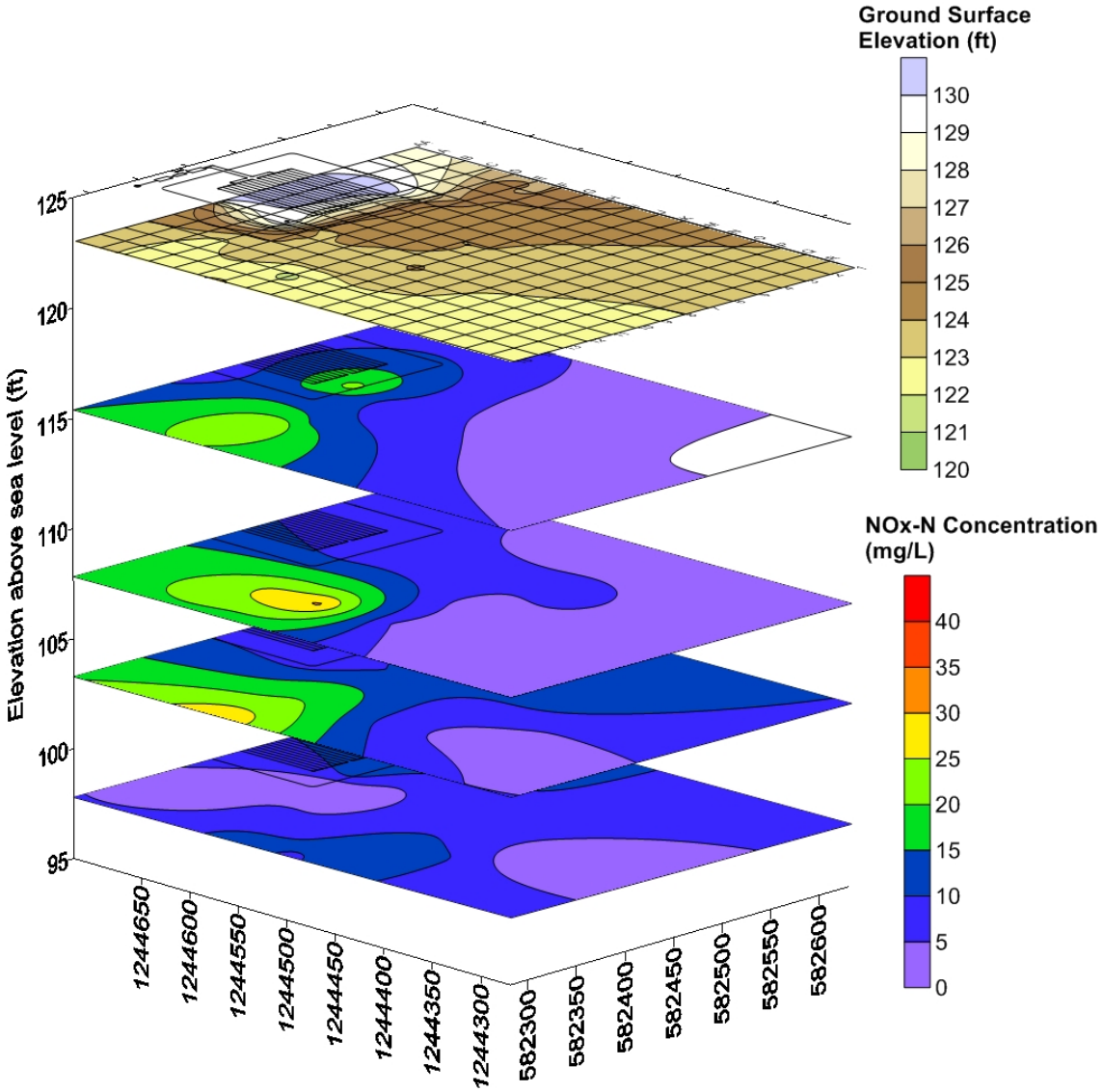


**Figure 12**

**A layered schematic (using Surfer) illustrating NOX concentrations in the subsurface at four different elevation intervals (based on the December 2010 sampling event). The top slice provides a contour map of the surface elevation. UTM coordinates are provided to correlate the schematic to Figure 1.**

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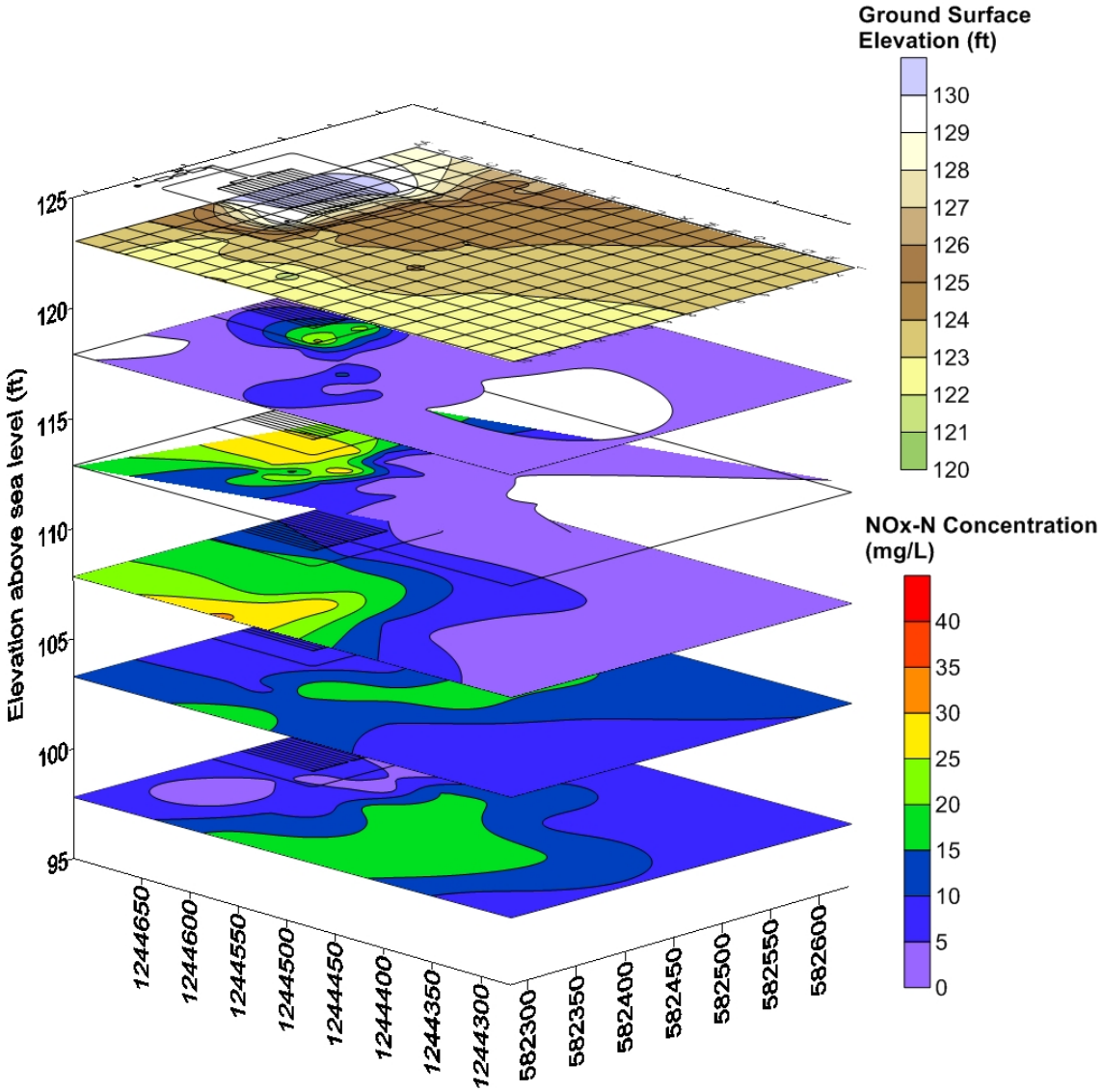


**Figure 13**

**A layered schematic (using Surfer) illustrating NOX concentrations in the subsurface at four different elevation intervals (based on the March 2011 sampling event). The top slice provides a contour map of the surface elevation. UTM coordinates are provided to correlate the schematic to Figure 1.**

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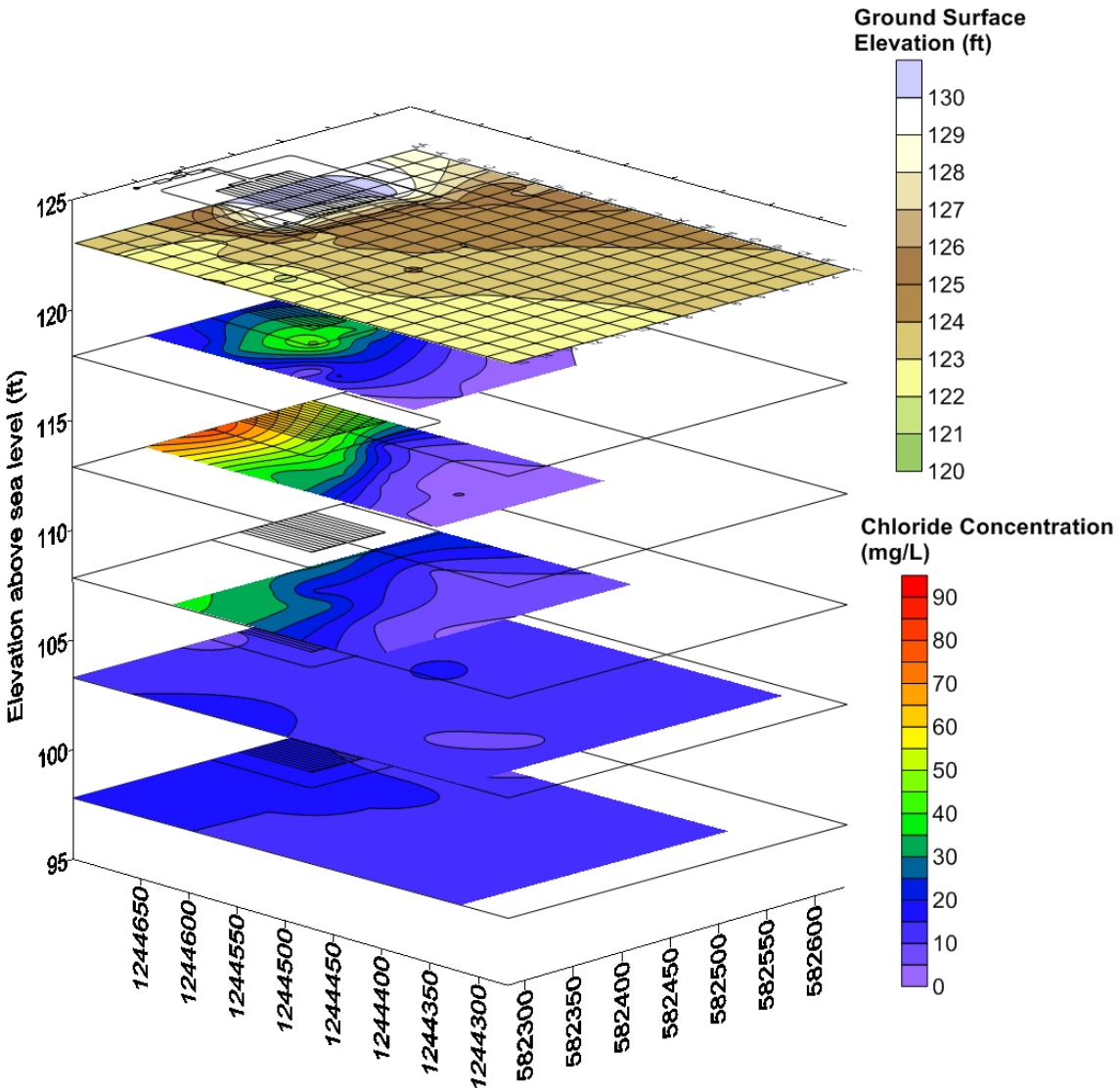


**Figure 14**

**A layered schematic (using Surfer) illustrating Chloride concentrations in the subsurface at five different elevation intervals (based on the June 2011 sampling event). UTM coordinates are provided to correlate the schematic to Figure 1.**

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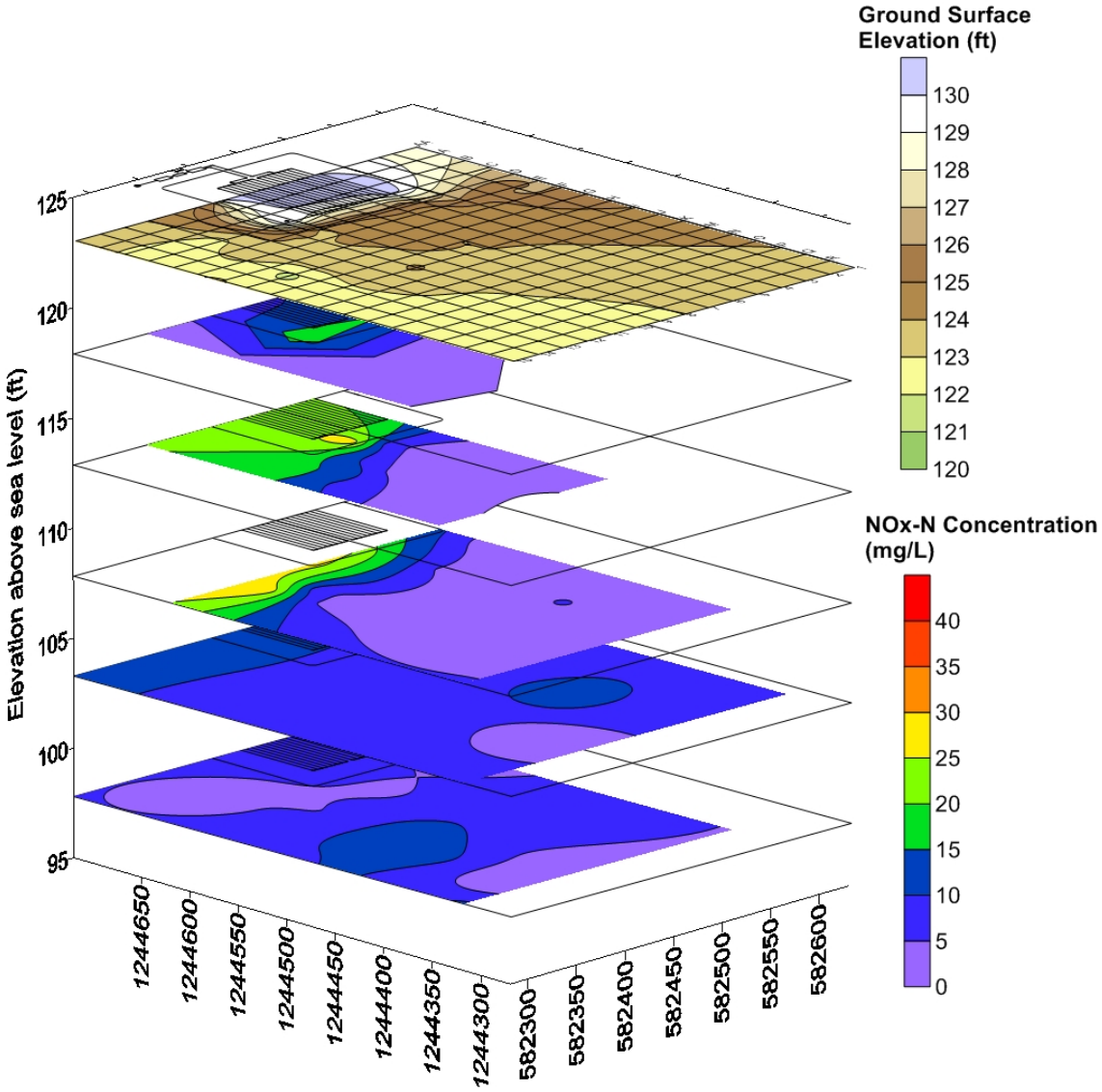


**Figure 15**

**A layered schematic (using Surfer) illustrating NOX concentrations in the subsurface at five different elevation intervals (based on the September 2011 sampling event). UTM coordinates are provided to correlate the schematic to Figure 1.**

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# 5.0 GCREC Data Summary Report No. 4: Summary and Recommendations

## 5.1 Summary

The results of the data collected to date have provided additional understanding of the extent of the spodic layer, allowed for estimations of groundwater flow, gradient and velocity, and provided additional insights into the general trend of the NOX plume. Results of Sample Event No. 4 indicate that:

- Although the groundwater levels fluctuate, the direction of flow remains relatively constant.
- The groundwater gradient has been found to range from 0.0047 to 0.011.
- Additional verification of the elevation of the top of the spodic layer show that it follows the same trend as that of the groundwater.
- A good correlation has been established between specific conductance and concentrations of chloride ($R^2$=0.8) as well as NOX ($R^2$=0.8).
- The chloride plume appears to follow the extent and movement of the NOX plume and follows a southwesterly direction with elevated concentrations in the spodic layer closer to the mound and higher elevations just below the spodic layer further away from the mound. The concentration is lowest just above the confining layer.
- Little seasonal variation in the groundwater flow direction and parameter concentrations were observed.

## 5.2 Recommendations

Sample Event 4 was the last funded sample event for the GCREC mound monitoring network. The insight gained from monitoring the GCREC mound plume will provide information needed for the development of the groundwater model in Task D.

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# Appendix A: GCREC Mound Wastewater Flow Data

**Table A.1**
**GCREC Mound Metered Wastewater Flow Data**

| Date Range | 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) |
|---|---|---|---|
| **Before A/C Condensate Diversion** | | | |
| 12/21/09 – 7/16/10 | 1,650 | 591 | 2,241 |
| **After A/C Condensate Diversion** | | | |
| 7/19/10 – 10/10/11 | 1,147 | 1,463 | 2,610 |

**Table A.2**
**Summary of Daily Wastewater Flows (PLC Recorded)**

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

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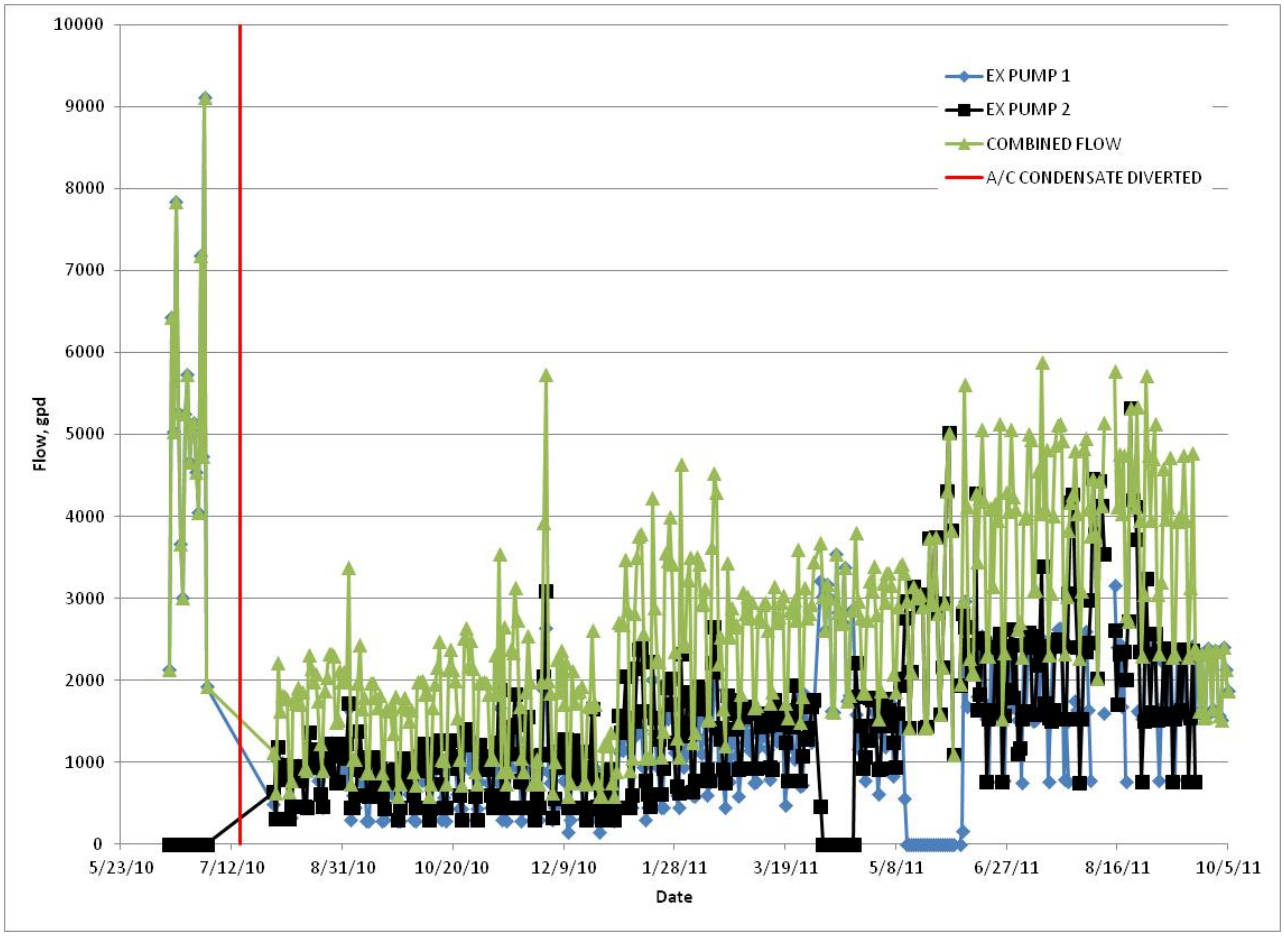


**Figure A.1**
**PLC Recorded Daily Wastewater Flows**
**(6/14/10 – 10/05/11)**

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# Appendix B: GCREC Weather Station Data

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## Table B.1
## Monthly Recorded Meteorological Data

| 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/day) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |

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# Appendix C: GCREC Mound Sample Identification

**Table C.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 C.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 |

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**Table C.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 |

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**Table C.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 | H9 | 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 | I6 | DP-I06-14 | SST Drive Point | 110.24 |
| 106 | I6 | DP-I06-20 | SST Drive Point | 103.99 |
| 107 | I6 | DP-I06-26 | SST Drive Point | 97.94 |
| 108 | I7 | DP-I07-8 | SST Drive Point | 115.67 |
| 109 | I8 | DP-I08-5 | SST Drive Point | 118.56 |
| 110 | I8.5 | PZ09-I08-5 | 1 1/4" Standpipe Piezometer, 4' screen | 118.93 |
| 111 | I9 | DP-I09-11 | SST Drive Point | 112.96 |
| 112 | I10 | DP-I10-6 | SST Drive Point | 117.72 |
| 113 | I11 | DP-I11-10 | SST Drive Point | 113.50 |
| 114 | I12 | DP-I12-6 | SST Drive Point | 117.54 |
| 115 | I15 | 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 |

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**Table C.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-O10-12 | SST Drive Point | 110.71 |
| 140 | O10 | DP-O10-18 | SST Drive Point | 104.56 |
| 141 | O10 | DP-O10-24 | 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 D: Soil Analytical Results

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# Table D.1
# Soil Analytical Results

| ID# | Sample ID | Depth | pH | BufpH | CEC | TN[1] | TKN | ON[2] | NH3-N | NOx-N | TIN[3] | OrgMt | Est. TOC[4] | K | Ca | Mg | Na |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | % | 0.68% OM | mg/kg | mg/kg | mg/kg | mg/kg |
| 1 | O-10 | 0-1.57' | 6.10 | 7.80 | 6.92 | 800.92 | 799.0897 | 797.44 | 1.65 | 1.83 | 3.48 | 2.11 | 1.43 | 27.19 | 634.0 | 50.20 | 23.68 |
| 2 | O-10 | 1.57-2.49' | 5.30 | 7.89 | 2.36 | 115.37 | 114.3235 | 113.31 | 1.02 | 1.05 | 2.06 | 0.20 | 0.14 | 12.89 | 42.86 | 1.58 | 21.25 |
| 3 | O-10 | 2.49-3.58' | 5.40 | 7.92 | 2.19 | 49.20 | 48.9296 | 48.06 | 0.87 | 0.27 | 1.14 | 0.14 | 0.10 | 11.81 | 38.34 | 1.99 | 23.84 |
| 4 | O-10 | 3.58-5.1' | 5.20 | 7.92 | 2.15 | 41.04 | 40.777 | 39.92 | 0.86 | 0.26 | 1.12 | 0.14 | 0.10 | 13.01 | 39.47 | 1.88 | 22.10 |
| 5 | O-10 | 5.1-5.6' | 4.70 | 7.76 | 3.79 | 66.94 | 66.7042 | 65.68 | 1.03 | 0.23 | 1.26 | 0.20 | 0.14 | 17.00 | 34.48 | 0.54 | 28.90 |
| 6 | O-10 | 5.6-6.2' | 4.60 | 7.52 | 6.20 | 116.14 | 115.8041 | 114.62 | 1.18 | 0.34 | 1.52 | 0.54 | 0.37 | 21.73 | 40.38 | 1.03 | 36.54 |
| 7 | E-06 | 0-2.4' | 6.10 | 7.81 | 8.48 | 741.19 | 716.9355 | 715.98 | 0.96 | 24.26 | 25.21 | 2.04 | 1.39 | 65.70 | 795.0 | 52.20 | 19.91 |
| 8 | E-06 | 2.44-2.9' | 6.10 | 7.87 | 3.22 | 145.49 | 144.4289 | 143.50 | 0.92 | 1.06 | 1.99 | 0.48 | 0.33 | 22.54 | 133.6 | 11.93 | 19.09 |
| 9 | E-06 | 2.8-3.9' | 5.10 | NES[5] | 1.31 | 54.49 | 54.1427 | 52.77 | 1.37 | 0.34 | 1.71 | 0.14 | 0.10 | 13.05 | 35.32 | 0.73 | 18.29 |
| 10 | E-06 | 3.9-4' | 6.10 | 7.93 | 2.33 | 56.94 | 56.5046 | 55.50 | 1.00 | 0.44 | 1.44 | 0.14 | 0.10 | 19.86 | 64.20 | 9.60 | 19.80 |
| 11 | E-06 | 4-4.35' | 5.80 | 7.97 | 1.65 | 60.71 | 58.6418 | 57.69 | 0.95 | 2.07 | 3.02 | 0.14 | 0.10 | 12.82 | 68.60 | 3.20 | 16.34 |
| 12 | E-06 | 4.35-4.85' | 4.60 | NES[5] | 1.52 | 54.22 | 52.7575 | 51.37 | 1.39 | 1.46 | 2.86 | 0.14 | 0.10 | 16.61 | 39.65 | 1.41 | 20.33 |
| 13 | E-06 | 4.85-5.35' | 4.40 | NES[5] | 1.73 | 204.35 | 201.9656 | 199.86 | 2.10 | 2.38 | 4.49 | 1.22 | 0.83 | 23.64 | 35.36 | -1.41 | 22.07 |
| 14 | E-06 | 6-8' | 4.70 | 7.30 | 8.18 | 322.05 | 319.6979 | 318.72 | 0.98 | 2.35 | 3.33 | 2.38 | 1.62 | 19.44 | 42.37 | 0.63 | 42.80 |
| 15 | G-10 | 0-1.2' | 5.90 | 7.74 | 6.25 | 472.86 | 470.9396 | 465.80 | 5.14 | 1.92 | 7.06 | 1.70 | 1.16 | 46.82 | 352.9 | 20.01 | 23.97 |
| 16 | G-10 | 1.2-2.8' | 4.90 | 7.61 | 5.09 | 105.16 | 102.5401 | 98.95 | 3.59 | 2.62 | 6.21 | 0.41 | 0.28 | 20.74 | 57.40 | 3.35 | 25.84 |
| 17 | G-10 | 2.8-6.1' | 5.70 | NES[5] | 5.27 | 566.03 | 563.7461 | 557.91 | 5.84 | 2.28 | 8.12 | 1.50 | 1.02 | 65.50 | 380.3 | 28.36 | 33.38 |
| 18 | G-10 | 6.1-9' | 5.00 | 7.15 | 9.47 | 286.09 | 283.8583 | 280.52 | 3.34 | 2.23 | 5.57 | 2.24 | 1.52 | 38.03 | 91.50 | 3.93 | 27.73 |
| 19 | G-10 | 9-10.1' | 5.20 | 7.14 | 9.17 | 235.29 | 233.4414 | 231.18 | 2.26 | 1.85 | 4.10 | 1.50 | 1.02 | 26.30 | 89.80 | 3.17 | 26.30 |
| 20 | G-10 | 10.1-13.9' | 5.00 | 7.66 | 4.57 | 173.91 | 171.1635 | 169.04 | 2.13 | 2.74 | 4.87 | 1.22 | 0.83 | 19.31 | 65.10 | 0.78 | 23.52 |
| 21 | G-10 | 13.9-16.6' | 5.20 | 7.55 | 5.96 | 122.10 | 118.4095 | 115.41 | 3.00 | 3.69 | 6.69 | 0.75 | 0.51 | 28.65 | 74.30 | 2.94 | 28.17 |
| 22 | G-10 | 16.6-19' | 5.30 | 7.32 | 7.63 | 218.35 | 215.8369 | 213.42 | 2.42 | 2.52 | 4.93 | 1.50 | 1.02 | 30.33 | 77.50 | 2.77 | 23.10 |
| 23 | G-10 | 19-23' | 5.20 | 7.44 | 7.08 | 126.14 | 122.7524 | 120.20 | 2.56 | 3.39 | 5.95 | 0.68 | 0.46 | 33.10 | 109.4 | 5.16 | 26.63 |
| 24 | G-10 | 23-27.5' | 5.40 | 7.88 | 3.28 | 50.61 | 48.4507 | 46.62 | 1.83 | 2.16 | 3.99 | 0.14 | 0.10 | 19.62 | 170.6 | 9.63 | 20.22 |
| 25 | G-10 | 27.5-27.9' | 5.30 | NES[5] | 9.49 | 86.50 | 84.48341 | 81.07 | 3.41 | 2.02 | 5.43 | 0.27 | 0.18 | 33.57 | 1293 | 74.30 | 35.52 |
| 26 | G-10 | 27.9-30' | 5.70 | 7.71 | 34.05 | 237.70 | 235.0367 | 223.28 | 11.75 | 2.66 | 14.41 | 0.20 | 0.14 | 281.9 | 3035 | 850.0 | 51.70 |

T: for Value < MDL Non-detect

I: for Value >= MDL but < PQL

[1]Total Nitrogen (TN) is a calculated value equal to the sum of TKN and $NO_X$.

[2]Organic Nitrogen (ON) is a calculated value equal to the difference of TKN and $NH_3$.

[3]Total Inorganic Nitrogen (TIN) is a calculated value equal to the sum of $NH_3$ and $NO_X$.

[4]TOC calculated value typical range 0.58-0.70 of organic matter, using 0.68

[5]NES: for Not Enough Sample

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# Appendix E: Groundwater Elevations

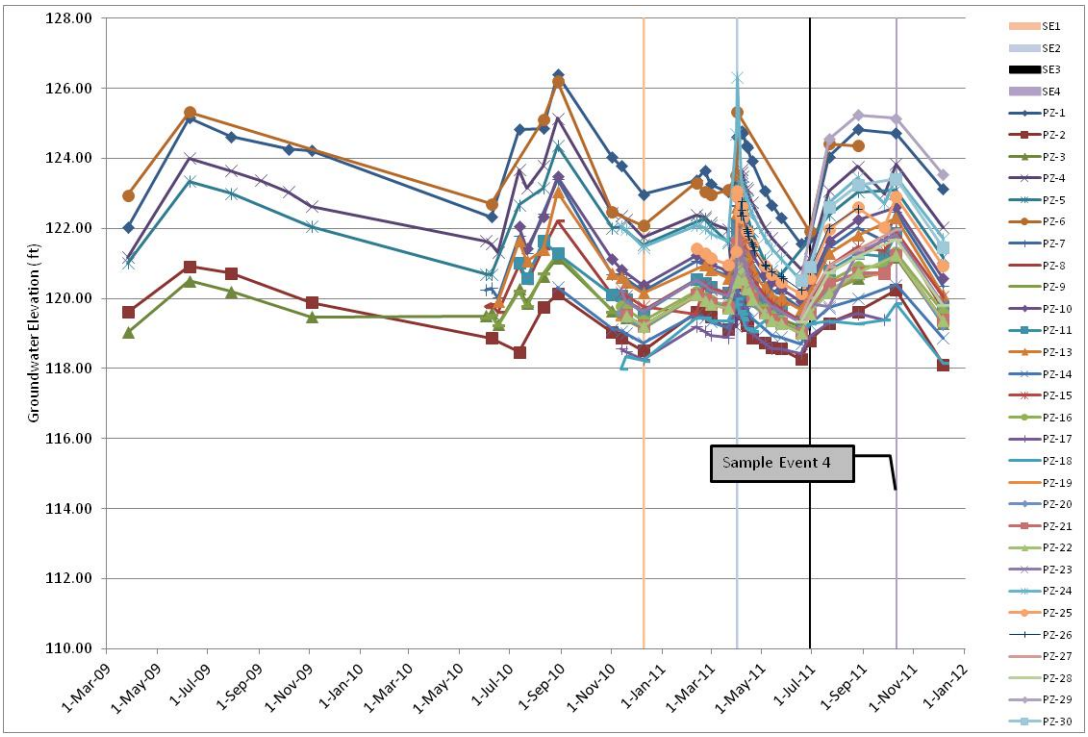


**Figure E.1**
**Groundwater Elevations**

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Table E.1
Groundwater Elevations

| ID | PZ-1 | PZ-2 | PZ-3 | PZ-4 | PZ-5 | PZ-6 | PZ-7 | PZ-8 | PZ-9 | PZ-10 | PZ-11 | PZ-13 | PZ-14 | PZ-15 | PZ-16 | PZ-17 | PZ-18 | PZ-19 | PZ-20 | PZ-21 | PZ-22 | PZ-23 | PZ-24 | PZ-25 | PZ-26 | PZ-27 | PZ-28 | PZ-29 | PZ-30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | BKG, N | PG1.75 | H11 | BKG, N | BKG, E | BKG, NW | D5.5 | FG7 | I8.5 | CD6.5 | E9 | F4 | G13 | A11 | C12 | I15 | R12 | G9.75 | G9.75 | E11 | E11 | D9 | BKG, N | C-Mound | EF2 | D08 | D11 | BKG | A0 |
| 3/26/2009 | 122.02 | 119.61 | 119.04 | 121.17 | 121.00 | 122.95 | | | | | | | | | | | | | | | | | | | | | | | |
| 6/8/2009 | 125.16 | 120.92 | 120.50 | 124.01 | 123.34 | 125.33 | | | | | | | | | | | | | | | | | | | | | | | |
| 7/28/2009 | 124.62 | 120.72 | 120.20 | 123.64 | 123.00 | | | | | | | | | | | | | | | | | | | | | | | | |
| 9/2/2009 | | | | 123.37 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10/6/2009 | 124.26 | | | 123.04 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11/3/2009 | 124.22 | 119.88 | 119.48 | 122.63 | 122.06 | | | | | | | | | | | | | | | | | | | | | | | | |
| 6/1/2010 | | | 119.49 | 121.63 | 120.69 | | 120.23 | 119.76 | 119.44 | | | | | | | | | | | | | | | | | | | | |
| 6/8/2010 | 122.32 | 118.87 | 119.58 | 121.55 | 120.68 | 122.70 | 120.29 | 119.84 | 119.52 | | | | | | | | | | | | | | | | | | | | |
| 6/16/2010 | | | 119.26 | 121.31 | | | 120.03 | 119.61 | 119.22 | | | 119.91 | | | | | | | | | | | | | | | | | |
| 7/12/2010 | 124.83 | 118.47 | 120.27 | 123.68 | 122.67 | | 121.77 | 120.94 | 120.22 | 122.06 | 121.01 | 121.63 | | | | | | | | | | | | | | | | | |
| 7/21/2010 | | | 119.87 | 123.16 | | | 121.28 | 120.44 | 119.77 | 121.43 | 120.56 | 121.06 | | | | | | | | | | | | | | | | | |
| 8/10/2010 | 124.85 | 119.74 | 120.64 | 123.79 | 123.15 | 125.10 | 122.42 | 121.42 | 120.70 | 122.33 | 121.64 | 121.40 | | | | | | | | | | | | | | | | | |
| 8/27/2010 | 126.39 | 120.12 | 121.16 | 125.14 | 124.35 | 126.19 | 123.39 | 122.21 | 121.28 | 123.49 | 121.29 | 123.05 | 120.32 | | | | | | | | | | | | | | | | |
| 11/1/2010 | 124.02 | 119.03 | 119.65 | 122.43 | 122.01 | 122.46 | 120.67 | 120.10 | 119.62 | 121.12 | 120.10 | 120.71 | 119.13 | | | | | | | | | | | | | | | | |
| 11/12/2010 | 123.79 | 118.87 | 119.54 | 122.37 | 122.05 | | 120.67 | 120.04 | 119.49 | 120.83 | 120.07 | 120.59 | 119.07 | 120.16 | 119.78 | 118.56 | 117.98 | 119.38 | 119.58 | | | 120.27 | 122.05 | | | | | | |
| 11/18/2010 | | | 119.45 | 122.26 | | | 120.56 | 119.93 | 119.38 | | 119.96 | 120.45 | 119.01 | 120.09 | 119.71 | 118.49 | 118.34 | 119.45 | 119.45 | 119.53 | 119.51 | 119.91 | 121.96 | | | | | | |
| 12/9/2010 | 122.97 | 118.52 | 119.21 | 121.76 | 121.53 | 122.09 | 120.22 | 119.65 | 119.15 | 120.37 | 119.57 | 120.16 | 118.72 | 119.77 | 119.37 | 118.26 | 118.22 | 119.18 | 119.17 | 119.22 | 119.21 | 119.64 | 121.46 | | | | | | |
| 2/11/2011 | 123.38 | 119.60 | 120.13 | 122.38 | 122.18 | 123.30 | 121.06 | 120.54 | 120.08 | 121.22 | 120.55 | | 119.55 | 119.56 | 120.20 | 119.19 | 119.44 | 120.08 | 120.10 | 120.10 | 120.11 | 120.51 | 122.07 | 121.42 | | | | | |
| 2/21/2011 | 123.66 | 119.62 | 120.01 | 122.33 | 122.27 | 123.05 | 120.98 | 120.45 | 120.03 | 121.10 | 120.44 | 120.95 | 119.44 | 120.40 | 120.03 | 119.06 | 119.44 | 119.97 | 119.98 | 119.96 | 119.94 | 120.37 | 122.01 | 121.28 | | | | | |
| 2/28/2011 | 123.27 | 119.48 | 119.90 | 122.17 | 122.08 | 122.95 | 120.85 | 120.33 | 119.90 | 120.98 | 120.33 | 120.82 | 119.34 | 120.28 | 119.93 | 118.94 | 119.35 | 119.85 | 119.86 | 119.85 | 119.83 | 120.24 | 121.86 | 121.15 | | | | | |
| 3/21/2011 | 123.04 | 119.11 | 119.80 | 121.97 | 121.60 | 123.10 | 120.64 | 120.14 | 119.75 | 120.79 | 120.15 | 120.58 | 119.17 | 120.16 | 119.81 | 118.88 | 119.37 | 119.73 | 119.76 | 119.71 | 119.71 | 120.07 | 121.65 | 120.97 | | | | | |
| 3/31/2011 | 123.24 | 119.78 | 120.60 | 119.19 | 121.87 | 123.50 | 121.10 | 120.81 | 120.53 | 121.21 | 120.85 | 121.12 | 119.99 | 120.82 | 120.53 | 119.82 | 119.82 | 120.48 | 120.49 | 120.48 | 120.47 | 120.77 | 124.70 | 121.35 | | | | | |
| 4/1/2011 | | | | | | | 122.67 | 122.17 | 121.68 | 122.86 | 122.13 | 122.60 | | 122.10 | 121.41 | | | 121.58 | 121.61 | 121.60 | 121.48 | 121.98 | | 122.92 | | | | | |
| 4/1/2011 | 124.62 | 120.37 | 121.24 | 120.73 | 123.32 | 125.33 | 122.63 | 121.98 | 121.39 | 122.92 | 121.91 | 122.45 | 120.28 | 121.96 | 121.36 | 120.10 | 119.99 | 121.35 | 121.37 | 121.27 | 121.28 | 121.90 | 126.30 | 123.08 | | | | | |
| 4/4/2011 | | 119.74 | 120.60 | | | | 121.96 | 121.25 | 120.64 | 122.17 | 121.25 | 121.82 | 119.93 | 121.36 | 120.91 | 119.57 | 119.57 | 120.66 | 120.67 | 120.69 | 120.68 | 121.25 | | 122.46 | | | | | |
| 4/4/2011 | | 119.68 | 120.54 | | | | 121.90 | 121.18 | 120.56 | 122.14 | 121.20 | 121.75 | 119.90 | 121.33 | 120.81 | 119.51 | 119.63 | 120.59 | 120.57 | 120.63 | 120.63 | 121.20 | | 122.44 | | | | | |
| 4/5/2011 | | | 120.50 | | | | 121.82 | 121.11 | 120.51 | 122.04 | 121.10 | 121.65 | 119.86 | 121.25 | 120.76 | | | 120.55 | 120.57 | 120.58 | 120.57 | 121.11 | | 122.34 | 122.36 | | | | |
| 4/6/2011 | 124.73 | 119.90 | 120.79 | 123.67 | 123.17 | | 122.17 | 121.49 | 120.86 | 122.36 | 121.48 | 122.06 | 120.08 | 121.56 | 121.04 | 119.78 | 119.55 | 120.88 | 120.89 | 120.89 | 120.88 | 121.46 | 123.36 | 122.62 | 122.76 | | | | |
| 4/7/2011 | 124.76 | 119.66 | 120.55 | 123.58 | 123.03 | | 121.94 | 121.21 | 120.57 | 122.15 | 121.22 | 121.80 | 119.92 | 121.35 | 120.86 | 119.54 | 119.45 | 120.62 | 120.63 | 120.66 | 120.65 | 121.21 | 123.26 | 122.43 | 122.52 | | | | |
| 4/8/2011 | 124.71 | 119.56 | 120.45 | 123.49 | 122.90 | | 121.80 | 121.08 | 120.46 | 122.02 | 121.11 | 121.65 | 119.85 | 121.23 | 120.73 | 119.45 | 119.39 | 120.50 | 120.53 | 120.56 | 120.54 | 121.10 | 123.18 | 122.31 | 122.35 | | | | |
| 4/12/2011 | 124.37 | 119.27 | 120.19 | 123.15 | 122.49 | | 121.46 | 120.77 | 120.17 | 121.67 | 120.81 | 121.28 | 119.69 | 120.92 | 120.47 | 119.24 | 119.15 | 120.25 | 120.27 | 120.31 | 120.31 | 120.81 | 122.85 | 121.93 | 121.98 | | | | |
| 4/13/2011 | 124.32 | 119.22 | 120.18 | 123.10 | 122.41 | | 121.40 | 120.71 | 120.12 | 121.61 | 120.76 | 121.23 | 119.66 | 120.89 | 120.43 | 119.22 | 119.13 | 120.20 | 120.21 | 120.28 | 120.26 | 120.77 | 122.80 | 121.88 | 121.93 | | | | |
| 4/14/2011 | | | | | | | 121.33 | | | | | 121.16 | | | | | | | | | | | | | 121.85 | | | | |
| 4/15/2011 | | | | | | | | | | | | 121.09 | | | | | | | | | | | | | 121.77 | | | | |
| 4/18/2011 | | | | | | | | | | | | 120.91 | | | | | | | | | | | | | 121.60 | | | | |
| 4/19/2011 | 123.92 | 118.87 | 119.93 | 122.73 | 121.92 | | 121.03 | 120.37 | 119.82 | 121.27 | 120.44 | 120.84 | 119.44 | 120.60 | 120.16 | 119.01 | 119.05 | 119.91 | 119.90 | 119.99 | 119.98 | 120.46 | 122.44 | 121.52 | 121.52 | | | | |
| 4/20/2011 | | | | | | | | | | | | 120.77 | | | | | | | | | | | | | 121.48 | | | | |
| 4/22/2011 | | | | | | | | | | | | 120.68 | | | | | | | | | | | | | 121.36 | | | | |
| 5/4/2011 | 123.08 | 118.73 | 119.65 | 122.04 | 121.10 | | 120.47 | 119.95 | 119.55 | 120.69 | 120.00 | 120.33 | 119.15 | 120.09 | 119.70 | 118.74 | 119.35 | 119.56 | 119.55 | 119.59 | 119.58 | 119.99 | 121.74 | 120.94 | 120.96 | | | | |
| 5/5/2011 | | | | | | | | | | | | 120.30 | | | | | | | | | | | | | 120.95 | | | | |
| 5/6/2011 | | | | | | | | | | | | 120.29 | | | | | | | | | | | | | 120.92 | | | | |
| 5/13/2011 | 122.67 | 118.59 | 119.49 | 121.72 | 120.80 | | 120.25 | 119.75 | 119.40 | 120.46 | 119.79 | 120.09 | 118.94 | 119.87 | 119.49 | 118.57 | 119.28 | 119.37 | 119.38 | 119.39 | 119.37 | 119.76 | 121.43 | 120.68 | 120.77 | | | | |
| 5/24/2011 | 122.31 | 118.57 | 119.42 | 121.45 | 120.68 | | 120.12 | 119.66 | 119.34 | 120.28 | 119.68 | 119.99 | 118.90 | 119.72 | 119.36 | 118.56 | 119.29 | 119.29 | 119.30 | 119.29 | 119.27 | 119.64 | 121.14 | 120.46 | 120.62 | | | | |
| 5/26/2011 | | | | | | | | | | | | 119.97 | | | | | | | | | | | | | 120.58 | | | | |
| 6/17/2011 | 121.56 | 118.26 | 119.20 | 120.85 | | | 119.72 | 119.33 | 119.06 | 119.90 | 119.36 | 119.68 | 118.71 | 119.36 | 119.07 | 118.42 | 119.01 | 119.02 | 119.03 | 119.01 | 119.00 | 119.31 | 120.52 | 120.12 | 120.25 | 119.45 | 119.34 | 120.51 | 120.52 |
| 6/28/2011 | 121.73 | 118.80 | 119.74 | 121.11 | | 121.92 | 120.26 | 119.93 | 119.63 | 120.40 | 119.96 | 120.15 | 119.26 | 119.88 | 119.63 | 118.93 | 119.28 | 119.60 | 119.62 | 119.58 | 119.57 | 119.85 | 120.80 | 120.58 | 120.78 | 120.01 | | | 120.91 |
| 7/21/2011 | 124.04 | 119.29 | 120.21 | 123.06 | 122.39 | 124.41 | 121.44 | 120.75 | 120.17 | 121.65 | 120.79 | 121.28 | 119.73 | 120.91 | 120.48 | 119.29 | 119.35 | 120.22 | 120.25 | 120.42 | 120.17 | 119.78 | 122.74 | 121.96 | 122.01 | 120.91 | 120.73 | 124.56 | 122.60 |
| 8/25/2011 | 124.82 | 119.62 | 120.57 | 123.77 | 123.03 | 124.35 | 122.01 | 121.24 | 120.57 | 122.25 | 121.29 | 121.80 | 119.99 | 121.47 | 120.91 | 119.57 | 119.28 | 120.65 | 120.68 | 120.73 | 120.74 | 121.30 | 123.45 | 122.60 | 122.56 | 121.39 | 121.19 | 125.24 | 123.24 |
| 9/26/2011 | | | 120.75 | 122.99 | | | 121.63 | | | | 121.21 | | | 121.36 | 120.89 | 119.39 | 119.38 | 120.70 | 120.76 | 120.72 | | | 122.71 | 122.04 | | | | | |
| 10/10/2011 | 124.71 | 120.23 | 121.17 | 123.84 | 123.09 | | 122.47 | 121.85 | | 122.61 | 121.85 | 122.29 | 120.39 | 121.91 | 121.31 | | 119.85 | 121.25 | 121.29 | 121.23 | 121.22 | 121.82 | 123.47 | 122.90 | | 121.96 | 121.68 | 125.14 | 123.41 |
| 12/6/2011 | 123.12 | 118.11 | 119.27 | 122.03 | 121.18 | | 120.34 | 119.68 | | 120.57 | 119.77 | 120.10 | 118.86 | 120.04 | 119.61 | | 118.16 | 119.24 | 119.25 | 119.38 | 119.37 | 119.82 | 121.71 | 120.92 | | | 119.80 | 123.53 | 121.45 |

# Appendix F: Water Quality Analytical Results

o:\44237-001\Wpdocs\Report

Table F.1
Water Quality Analytical Results
(September 26 – September 28, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg-N/L) | NH3-N (mg-N/L) | NOx-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-N | $PO_4$-P | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| **STE Sample** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STE-EX Pump Tank | 9/28/11 12:00 | G | 29.4 | 7 | 250 | 0.9 | 721 | 20 | 10 | | | 32.24 | 32 | 4.00 | 28 | 0.24 | 28.24 | 3.2 | 50 | | | | 68 | 0.24 | 0.01 | | | | | | | | | | |
| STE-EX Pump Tank-D | 9/28/11 12:05 | G | 29.4 | 7 | 250 | 0.9 | 721 | 17 | 10 | | | 31.24 | 31 | 3.00 | 28 | 0.24 | 28.24 | 3 | 50 | | | | 42 | 0.24 | 0.01 | | | | | | | | | | |
| **Drivepoints** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DP-AA9-14 | 9/28/11 9:55 | G | 25.4 | 4.6 | 10 | 2 | 554 | | | | 10 | 23.4 | 2.4 | 2.39 | 0.01 | 21 | 21.01 | 0.17 | | 2.6 | 2.1 | 0.091 | 52 | 21 | 0.01 | 0.01 | 52 | 0.13 | 37 | 0.076 | 9.5 | 0.015 | 11 | 43 |
| DP-AA9-14-D | 9/28/11 10:00 | G | 25.4 | 4.6 | 10 | 2 | 554 | | | | 10 | 22.1 | 2.1 | 2.09 | 0.01 | 20 | 20.01 | 0.17 | | 2.6 | 2.6 | 0.072 | 50 | 20 | 0.01 | 0.01 | 51 | 0.13 | 36 | 0.56 | 9.3 | 0.019 | 11 | 44 |
| DP-AA9-22 | 9/28/11 10:10 | G | 25.1 | 5 | 10 | 0.3 | 369 | | | | 10 | 16.7 | 1.7 | 1.69 | 0.01 | 15 | 15.01 | 0.36 | | | | | 19 | 15 | 0.01 | | | | | | | | | |
| DP-AA9-27 | 9/28/11 10:15 | G | 24.9 | 4.9 | 10 | 0.3 | 267 | | | | 10 | 12.28 | 2.7 | 2.69 | 0.01 | 9.58 | 9.59 | 0.26 | | | | | 16 | 9.4 | 0.18 | | | | | | | | | |
| DP-D07-5 | 9/27/11 8:25 | G | 26 | 5.7 | 31 | 1.7 | 346 | | | | 32 | 10.8 | 1.7 | 1.66 | 0.044 | 9.1 | 9.14 | 0.078 | | 12 | 12 | 0.072 | 29 | 9.1 | 0.01 | 0.043 | 32 | 0.091 | 28 | 0.4 | 5 | 0.007 | 5.1 | 27 |
| DP-D07-9 | 9/27/11 8:40 | G | 25.6 | 3.7 | 2 | 0.8 | 613 | | | | 46 | 26.3 | 3.3 | 3.29 | 0.01 | 23 | 23.01 | 0.046 | | 2.9 | 1.8 | 0.21 | 43 | 23 | 0.01 | 0.01 | 68 | 0.12 | 37 | 0.061 | 8.4 | 0.011 | 12 | 39 |
| DP-D08-9 | 9/27/11 8:00 | G | 25.3 | 5 | 42 | 2.8 | 449 | | | | 28 | 9.5 | 1.5 | 1.39 | 0.11 | 8 | 8.11 | 0.16 | | | | | 35 | 8 | 0.01 | | | | | | | | | |
| DP-D09-15 | 9/27/11 7:55 | G | 24.9 | 4.8 | 10 | 1.8 | 615 | | | | 11 | 29.4 | 2.4 | 2.39 | 0.01 | 27 | 27.01 | 0.5 | | | | | 45 | 27 | 0.01 | | | | | | | | | |
| DP-D09-8 | 9/27/11 7:50 | G | 25.8 | 4.6 | 2 | 0.5 | 591 | | | | 10 | 24.8 | 2.8 | 2.66 | 0.14 | 22 | 22.14 | 0.028 | | 2.9 | 2.3 | 0.35 | 50 | 22 | 0.01 | 0.092 | 64 | 0.12 | 37 | 0.033 | 9.5 | 0.0095 | 9.1 | 38 |
| DP-D11-11 | 9/27/11 7:45 | G | 26 | 5.2 | 31 | 2.3 | 442 | | | | 10 | 17.6 | 1.6 | 1.59 | 0.01 | 16 | 16.01 | 0.12 | | | | | 33 | 16 | 0.01 | | | | | | | | | |
| DP-D12-11 | 9/27/11 7:40 | G | 25.7 | 4.6 | 10 | 1.2 | 486 | | | | 11 | 20.5 | 2.5 | 2.21 | 0.29 | 18 | 18.29 | 0.11 | | | | | 36 | 18 | 0.01 | | | | | | | | | |
| DP-D7.5-14 | 9/27/11 8:00 | G | 24.6 | 4.9 | 10 | 0.2 | 608 | | | | 10 | 29.1 | 2.1 | 2.07 | 0.032 | 27 | 27.03 | 0.099 | | 2.4 | 1.3 | 0.092 | 54 | 27 | 0.01 | 0.042 | 42 | 0.1 | 39 | 0.044 | 11 | 0.120 | 11 | 38 |
| DP-D7.5-14-D | 9/27/11 8:05 | G | 24.6 | 4.9 | 10 | 0.2 | 608 | | | | 10 | 28.9 | 1.9 | 1.87 | 0.032 | 27 | 27.03 | 0.077 | | 2 | 1.2 | 0.082 | 52 | 27 | 0.01 | 0.01 | 41 | 0.12 | 39 | 0.049 | 11 | 0.120 | 11 | 38 |
| DP-D7.5-20 | 9/27/11 8:25 | G | 24.2 | 5.1 | 10 | 0.5 | 531 | | | | | 26.3 | 1.3 | 1.28 | 0.019 | 25 | 25.02 | | | | | | 42 | 25 | 0.01 | | | | | | | | | |
| DP-D7.5-26 | 9/27/11 8:35 | G | 24.2 | 5.2 | 10 | 0.5 | 289 | | | | | 9.62 | 0.92 | 0.04 | 0.88 | 8.7 | 9.58 | | | | | | 14 | 8.7 | 0.01 | | | | | | | | | |
| DP-E04-8 | 9/27/11 8:55 | G | 26.9 | 4 | 2 | 0.6 | 76 | | | | 22 | 0.91 | 0.58 | 0.33 | 0.25 | 0.33 | 0.58 | 1 | | | | | 3.6 | 0.33 | 0.01 | | | | | | | | | |
| DP-E07-10 | 9/27/11 9:09 | G | 26.5 | 4 | 5 | 1 | 264 | | | | 11 | 8.4 | 1.2 | 1.08 | 0.12 | 7.2 | 7.32 | 0.12 | | | | | 12 | 7.2 | 0.01 | | | | | | | | | |
| DP-E08-8 | 9/27/11 9:25 | G | 26.8 | 4.2 | 3 | 0.7 | 304 | | | | 13 | 10.8 | 1.7 | 1.61 | 0.088 | 9.1 | 9.19 | 0.086 | | | | | 22 | 9.1 | 0.01 | | | | | | | | | |
| DP-E10-6 | 9/27/11 9:35 | G | 27.1 | 3.9 | 2 | 0.8 | 352 | | | | | 10.6 | 1.5 | 1.46 | 0.045 | 9.1 | 9.15 | | | | | | 31 | 9.1 | 0.01 | | | | | | | | | |
| DP-E11-12 | 9/27/11 9:35 | G | 26.4 | 5.1 | 8 | 0.3 | 506 | | | | 10 | 18.7 | 1.7 | 1.66 | 0.045 | 17 | 17.05 | 0.031 | | | | | 39 | 17 | 0.01 | | | | | | | | | |
| DP-E12-10 | 9/27/11 8:50 | G | 25.9 | 5.3 | 10 | 0.4 | 462 | | | | 10 | 17.3 | 1.3 | 1.29 | 0.013 | 16 | 16.01 | 0.034 | | 2.4 | 1.4 | 0.063 | 32 | 16 | 0.01 | 0.01 | 49 | 0.1 | 33 | 0.27 | 7.8 | 0.150 | 11 | 31 |
| DP-E12-15 | 9/27/11 9:00 | G | 25.7 | 5.1 | 7 | 1 | 607 | | | | 10 | 29.2 | 1.2 | 1.18 | 0.02 | 28 | 28.02 | 0.044 | | 2.2 | 1.4 | 0.078 | 44 | 28 | 0.01 | 0.01 | 54 | 0.12 | 40 | 0.046 | 10 | 0.025 | 13 | 44 |
| DP-E12-22 | 9/27/11 9:10 | G | 25.2 | 5.2 | 5 | 0.2 | 311 | | | | 10 | 8.9 | 1.3 | 1.29 | 0.014 | 7.6 | 7.61 | 0.13 | | 2.3 | 1.4 | 0.1 | 8.9 | 7.6 | 0.01 | 0.01 | 68 | 0.054 | 25 | 0.02 | 8.1 | 0.190 | 13 | 6.8 |
| DP-E12-28 | 9/27/11 9:20 | G | 25.1 | 5.1 | 4 | 0.4 | 295 | | | | | 6.5 | 0.9 | 0.86 | 0.039 | 5.6 | 5.64 | | | | | | 14 | 5.6 | 0.01 | | | | | | | | | |
| DP-E12-28-D | 9/27/11 9:25 | G | 25.1 | 5.1 | 5 | 0.4 | 295 | | | | | 6.54 | 0.84 | 0.80 | 0.04 | 5.7 | 5.74 | | | | | | 14 | 5.7 | 0.01 | | | | | | | | | |
| DP-F04-17 | 9/27/11 11:12 | G | 27.8 | 5.8 | 52 | 0.8 | 280 | | | | 11 | 2.69 | 0.35 | 0.32 | 0.026 | 2.34 | 2.37 | 0.075 | | | | | 5.6 | 2.1 | 0.24 | | | | | | | | | |
| DP-F04-22 | 9/27/11 11:05 | G | 25.9 | 5.2 | 10 | 0.6 | 270 | | | | | 7.65 | 0.05 | 0.03 | 0.02 | 7.6 | 7.62 | | | | | | 12 | 7.6 | 0.01 | | | | | | | | | |
| DP-F04-32 | 9/27/11 11:00 | G | 26 | 5.9 | 42 | 0.5 | 290 | | | | 10 | 0.66 | 0.18 | 0.12 | 0.06 | 0.48 | 0.54 | 0.21 | | | | | 19 | 0.48 | 0.01 | | | | | | | | | |
| DP-F05-5 | 9/27/11 10:45 | G | 28.8 | 4.8 | 10 | 0.6 | 178 | | | | 10 | 0.96 | 0.44 | 0.31 | 0.13 | 0.52 | 0.65 | 0.18 | | | | | 4.3 | 0.42 | 0.1 | | | | | | | | | |
| DP-F08-20 | 9/27/11 10:20 | G | 25.9 | 5 | 10 | 0.6 | 298 | | | | 10 | 8.4 | 1.2 | 1.17 | 0.033 | 7.2 | 7.23 | 0.33 | | | | | 12 | 7.2 | 0.01 | | | | | | | | | |
| DP-F08-28 | 9/27/11 10:25 | G | 25.4 | 5.1 | 10 | 0.5 | 298 | | | | | 1.84 | 0.34 | 0.31 | 0.026 | 1.5 | 1.53 | | | | | | 20 | 1.5 | 0.01 | | | | | | | | | |
| DP-F10-11 | 9/27/11 10:00 | G | 27 | 4.2 | 10 | 0.5 | 446 | | | | 10 | 16.7 | 2.7 | 2.32 | 0.38 | 14 | 14.38 | 0.076 | | 2 | 1.5 | 0.18 | 32 | 14 | 0.01 | 0.044 | 55 | 0.09 | 30 | 0.054 | 7.9 | 0.150 | 9.1 | 29 |
| DP-F11-11 | 9/27/11 9:50 | G | 27.2 | 5 | 10 | 1.5 | 389 | | | | 10 | 12.4 | 1.4 | 1.29 | 0.11 | 11 | 11.11 | 0.1 | | | | | 31 | 11 | 0.01 | | | | | | | | | |
| DP-F11-15 | 9/27/11 10:00 | G | 26.2 | 5.1 | 10 | 0.5 | 490 | | | | 10 | 19.5 | 1.5 | 1.45 | 0.052 | 18 | 18.05 | 0.28 | | | | | 32 | 18 | 0.01 | | | | | | | | | |
| DP-F11-15-D | 9/27/11 10:05 | G | 26.2 | 5.1 | 10 | 0.5 | 490 | | | | 10 | 20.5 | 1.5 | 1.45 | 0.053 | 19 | 19.05 | 0.31 | | | | | 35 | 19 | 0.01 | | | | | | | | | |
| DP-F11-18 | 9/27/11 10:10 | G | 25.8 | 5.3 | 10 | 0.3 | 271 | | | | 11 | 7.18 | 0.18 | 0.14 | 0.036 | 7 | 7.04 | 0.087 | | | | | 8.9 | 7 | 0.01 | | | | | | | | | |



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Table F.1 (con't)
Water Quality Analytical Results
(September 26 – September 28, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg-N/L) | NH3-N (mg-N/L) | NOx-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-F11-21 | 9/27/11 10:15 | G | 25.6 | 5.2 | 10 | 0.4 | 298 | | | | 34 | 8.42 | 0.92 | 0.87 | 0.047 | 7.5 | 7.55 | 0.81 | | | | | 10 | 7.5 | 0.01 | | | | | | | | | | |
| DP-F11-24 | 9/27/11 10:20 | G | 25.4 | 5.1 | 10 | 0.6 | 296 | | | | 10 | 11.1 | 1.1 | 1.07 | 0.032 | 10 | 10.03 | 0.35 | | | | | 16 | 10 | 0.01 | | | | | | | | | | |
| DP-F11-27 | 9/27/11 10:25 | G | 25.3 | 5.2 | 10 | 0.4 | 306 | | | | 10 | 5.1 | 0.4 | 0.36 | 0.044 | 4.7 | 4.74 | 0.55 | | | | | 16 | 4.7 | 0.01 | | | | | | | | | | |
| DP-F12-10 | 9/27/11 9:45 | G | 26.7 | 3.8 | 2 | 0.6 | 423 | | | | 10 | 12.28 | 0.28 | 0.21 | 0.074 | 12 | 12.07 | 0.097 | | | | | 34 | 12 | 0.01 | | | | | | | | | | |
| DP-F15-14 | 9/28/11 10:35 | G | 26.1 | 5 | 9 | 0.4 | 457 | | | | 10 | 18.5 | 1.5 | 1.43 | 0.068 | 17 | 17.07 | 0.072 | | 1.9 | 2 | 0.1 | 31 | 17 | 0.01 | 0.01 | 61 | 0.11 | 33 | 0.048 | 9.2 | 0.170 | 14 | 34 |
| DP-F15-20 | 9/28/11 10:45 | G | 25.3 | 5 | 5 | 0.4 | 290 | | | | 10 | 8.24 | 0.34 | 0.18 | 0.16 | 7.9 | 8.06 | 0.5 | | | | | 10 | 7.9 | 0.01 | | | | | | | | | | |
| DP-F15-26 | 9/28/11 10:50 | G | 25.2 | 4.9 | 4 | 0.3 | 280 | | | | 10 | 10.3 | 1.3 | 1.27 | 0.031 | 9 | 9.03 | 0.12 | | | | | 13 | 9 | 0.01 | | | | | | | | | | |
| DP-F15-26-D | 9/28/11 10:55 | G | 25.2 | 4.9 | 3 | 0.3 | 280 | | | | 10 | 10.5 | 1.5 | 1.47 | 0.034 | 9 | 9.03 | 0.11 | | | | | 13 | 9 | 0.01 | | | | | | | | | | |
| DP-G07-13 | 9/27/11 11:35 | G | 29.8 | 5.2 | 7 | 0.8 | 224 | | | | | 2.18 | 1.3 | 1.29 | 0.01 | 0.88 | 0.89 | | | | | | 5.7 | 0.88 | 0.01 | | | | | | | | | | |
| DP-G07-15 | 9/27/11 11:50 | G | 28.7 | 4.7 | 6 | 0.7 | 254 | | | | 10 | 2.68 | 0.88 | 0.87 | 0.01 | 1.8 | 1.81 | 1.4 | | | | | 5 | 1.8 | 0.01 | | | | | | | | | | |
| DP-G07-17 | 9/27/11 12:00 | G | 26 | 4.8 | 5 | 0.4 | 300 | | | | | 6.3 | 1.7 | 1.69 | 0.01 | 4.6 | 4.61 | | | | | | 7.3 | 4.6 | 0.01 | | | | | | | | | | |
| DP-G07-21 | 9/27/11 12:05 | G | 25.3 | 4.6 | 4 | 0.4 | 274 | | | | 10 | 11.4 | 1.9 | 1.89 | 0.01 | 9.5 | 9.51 | 0.57 | | 1.1 | 0.68 | 0.12 | 16 | 9.5 | 0.01 | 0.01 | 43 | 0.05 | 19 | 0.084 | 8.5 | 0.200 | 9.7 | 7.5 |
| DP-G07-24 | 9/27/11 12:15 | G | 25.6 | 4.7 | 5 | 0.6 | 300 | | | | | 9.94 | 1.8 | 1.79 | 0.01 | 8.14 | 8.15 | | | | | | 11 | 8 | 0.14 | | | | | | | | | | |
| DP-G07-27 | 9/27/11 12:25 | G | 25.7 | 4.7 | 5 | 1.2 | 300 | | | | | 9.3 | 1.6 | 1.59 | 0.01 | 7.7 | 7.71 | | | | | | 15 | 7.7 | 0.01 | | | | | | | | | | |
| DP-G08-5 | 9/27/11 11:55 | G | 28.1 | 5.7 | 11 | 1 | 174 | | | | 10 | 1.48 | 0.93 | 0.85 | 0.082 | 0.55 | 0.63 | 0.14 | | 3.9 | 3.4 | 0.5 | 3.8 | 0.55 | 0.01 | 0.045 | 46 | 0.05 | 13 | 3.6 | 3.7 | 0.260 | 4.3 | 3.3 |
| DP-G09-11 | 9/27/11 11:45 | G | 28.3 | 5.6 | 11 | 1.4 | 299 | | | | 10 | 4.22 | 0.22 | 0.21 | 0.01 | 4 | 4.01 | 0.33 | | | | | 9 | 4 | 0.01 | | | | | | | | | | |
| DP-G11-8 | 9/27/11 11:35 | G | 27.2 | 4.6 | 4 | 0.7 | 319 | | | | 10 | 11.1 | 2.3 | 2.29 | 0.01 | 8.8 | 8.81 | 0.062 | | | | | 23 | 8.8 | 0.01 | | | | | | | | | | |
| DP-G12-9 | 9/27/11 10:45 | G | 24.8 | 5 | 2 | 3.4 | 363 | | | | 10 | 12.4 | 2.3 | 2.29 | 0.01 | 10.1 | 10.11 | 0.19 | | | | | 27 | 9.9 | 0.20 | | | | | | | | | | |
| DP-G12-15 | 9/27/11 10:50 | G | 26.2 | 5.1 | 6 | 0.4 | 415 | | | | 10 | 16.2 | 1.2 | 0.81 | 0.39 | 15 | 15.39 | 1.1 | | 2.2 | 1.4 | 0.058 | 28 | 15 | 0.01 | 0.042 | 54 | 0.087 | 27 | 0.5 | 6.9 | 0.180 | 9.4 | 24 |
| DP-G12-18 | 9/27/11 11:05 | G | 25.8 | 5.3 | 10 | 0.6 | 264 | | | | 26 | 5.6 | 1.2 | 1.19 | 0.01 | 4.4 | 4.41 | 1.1 | | 3.3 | 2.1 | 0.06 | 7.7 | 4.4 | 0.01 | 0.056 | 67 | 0.1 | 21 | 0.59 | 5.7 | 0.110 | 8.9 | 12 |
| DP-G12-21 | 9/27/11 11:15 | G | 25.5 | 5.3 | 10 | 0.5 | 271 | | | | 10 | 8.7 | 1.5 | 1.49 | 0.01 | 7.2 | 7.21 | 0.37 | | | | | 9.8 | 7.2 | 0.01 | | | | | | | | | | |
| DP-G12-24 | 9/27/11 11:20 | G | 25.4 | 5.2 | 10 | 0.4 | 302 | | | | 10 | 10.5 | 1.3 | 1.29 | 0.01 | 9.2 | 9.21 | 0.71 | | | | | 15 | 9.2 | 0.01 | | | | | | | | | | |
| DP-G12-27 | 9/27/11 11:25 | G | 25.3 | 5.1 | 10 | 0.3 | 289 | | | | 10 | 9.8 | 1.5 | 1.49 | 0.01 | 8.3 | 8.31 | 0.14 | | | | | 15 | 8.3 | 0.01 | | | | | | | | | | |
| DP-H06-7 | 9/28/11 7:35 | G | 25.5 | 5.8 | 31 | 4.2 | 140 | | | | 10 | 1.58 | 1.1 | 0.66 | 0.44 | 0.48 | 0.92 | 0.78 | | | | | 4.5 | 0.48 | 0.01 | | | | | | | | | | |
| DP-H09-12 | 9/28/11 7:45 | G | 25.9 | 5.1 | 6 | 0.7 | 248 | | | | 50 | 3.44 | 0.84 | 0.83 | 0.01 | 2.6 | 2.61 | 0.084 | | | | | 5.7 | 2.6 | 0.01 | | | | | | | | | | |
| DP-I06-14 | 9/28/11 7:50 | G | 25.4 | 5.1 | 7 | 0.5 | 220 | | | | 10 | 3.31 | 0.71 | 0.70 | 0.01 | 2.6 | 2.61 | 0.61 | | 3.2 | 2.5 | 0.064 | 5.4 | 2.6 | 0.01 | 0.15 | 61 | 0.05 | 21 | 0.14 | 4.8 | 0.170 | 9.4 | 3.1 |
| DP-I06-20 | 9/28/11 8:05 | G | 24.8 | 5.1 | 4 | 0.4 | 330 | | | | 10 | 11.1 | 2 | 1.99 | 0.01 | 9.1 | 9.11 | 0.17 | | 1.7 | 1.8 | 0.096 | 12 | 9.1 | 0.01 | 0.052 | 73 | 0.05 | 28 | 0.048 | 6.7 | 0.060 | 16 | 6.9 |
| DP-I06-26 | 9/28/11 8:10 | G | 24.6 | 5 | 3 | 0.3 | 295 | | | | | 11.1 | 2.1 | 2.09 | 0.01 | 9 | 9.01 | | | | | | 14 | 9 | 0.01 | | | | | | | | | | |
| DP-I12-6 | 9/28/11 7:40 | G | 26.2 | 5.1 | 6 | 0.6 | 95 | | | | 10 | 1.33 | 0.99 | 0.98 | 0.01 | 0.34 | 0.35 | 0.3 | | | | | 3.1 | 0.34 | 0.01 | | | | | | | | | | |
| DP-J09-12 | 9/28/11 7:55 | G | 26.2 | 5 | 3 | 0.9 | 171 | | | | | 1.43 | 0.57 | 0.56 | 0.01 | 0.86 | 0.87 | | | | | | 4.6 | 0.86 | 0.01 | | | | | | | | | | |
| DP-J09-14 | 9/28/11 8:00 | G | 26.1 | 4.8 | 4 | 0.4 | 210 | | | | 10 | 2.98 | 0.68 | 0.67 | 0.01 | 2.3 | 2.31 | 0.4 | | | | | 5.6 | 2.3 | 0.01 | | | | | | | | | | |
| DP-J09-20 | 9/28/11 8:05 | G | 25.5 | 5 | 5 | 0.3 | 320 | | | | 10 | 9.26 | 0.66 | 0.65 | 0.01 | 8.6 | 8.61 | 0.73 | | | | | 10 | 8.6 | 0.01 | | | | | | | | | | |
| DP-J09-26 | 9/28/11 8:10 | G | 25.4 | 4.8 | 3 | 0.5 | 292 | | | | | 11 | 1.1 | 1.09 | 0.01 | 9.9 | 9.91 | | | | | | 14 | 9.9 | 0.01 | | | | | | | | | | |
| DP-J12-13 | 9/28/11 8:35 | G | 26.1 | 4.9 | 5 | 0.3 | 206 | | | | | 2.58 | 0.48 | 0.47 | 0.01 | 2.1 | 2.11 | | | | | | 5.3 | 2.1 | 0.01 | | | | | | | | | | |
| DP-J12-15 | 9/28/11 8:40 | G | 26.8 | 4.9 | 4 | 0.5 | 265 | | | | 10 | 4.57 | 0.97 | 0.96 | 0.01 | 3.6 | 3.61 | 0.77 | | | | | 6.2 | 3.6 | 0.01 | | | | | | | | | | |
| DP-J12-20 | 9/28/11 8:45 | G | 25.7 | 5.1 | 6 | 0.4 | 327 | | | | 10 | 8.08 | 0.28 | 0.27 | 0.01 | 7.8 | 7.81 | 0.88 | | | | | 10 | 7.8 | 0.01 | | | | | | | | | | |
| DP-J12-27 | 9/28/11 8:50 | G | 24.9 | 4.9 | 4 | 0.4 | 282 | | | | | 12.29 | 0.29 | 0.28 | 0.01 | 12 | 12.01 | | | | | | 15 | 12 | 0.01 | | | | | | | | | | |
| DP-K12-5 | 9/28/11 9:00 | G | 27.5 | 5 | 10 | 0.6 | 70 | | | | 10 | 0.6 | 0.31 | 0.30 | 0.01 | 0.29 | 0.30 | 0.47 | | | | | 4.4 | 0.29 | 0.01 | | | | | | | | | | |
| DP-M07-15 | 9/28/11 8:45 | G | 25.9 | 5.2 | 10 | 0.3 | 274 | | | | | 5.55 | 0.21 | 0.20 | 0.01 | 5.34 | 5.35 | | | | | | 9.1 | 5.1 | 0.24 | | | | | | | | | | |
| DP-M07-21 | 9/28/11 8:55 | G | 25.3 | 5.2 | 10 | 0.3 | 351 | | | | 10 | 12.17 | 0.17 | 0.16 | 0.01 | 12 | 12.01 | 1.1 | | | | | 13 | 12 | 0.01 | | | | | | | | | | |



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Table F.1 (con't)
Water Quality Analytical Results
(September 26 – September 28, 2011)

| Sample ID | Sample Date/Time | Sample Type | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TSS (mg/L) | TS (% by wt.) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg-N/L) | TKN (mg-N/L) | Organic N (mg-N/L) | NH3-N (mg-N/L) | NOx-N (mg-N/L) | TIN (mg-N/L) | TP (mg-P/L) | Fecal (1cfu/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4$ | B | Ca | Fe | Mg | Mn | K | Na |
| DP-M07-27 | 9/28/11 9:00 | G | 25.1 | 5.1 | 10 | 0.2 | 290 | | | | 10 | 8.32 | 0.22 | 0.21 | 0.01 | 8.1 | 8.11 | 0.093 | | | | | 12 | 8.1 | 0.01 | | | | | | | | | |
| DP-M12-10 | 9/28/11 8:30 | G | 26.2 | 5.6 | 10 | 1.8 | 162 | | | | 10 | 1.31 | 0.79 | 0.74 | 0.046 | 0.52 | 0.57 | 0.13 | | | | | 4.4 | 0.37 | 0.15 | | | | | | | | | |
| DP-N12-14 | 9/28/11 9:15 | G | 26.5 | 5 | 4 | 0.3 | 181 | | | | 10 | 1.45 | 0.15 | 0.14 | 0.01 | 1.3 | 1.31 | 0.35 | | 2 | 1.9 | 0.074 | 4.6 | 1.3 | 0.01 | 0.01 | 53 | 0.05 | 17 | 0.1 | 3.4 | 0.170 | 6 | 2.7 |
| DP-N12-18 | 9/28/11 9:25 | G | 26.7 | 5.1 | 6 | 0.4 | 234 | | | | 10 | 4.47 | 0.57 | 0.56 | 0.01 | 3.9 | 3.91 | 1.1 | | | | | 7.7 | 3.9 | 0.01 | | | | | | | | | |
| DP-N12-21 | 9/28/11 9:35 | G | 26 | 5.3 | 6 | 0.3 | 316 | | | | 10 | 6.83 | 0.13 | 0.12 | 0.01 | 6.7 | 6.71 | 0.093 | | 2.8 | 2.2 | 0.062 | 9.8 | 6.7 | 0.01 | 0.01 | 85 | 0.05 | 31 | 0.02 | 9 | 0.088 | 17 | 4.7 |
| DP-N12-24 | 9/28/11 9:45 | G | 25.9 | 5.2 | 6 | 0.2 | 359 | | | | 67 | 12.05 | 0.05 | 0.04 | 0.01 | 12 | 12.01 | 0.13 | | 2.3 | 2.2 | 0.089 | 14 | 12 | 0.01 | 0.051 | 83 | 0.05 | 31 | 0.098 | 11 | 0.042 | 23 | 6.7 |
| DP-N12-27 | 9/28/11 9:55 | G | 25.8 | 5.1 | 3 | 0.3 | 323 | | | | 10 | 14.6 | 2.6 | 2.59 | 0.01 | 12 | 12.01 | 0.31 | | 1.6 | 1.3 | 0.061 | 15 | 12 | 0.01 | 0.01 | 59 | 0.05 | 27 | 0.02 | 8.3 | 0.085 | 19 | 7.6 |
| DP-O10-18 | 9/28/11 9:15 | G | 27.3 | 4.2 | 2 | 0.7 | 160 | | | | 10 | 0.91 | 0.33 | 0.32 | 0.01 | 0.58 | 0.59 | 0.078 | | | | | 3.6 | 0.47 | 0.11 | | | | | | | | | |
| DP-O10-18-D | 9/28/11 9:20 | G | 27.3 | 4.2 | 2 | 0.7 | 160 | | | | 10 | 0.86 | 0.48 | 0.47 | 0.01 | 0.38 | 0.39 | 0.074 | | | | | 3.7 | 0.38 | 0.01 | | | | | | | | | |
| DP-O10-24 | 9/28/11 9:30 | G | 26.8 | 4.9 | 10 | 0.6 | 279 | | | | 10 | 4.27 | 0.47 | 0.41 | 0.06 | 3.8 | 3.86 | 0.14 | | 2.4 | 2.6 | 0.067 | 6.8 | 3.8 | 0.01 | 0.054 | 77 | 0.05 | 32 | 0.048 | 7.2 | 0.160 | 14 | 3.5 |
| DP-Q15-15 | 9/28/11 10:55 | G | 27.8 | 4.6 | 3 | 0.7 | 316 | | | | | 6.08 | 0.48 | 0.47 | 0.01 | 5.6 | 5.61 | | | | | | 9.5 | 5.6 | 0.01 | | | | | | | | | |
| DP-Q15-21 | 9/28/11 11:00 | G | 26.6 | 5 | 5 | 0.5 | 317 | | | | | 9.58 | 0.48 | 0.47 | 0.01 | 9.1 | 9.11 | | | | | | 15 | 9.1 | 0.01 | | | | | | | | | |
| DP-Q15-26 | 9/28/11 11:10 | G | 26.8 | 5.1 | 10 | 0.3 | 293 | | | | | 11.46 | 0.46 | 0.45 | 0.01 | 11 | 11.01 | | | | | | 13 | 11 | 0.01 | | | | | | | | | |
| DP-Q15-26-D | 9/28/11 11:15 | G | 26.8 | 5.1 | 6 | 0.3 | 293 | | | | | 11.9 | 1.9 | 1.89 | 0.01 | 10 | 10.01 | | | | | | 13 | 10 | 0.01 | | | | | | | | | |
| **Standpipe Piezometers** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PZ03-H11-6 | 9/26/11 8:43 | G | 26.5 | 4.4 | 2 | 1.4 | 136 | | | | 15 | 1.41 | 0.74 | 0.72 | 0.024 | 0.67 | 0.69 | 0.01 | | | | | 8.5 | 0.67 | 0.01 | | | | | | | | | |
| PZ04-BKG-9 | 9/26/11 10:35 | G | 28.2 | 5 | 5 | 1.7 | 120 | | | | 11 | 6.45 | 0.95 | 0.93 | 0.017 | 5.5 | 5.52 | 0.01 | | 3.4 | 3.8 | 0.24 | 3.4 | 5.5 | 0.01 | 0.042 | 10 | 0.05 | 12 | 0.11 | 2.8 | 0.048 | 0.64 | 1.7 |
| PZ07-D05-7 | 9/26/11 9:22 | G | 25.5 | 4.6 | 5 | 0.9 | 361 | | | | 22 | 11.3 | 1.3 | 1.26 | 0.042 | 10 | 10.04 | 0.01 | | | | | 29 | 10 | 0.01 | | | | | | | | | |
| PZ11-E09-10 | 9/26/11 9:15 | G | 26 | 5.7 | 36 | 5.6 | 413 | | | | 140 | 13.4 | 1.4 | 1.35 | 0.046 | 12 | 12.05 | 0.021 | | | | | 37 | 12 | 0.01 | | | | | | | | | |
| PZ15-A11-6 | 9/26/11 9:35 | G | 27.1 | 4.8 | 9 | 1.7 | 84 | | | | 38 | 1.26 | 0.74 | 0.70 | 0.04 | 0.52 | 0.56 | 0.01 | | | | | 6.8 | 0.52 | 0.01 | | | | | | | | | |
| PZ16-C12-28 | 9/26/11 10:03 | G | 24.6 | 5.3 | 10 | 0.3 | 311 | | | | 10 | 0.48 | 0.21 | 0.19 | 0.022 | 0.27 | 0.29 | 0.48 | | | | | 19 | 0.27 | 0.01 | | | | | | | | | |
| PZ17-I15-26 | 9/28/11 10:48 | G | 24.9 | 4.8 | 3 | 0.2 | 283 | | | | | 10.7 | 1.5 | 1.12 | 0.38 | 9.2 | 9.58 | | | | | | 14 | 9.2 | 0.01 | | | | | | | | | |
| PZ18-R12-26 | 9/28/11 11:44 | G | 26.3 | 5 | 8 | 0.2 | 223 | | | | 10 | 0.73 | 0.22 | 0.20 | 0.02 | 0.51 | 0.53 | 0.59 | | | | | 12 | 0.51 | 0.01 | | | | | | | | | |
| PZ19-G10-26 | 9/26/11 8:08 | G | 24.6 | 5 | 4 | 0.4 | 302 | | | | 10 | 10.7 | 2.3 | 2.28 | 0.016 | 8.4 | 8.42 | 0.053 | | 0.77 | 1.1 | 0.19 | 15 | 8.4 | 0.01 | 0.093 | 52 | 0.05 | 22 | 0.034 | 8.2 | 0.210 | 11 | 6.2 |
| PZ20-G10-15 | 9/26/11 8:36 | G | 25.6 | 4.9 | 8 | 0.2 | 308 | | | | 26 | 10.06 | 1.4 | 1.36 | 0.041 | 8.66 | 8.70 | 1.1 | | 6.8 | 2.3 | 0.21 | 16 | 8.5 | 0.16 | 0.052 | 54 | 0.05 | 26 | 0.054 | 6.2 | 0.220 | 7.8 | 11 |
| PZ21-E11-26 | 9/26/11 8:14 | G | 24.7 | 5.1 | 8 | 0.9 | 298 | | | | | 10.47 | 1.4 | 1.28 | 0.12 | 9.07 | 9.19 | | | | | | 13 | 8.9 | 0.17 | | | | | | | | | |
| PZ24-BKG-26 | 9/26/11 10:48 | G | 25.5 | 4.8 | 4 | 0.4 | 299 | | | | 10 | 12.32 | 1.2 | 1.18 | 0.018 | 11.12 | 11.14 | 0.028 | | 0.64 | 1.4 | 0.12 | 15 | 11 | 0.12 | 0.12 | 42 | 0.05 | 20 | 0.035 | 11 | 0.160 | 8 | 7.8 |
| PZ24-BKG-26-D | 9/26/11 10:54 | G | 25.5 | 4.8 | 4 | 0.4 | 299 | | | | 10 | 13.3 | 1.3 | 1.29 | 0.015 | 12 | 12.02 | 0.022 | | 0.63 | 1.3 | 0.11 | 16 | 12 | 0.01 | 0.09 | 45 | 0.05 | 20 | 0.022 | 11 | 0.160 | 8.3 | 8 |
| PZ25-A06-10 | 9/26/11 9:51 | G | 27.4 | 6 | 66 | 2.2 | 608 | | | | 26 | 21 | 2 | 1.98 | 0.02 | 19 | 19.02 | 0.49 | | | | | 37 | 19 | 0.01 | | | | | | | | | |
| **Blanks** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment Blank | 9/28/11 9:40 | G | 25.1 | 5.6 | 6 | 4.6 | 1 | | | | 10 | 0.22 | 0.21 | 0.19 | 0.021 | 0.01 | 0.03 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | |
| Field Blank - DI | 9/28/11 9:45 | G | 25.1 | 5.6 | 2 | 4.6 | 1 | | | | 10 | 0.06 | 0.05 | 0.04 | 0.01 | 0.01 | 0.02 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | |
| Field Blank - Tap | 9/28/11 12:15 | G | 29 | 7.6 | 120 | 5.2 | 430 | | | | 10 | 0.31 | 0.05 | 0.04 | 0.01 | 0.26 | 0.27 | 0.01 | | | | | 19 | 0.26 | 0.01 | | | | | | | | | |

Notes
DO - Dissolved oxygen
G - Grab sample
Gray - Shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.
Yellow shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
Dark Orange shaded data points indicate too many colonies were present for accurate counting.



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# Appendix G: Summary of Water Quality Data

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# Table G.1
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity (mg/L) | DO (mg/L) | Specific Conductance (µS) | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_2$-$N^-$ | $NO_3$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| **STE Sample** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STE-EX Pump Tank | n | 7 | 7 | 8 | 5 | 6 | 3 | 6 | 4 | 5 | 7 | 7 | 7 | 8 | 8 | 7 | 5 | 6 | 0 | 0 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | MEAN | 27.23 | | 232.88 | 0.31 | 792.00 | 410.33 | 31.00 | 138.68 | 270.80 | 37.41 | 37.31 | 7.39 | 26.91 | 0.09 | 30.03 | 3.94 | | | | 5.65 | 62.33 | 0.12 | 0.01 | 6.55 | 21.50 | 0.11 | 57.00 | 3.91 | 18.50 | 0.06 | 19.00 | 46.00 | 5.02 |
| | STD. DEV. | 3.82 | | 81.58 | 0.34 | 278.51 | 166.94 | 24.84 | 107.59 | 236.65 | 12.67 | 12.65 | 7.44 | 10.46 | 0.10 | 6.56 | 2.15 | | | | | | | | | | | | | | | | | |
| | MIN | 19.90 | 6.51 | 150.00 | 0.10 | 494.00 | 260.00 | 14.00 | 82.70 | 120.00 | 24.23 | 24.20 | -1.00 | 5.80 | 0.01 | 21.53 | 1.30 | 50.00 | | | 4.60 | 47.00 | 0.03 | 0.01 | 3.20 | 21.00 | 0.07 | 56.00 | 0.81 | 18.00 | 0.04 | 15.00 | 43.00 | 0.03 |
| | MAX | 31.00 | 7.33 | 410.00 | 0.90 | 1273.00 | 590.00 | 80.00 | 300.00 | 680.00 | 56.01 | 56.00 | 21.00 | 39.00 | 0.26 | 39.26 | 6.40 | 1,000,000.00 | | | 6.70 | 72.00 | 0.24 | 0.01 | 9.90 | 22.00 | 0.15 | 58.00 | 7.00 | 19.00 | 0.08 | 23.00 | 49.00 | 10.00 |
| **Drivepoints** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DP-AA9-14 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.60 | | 8.63 | 1.30 | 571.73 | | | | 10.00 | 26.28 | 1.98 | 1.96 | 0.01 | 24.30 | 24.31 | 0.17 | | 2.60 | 2.10 | 0.09 | 67.00 | 21.00 | 0.01 | 0.01 | 52.00 | 0.13 | 37.00 | 0.08 | 9.50 | 0.02 | 11.00 | 43.00 | |
| | STD. DEV. | 1.71 | | 3.27 | 0.50 | 210.56 | | | | | 21.03 | 0.91 | 0.91 | 0.01 | 20.25 | 20.26 | 0.00 | | | | | 21.21 | | | | | | | | | | | |
| | MIN | 21.50 | 4.60 | 4.90 | 0.89 | 281.90 | | | | 10.00 | 6.83 | 0.93 | 0.92 | 0.01 | 5.90 | 5.91 | 0.17 | | 2.60 | 2.10 | 0.09 | 52.00 | 21.00 | 0.01 | 0.01 | 52.00 | 0.13 | 37.00 | 0.08 | 9.50 | 0.02 | 11.00 | 43.00 | |
| | MAX | 25.40 | 5.10 | 11.00 | 2.00 | 752.00 | | | | 10.00 | 48.60 | 2.60 | 2.58 | 0.02 | 46.00 | 46.02 | 0.17 | | 2.60 | 2.10 | 0.09 | 82.00 | 21.00 | 0.01 | 0.01 | 52.00 | 0.13 | 37.00 | 0.08 | 9.50 | 0.02 | 11.00 | 43.00 | |
| DP-AA9-22 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.23 | | 6.30 | 0.61 | 313.18 | | | | 10.00 | 12.21 | 1.24 | 1.22 | 0.02 | 10.97 | 10.99 | 0.36 | | | | | 13.85 | 15.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 0.82 | | 4.03 | 0.37 | 41.04 | | | | | 3.99 | 0.44 | 0.44 | 0.02 | 3.65 | 3.63 | | | | | | 7.28 | | | | | | | | | | | | |
| | MIN | 23.30 | 4.90 | 2.00 | 0.30 | 279.00 | | | | 10.00 | 9.10 | 0.82 | 0.81 | 0.01 | 7.90 | 7.94 | 0.36 | | | | | 8.70 | 15.00 | 0.01 | | | | | | | | | | |
| | MAX | 25.10 | 5.30 | 10.00 | 1.06 | 369.00 | | | | 10.00 | 16.70 | 1.70 | 1.69 | 0.04 | 15.00 | 15.01 | 0.36 | | | | | 19.00 | 15.00 | 0.01 | | | | | | | | | | |
| DP-AA9-27 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.05 | | 5.00 | 0.67 | 285.80 | | | | 10.00 | 10.43 | 1.60 | 1.57 | 0.03 | 8.83 | 8.85 | 0.26 | | | | | 18.00 | 9.40 | 0.18 | | | | | | | | | | |
| | STD. DEV. | 1.00 | | 4.36 | 0.25 | 12.88 | | | | | 2.27 | 0.95 | 0.97 | 0.02 | 1.68 | 1.68 | | | | | | 2.83 | | | | | | | | | | | | |
| | MIN | 22.70 | 4.80 | 2.00 | 0.30 | 267.00 | | | | 10.00 | 7.90 | 1.00 | 0.97 | 0.01 | 6.90 | 6.93 | 0.26 | | | | | 16.00 | 9.40 | 0.18 | | | | | | | | | | |
| | MAX | 24.90 | 5.20 | 10.00 | 0.84 | 295.00 | | | | 10.00 | 12.28 | 2.70 | 2.69 | 0.04 | 10.00 | 10.04 | 0.26 | | | | | 20.00 | 9.40 | 0.18 | | | | | | | | | | |
| DP-C11-8 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.80 | | 28.00 | 3.25 | 352.00 | | | | 12.00 | 9.25 | 1.70 | 1.61 | 0.09 | 7.55 | 7.64 | | | 5.50 | 5.20 | 0.02 | 31.00 | 12.00 | 0.01 | 0.01 | 53.00 | 0.11 | 30.00 | 6.60 | 7.20 | 0.31 | 7.00 | 31.00 | |
| | STD. DEV. | 4.24 | | 9.90 | 0.35 | 46.67 | | | | | 6.58 | 0.28 | 0.28 | 0.00 | 6.29 | 6.29 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.80 | 5.80 | 21.00 | 3.00 | 319.00 | | | | 12.00 | 4.60 | 1.50 | 1.41 | 0.09 | 3.10 | 3.19 | | | 5.50 | 5.20 | 0.02 | 31.00 | 12.00 | 0.01 | 0.01 | 53.00 | 0.11 | 30.00 | 6.60 | 7.20 | 0.31 | 7.00 | 31.00 | |
| | MAX | 27.80 | 5.90 | 35.00 | 3.50 | 385.00 | | | | 12.00 | 13.90 | 1.90 | 1.81 | 0.09 | 12.00 | 12.09 | | | 5.50 | 5.20 | 0.02 | 31.00 | 12.00 | 0.01 | 0.01 | 53.00 | 0.11 | 30.00 | 6.60 | 7.20 | 0.31 | 7.00 | 31.00 | |
| DP-D07-5 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 25.05 | | 22.50 | 3.28 | 336.00 | | | | 32.00 | 11.90 | 1.85 | 1.83 | 0.02 | 10.05 | 10.07 | 0.08 | | 12.00 | 12.00 | 0.07 | 29.00 | 9.10 | 0.01 | 0.04 | 32.00 | 0.09 | 28.00 | 0.40 | 5.00 | 0.01 | 5.10 | 27.00 | |
| | STD. DEV. | 1.34 | | 12.02 | 2.23 | 14.14 | | | | | 1.56 | 0.21 | 0.24 | 0.03 | 1.34 | 1.32 | | | | | | | | | | | | | | | | | | |
| | MIN | 24.10 | 5.70 | 14.00 | 1.70 | 326.00 | | | | 32.00 | 10.80 | 1.70 | 1.66 | 0.01 | 9.10 | 9.14 | 0.08 | | 12.00 | 12.00 | 0.07 | 29.00 | 9.10 | 0.01 | 0.04 | 32.00 | 0.09 | 28.00 | 0.40 | 5.00 | 0.01 | 5.10 | 27.00 | |
| | MAX | 26.00 | 6.00 | 31.00 | 4.86 | 346.00 | | | | 32.00 | 13.00 | 2.00 | 2.00 | 0.04 | 11.00 | 11.01 | 0.08 | | 12.00 | 12.00 | 0.07 | 29.00 | 9.10 | 0.01 | 0.04 | 32.00 | 0.09 | 28.00 | 0.40 | 5.00 | 0.01 | 5.10 | 27.00 | |
| DP-D07-7 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.30 | | 2.00 | 0.77 | 365.00 | | | | 20.00 | 13.60 | 1.60 | 1.59 | 0.01 | 12.00 | 12.01 | 0.02 | | 1.70 | 1.40 | 0.12 | 23.00 | 12.00 | 0.01 | 0.01 | 53.00 | 0.10 | 27.00 | 0.05 | 5.40 | 0.01 | 8.00 | 20.00 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.30 | 4.70 | 2.00 | 0.77 | 365.00 | | | | 20.00 | 13.60 | 1.60 | 1.59 | 0.01 | 12.00 | 12.01 | 0.02 | | 1.70 | 1.40 | 0.12 | 23.00 | 12.00 | 0.01 | 0.01 | 53.00 | 0.10 | 27.00 | 0.05 | 5.40 | 0.01 | 8.00 | 20.00 | |
| | MAX | 23.30 | 4.70 | 2.00 | 0.77 | 365.00 | | | | 20.00 | 13.60 | 1.60 | 1.59 | 0.01 | 12.00 | 12.01 | 0.02 | | 1.70 | 1.40 | 0.12 | 23.00 | 12.00 | 0.01 | 0.01 | 53.00 | 0.10 | 27.00 | 0.05 | 5.40 | 0.01 | 8.00 | 20.00 | |
| DP-D07-9 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.67 | | 2.00 | 2.40 | 514.67 | | | | 46.00 | 25.05 | 2.55 | 2.54 | 0.01 | 22.50 | 22.51 | 0.05 | | 2.90 | 1.80 | 0.21 | 39.00 | 23.00 | 0.01 | 0.01 | 68.00 | 0.12 | 37.00 | 0.06 | 8.40 | 0.01 | 12.00 | 39.00 | |
| | STD. DEV. | 0.83 | | 0.00 | 1.90 | 112.49 | | | | | 1.77 | 1.06 | 1.06 | 0.00 | 0.71 | 0.71 | | | | | | 5.66 | | | | | | | | | | | | |
| | MIN | 24.00 | 3.70 | 2.00 | 0.80 | 392.00 | | | | 46.00 | 23.80 | 1.80 | 1.79 | 0.01 | 22.00 | 22.01 | 0.05 | | 2.90 | 1.80 | 0.21 | 35.00 | 23.00 | 0.01 | 0.01 | 68.00 | 0.12 | 37.00 | 0.06 | 8.40 | 0.01 | 12.00 | 39.00 | |
| | MAX | 25.60 | 4.50 | 2.00 | 4.50 | 613.00 | | | | 46.00 | 26.30 | 3.30 | 3.29 | 0.01 | 23.00 | 23.01 | 0.05 | | 2.90 | 1.80 | 0.21 | 43.00 | 23.00 | 0.01 | 0.01 | 68.00 | 0.12 | 37.00 | 0.06 | 8.40 | 0.01 | 12.00 | 39.00 | |
| DP-D7.5-14 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.50 | | 5.33 | 0.59 | 509.25 | | | | 10.00 | 27.99 | 1.99 | 1.94 | 0.05 | 26.00 | 26.05 | 0.10 | | 2.65 | 1.25 | 0.09 | 45.50 | 27.00 | 0.01 | 0.04 | 42.00 | 0.10 | 39.00 | 0.04 | 11.00 | 0.12 | 11.00 | 38.00 | |
| | STD. DEV. | 1.57 | | 4.16 | 0.39 | 74.01 | | | | | 4.86 | 1.26 | 1.32 | 0.06 | 3.61 | 3.55 | | | 0.35 | 0.07 | | 12.02 | | | | | | | | | | | | |
| | MIN | 21.20 | 4.50 | 2.00 | 0.20 | 432.00 | | | | 10.00 | 22.68 | 0.68 | 0.56 | 0.01 | 22.00 | 22.12 | 0.10 | | 2.40 | 1.20 | 0.09 | 37.00 | 27.00 | 0.01 | 0.04 | 42.00 | 0.10 | 39.00 | 0.04 | 11.00 | 0.12 | 11.00 | 38.00 | |
| | MAX | 24.60 | 7.01 | 10.00 | 1.10 | 608.00 | | | | 10.00 | 32.20 | 3.20 | 3.19 | 0.12 | 29.00 | 29.01 | 0.10 | | 2.90 | 1.30 | 0.09 | 54.00 | 27.00 | 0.01 | 0.04 | 42.00 | 0.10 | 39.00 | 0.04 | 11.00 | 0.12 | 11.00 | 38.00 | |
| DP-D7.5-20 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.80 | | 5.97 | 1.44 | 361.67 | | | | 10.00 | 14.47 | 1.13 | 1.12 | 0.02 | 13.33 | 13.35 | 0.16 | | 1.80 | 1.30 | 0.04 | 26.00 | 16.30 | 0.01 | 0.16 | 67.00 | 0.05 | 28.00 | 0.02 | 6.50 | 0.21 | 16.00 | 6.70 | |
| | STD. DEV. | 1.44 | | 4.00 | 1.04 | 147.87 | | | | | 10.25 | 0.29 | 0.29 | 0.01 | 10.10 | 10.11 | | | | | | | 12.30 | 0.00 | | | | | | | | | | |
| | MIN | 22.20 | 5.10 | 2.00 | 0.50 | 258.00 | | | | 10.00 | 8.20 | 0.80 | 0.78 | 0.01 | 7.40 | 7.42 | 0.16 | | 1.80 | 1.30 | 0.04 | 10.00 | 7.60 | 0.01 | 0.16 | 67.00 | 0.05 | 28.00 | 0.02 | 6.50 | 0.21 | 16.00 | 6.70 | |
| | MAX | 25.00 | 7.01 | 10.00 | 2.55 | 531.00 | | | | 10.00 | 26.30 | 1.30 | 1.30 | 0.02 | 25.00 | 25.02 | 0.16 | | 1.80 | 1.30 | 0.04 | 42.00 | 25.00 | 0.01 | 0.16 | 67.00 | 0.05 | 28.00 | 0.02 | 6.50 | 0.21 | 16.00 | 6.70 | |
| DP-D7.5-26 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.50 | | 5.33 | 1.33 | 292.00 | | | | | 10.44 | 1.07 | 0.76 | 0.31 | 9.37 | 9.67 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.95 | | 4.16 | 0.77 | 3.00 | | | | | 2.26 | 0.20 | 0.65 | 0.50 | 2.37 | 2.32 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.30 | 5.20 | 2.00 | 0.50 | 289.00 | | | | | 8.70 | 0.92 | 0.04 | 0.01 | 7.40 | 7.41 | | | | | | 14.00 | 8.70 | 0.01 | | | | | | | | | | |
| | MAX | 25.00 | 7.01 | 10.00 | 2.01 | 295.00 | | | | | 12.99 | 1.30 | 1.30 | 0.88 | 12.00 | 12.04 | | | | | | 14.00 | 8.70 | 0.01 | | | | | | | | | | |
| DP-D08-9 | n | 3 | 3 | 3 | 3 | 4 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 25.77 | | 31.00 | 1.99 | 454.00 | | | | 22.00 | 15.25 | 1.75 | 1.64 | 0.12 | 13.50 | 13.62 | 0.16 | | | 3.50 | 0.06 | 37.33 | 13.50 | 0.01 | 0.15 | 52.00 | 0.09 | 33.00 | 11.00 | 10.00 | 0.33 | 8.00 | 35.00 | |
| | STD. DEV. | 1.46 | | 15.56 | 0.74 | 45.71 | | | | 8.49 | 8.13 | 0.35 | 0.35 | 0.01 | 7.78 | 7.79 | 0.00 | | | | | 4.04 | 7.78 | 0.00 | | | | | | | | | | |
| | MIN | 24.60 | 5.00 | 20.00 | 1.36 | 411.00 | | | | 16.00 | 9.50 | 1.50 | 1.39 | 0.11 | 8.00 | 8.11 | 0.16 | | | 3.50 | 0.06 | 35.00 | 8.00 | 0.01 | 0.15 | 52.00 | 0.09 | 33.00 | 11.00 | 10.00 | 0.33 | 8.00 | 35.00 | |
| | MAX | 27.40 | 5.60 | 42.00 | 2.80 | 502.00 | | | | 28.00 | 21.00 | 2.00 | 1.88 | 0.12 | 19.00 | 19.12 | 0.16 | | | 3.50 | 0.06 | 42.00 | 19.00 | 0.01 | 0.15 | 52.00 | 0.09 | 33.00 | 11.00 | 10.00 | 0.33 | 8.00 | 35.00 | |
| DP-D09-6 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 19.80 | | 2.00 | 5.05 | 409.50 | | | | | 16.84 | 0.84 | 0.82 | 0.02 | 16.00 | 16.02 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 3.96 | | 0.00 | 0.77 | 65.76 | | | | | 7.07 | 0.00 | 0.01 | 0.01 | 7.07 | 7.06 | | | | | | | | | | | | | | | | | | |
| | MIN | 17.00 | 4.50 | 2.00 | 4.50 | 363.00 | | | | | 11.84 | 0.84 | 0.81 | 0.01 | 11.00 | 11.03 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.60 | 4.82 | 2.00 | 5.59 | 456.00 | | | | | 21.84 | 0.84 | 0.83 | 0.03 | 21.00 | 21.01 | | | | | | | | | | | | | | | | | | |
| DP-D09-8 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 23.45 | | 2.00 | 1.53 | 532.00 | | | | 10.00 | 25.33 | 2.33 | 2.28 | 0.05 | 23.00 | 23.05 | 0.03 | | 2.85 | 2.35 | 0.23 | 48.50 | 26.50 | 0.01 | 0.05 | 69.00 | 0.12 | 44.50 | 0.03 | 11.75 | 0.01 | 11.55 | 42.50 | |
| | STD. DEV. | 3.84 | | 0.00 | 1.35 | 126.03 | | | | 0.00 | 9.06 | 0.95 | 0.93 | 0.06 | 8.21 | 8.20 | | | 0.07 | 0.07 | 0.17 | 2.12 | 6.36 | 0.00 | 0.06 | 7.07 | 0.00 | 10.61 | 0.00 | 3.18 | 0.00 | 3.46 | 6.36 | |
| | MIN | 18.40 | 4.40 | 2.00 | 0.50 | 380.00 | | | | 10.00 | 12.91 | 0.91 | 0.89 | 0.01 | 12.00 | 12.02 | 0.03 | | 2.80 | 2.30 | 0.11 | 47.00 | 22.00 | 0.01 | 0.01 | 64.00 | 0.12 | 37.00 | 0.03 | 9.50 | 0.01 | 9.10 | 38.00 | |
| | MAX | 27.00 | 4.65 | 2.00 | 3.52 | 670.00 | | | | 10.00 | 33.80 | 2.80 | 2.80 | 0.14 | 31.00 | 31.03 | 0.03 | | 2.90 | 2.40 | 0.35 | 50.00 | 31.00 | 0.01 | 0.09 | 74.00 | 0.12 | 52.00 | 0.03 | 14.00 | 0.01 | 14.00 | 47.00 | |
| DP-D09-15 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.38 | | 9.75 | 1.77 | 494.75 | | | | 10.50 | 21.08 | 1.83 | 1.81 | 0.03 | 19.25 | 19.28 | 0.50 | | 4.25 | 2.90 | 0.04 | 38.00 | 23.00 | 0.01 | 0.01 | 59.00 | 0.12 | 35.00 | 0.05 | 9.30 | 0.11 | 13.00 | 32.00 | |
| | STD. DEV. | 3.09 | | 5.56 | 1.03 | 81.70 | | | | 0.71 | 6.56 | 0.96 | 1.00 | 0.04 | 5.80 | 5.77 | | | 1.48 | 0.57 | | 9.90 | 5.66 | 0.00 | | | | | | | | | | |
| | MIN | 19.10 | 4.80 | 2.00 | 0.90 | 433.00 | | | | 10.00 | 13.43 | 0.43 | 0.34 | 0.01 | 13.00 | 13.09 | 0.50 | | 3.20 | 2.50 | 0.04 | 31.00 | 19.00 | 0.01 | 0.01 | 59.00 | 0.12 | 35.00 | 0.05 | 9.30 | 0.11 | 13.00 | 32.00 | |
| | MAX | 26.20 | 5.40 | 15.00 | 3.20 | 615.00 | | | | 11.00 | 29.40 | 2.50 | 2.50 | 0.09 | 27.00 | 27.01 | 0.50 | | 5.30 | 3.30 | 0.04 | 45.00 | 27.00 | 0.01 | 0.01 | 59.00 | 0.12 | 35.00 | 0.05 | 9.30 | 0.11 | 13.00 | 32.00 | |
| DP-D09-21 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.95 | | 3.45 | 1.08 | 299.00 | | | | | 7.99 | 0.34 | 0.31 | 0.03 | 7.65 | 7.68 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.77 | | 2.05 | 0.39 | 1.41 | | | | | 0.45 | 0.09 | 0.13 | 0.03 | 0.35 | 0.32 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.70 | 5.30 | 2.00 | 0.80 | 298.00 | | | | | 7.67 | 0.27 | 0.22 | 0.01 | 7.40 | 7.45 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.20 | 5.78 | 4.90 | 1.35 | 300.00 | | | | | 8.30 | 0.40 | 0.40 | 0.05 | 7.90 | 7.91 | | | | | | | | | | | | | | | | | | |
| DP-D09-27 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.35 | | 7.00 | 1.51 | 289.50 | | | | | 1.79 | 0.68 | 0.65 | 0.03 | 1.12 | 1.14 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 3.04 | | 5.66 | 1.06 | 27.58 | | | | | 0.51 | 0.60 | 0.63 | 0.03 | 1.11 | 1.14 | | | | | | | | | | | | | | | | | | |
| | MIN | 20.20 | 5.97 | 3.00 | 0.76 | 270.00 | | | | | 1.43 | 0.25 | 0.20 | 0.01 | 0.33 | 0.34 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.50 | 6.00 | 11.00 | 2.26 | 309.00 | | | | | 2.15 | 1.10 | 1.09 | 0.05 | 1.90 | 1.95 | | | | | | | | | | | | | | | | | | |



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# Table G.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_2$-$N^-$ | $NO_3$-$N^-$ | $PO_4$-$P^-$ | $SO_4^=$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-D10-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.80 | | 23.00 | 1.45 | 337.00 | | | | | 4.10 | 1.90 | 1.88 | 0.03 | 2.20 | 2.23 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.80 | 5.70 | 23.00 | 1.45 | 337.00 | | | | | 4.10 | 1.90 | 1.88 | 0.03 | 2.20 | 2.23 | | | | | | | | | | | | | | | | | | |
| | MAX | 23.80 | 5.70 | 23.00 | 1.45 | 337.00 | | | | | 4.10 | 1.90 | 1.88 | 0.03 | 2.20 | 2.23 | | | | | | | | | | | | | | | | | | |
| DP-D11-11 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.67 | | 20.45 | 1.60 | 461.67 | | | | 10.00 | 22.20 | 1.70 | 1.66 | 0.05 | 20.50 | 20.55 | 0.12 | | | | | 36.00 | 16.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.57 | | 14.92 | 0.63 | 18.61 | | | | | 6.51 | 0.14 | 0.09 | 0.05 | 6.36 | 6.41 | | | | | | 4.24 | | | | | | | | | | | | |
| | MIN | 21.70 | 5.20 | 9.90 | 1.10 | 442.00 | | | | 10.00 | 17.60 | 1.60 | 1.59 | 0.01 | 16.00 | 16.01 | 0.12 | | | | | 33.00 | 16.00 | 0.01 | | | | | | | | | | |
| | MAX | 26.30 | 5.30 | 31.00 | 2.30 | 479.00 | | | | 10.00 | 26.80 | 1.80 | 1.72 | 0.08 | 25.00 | 25.08 | 0.12 | | | | | 39.00 | 16.00 | 0.01 | | | | | | | | | | |
| DP-D12-11 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.73 | | 7.37 | 0.72 | 483.33 | | | | 10.50 | 18.13 | 2.63 | 2.14 | 0.50 | 15.50 | 16.00 | 0.11 | | 2.60 | 1.80 | 0.01 | 36.50 | 18.50 | 0.01 | 0.01 | 52.00 | 0.13 | 38.00 | 0.04 | 9.10 | 0.07 | 11.00 | 31.00 | |
| | STD. DEV. | 2.12 | | 2.43 | 0.45 | 5.51 | | | | 0.71 | 5.08 | 0.15 | 0.08 | 0.23 | 5.22 | 5.02 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.30 | 4.60 | 5.20 | 0.30 | 477.00 | | | | 10.00 | 12.30 | 2.50 | 2.06 | 0.29 | 9.50 | 10.24 | 0.11 | | 2.60 | 1.80 | 0.01 | 36.00 | 18.00 | 0.01 | 0.01 | 52.00 | 0.13 | 38.00 | 0.04 | 9.10 | 0.07 | 11.00 | 31.00 | |
| | MAX | 26.20 | 4.90 | 10.00 | 1.20 | 487.00 | | | | 11.00 | 21.60 | 2.80 | 2.21 | 0.74 | 19.00 | 19.46 | 0.11 | | 2.60 | 1.80 | 0.01 | 37.00 | 19.00 | 0.01 | 0.01 | 52.00 | 0.13 | 38.00 | 0.04 | 9.10 | 0.07 | 11.00 | 31.00 | |
| DP-E02-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.30 | | 4.90 | 2.41 | 98.50 | | | | | 2.02 | 0.42 | 0.40 | 0.02 | 1.60 | 1.62 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.30 | 5.50 | 4.90 | 2.41 | 98.50 | | | | | 2.02 | 0.42 | 0.40 | 0.02 | 1.60 | 1.62 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.30 | 5.50 | 4.90 | 2.41 | 98.50 | | | | | 2.02 | 0.42 | 0.40 | 0.02 | 1.60 | 1.62 | | | | | | | | | | | | | | | | | | |
| DP-E02-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.30 | | 5.00 | 0.46 | 158.90 | | | | | 0.64 | 0.22 | 0.21 | 0.01 | 0.42 | 0.43 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.30 | 5.10 | 5.00 | 0.46 | 158.90 | | | | | 0.64 | 0.22 | 0.21 | 0.01 | 0.42 | 0.43 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.30 | 5.10 | 5.00 | 0.46 | 158.90 | | | | | 0.64 | 0.22 | 0.21 | 0.01 | 0.42 | 0.43 | | | | | | | | | | | | | | | | | | |
| DP-E03-10 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.30 | | 6.90 | 2.21 | 211.30 | | | | | 2.61 | 0.81 | 0.74 | 0.08 | 1.80 | 1.88 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.30 | 5.30 | 6.90 | 2.21 | 211.30 | | | | | 2.61 | 0.81 | 0.74 | 0.08 | 1.80 | 1.88 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.30 | 5.30 | 6.90 | 2.21 | 211.30 | | | | | 2.61 | 0.81 | 0.74 | 0.08 | 1.80 | 1.88 | | | | | | | | | | | | | | | | | | |
| DP-E04-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 22.30 | | 2.00 | 3.49 | 90.60 | | | | 39.00 | 1.13 | 0.67 | 0.65 | 0.02 | 0.46 | 0.48 | 2.50 | | | 3.20 | 0.08 | 2.70 | 0.46 | 0.01 | 0.01 | 21.00 | 0.05 | 7.50 | 0.33 | 1.80 | 0.05 | 0.94 | 2.30 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.30 | 4.70 | 2.00 | 3.49 | 90.60 | | | | 39.00 | 1.13 | 0.67 | 0.65 | 0.02 | 0.46 | 0.48 | 2.50 | | | 3.20 | 0.08 | 2.70 | 0.46 | 0.01 | 0.01 | 21.00 | 0.05 | 7.50 | 0.33 | 1.80 | 0.05 | 0.94 | 2.30 | |
| | MAX | 22.30 | 4.70 | 2.00 | 3.49 | 90.60 | | | | 39.00 | 1.13 | 0.67 | 0.65 | 0.02 | 0.46 | 0.48 | 2.50 | | | 3.20 | 0.08 | 2.70 | 0.46 | 0.01 | 0.01 | 21.00 | 0.05 | 7.50 | 0.33 | 1.80 | 0.05 | 0.94 | 2.30 | |
| DP-E04-8 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.97 | | 3.45 | 1.21 | 144.03 | | | | 22.00 | 2.36 | 0.79 | 0.65 | 0.14 | 1.57 | 1.70 | 1.00 | | | | | 4.60 | 0.33 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.61 | | 2.05 | 0.54 | 59.33 | | | | | 2.04 | 0.30 | 0.46 | 0.16 | 1.75 | 1.59 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 22.00 | 4.00 | 2.00 | 0.60 | 76.00 | | | | 22.00 | 0.91 | 0.58 | 0.33 | 0.02 | 0.33 | 0.58 | 1.00 | | | | | 3.60 | 0.33 | 0.01 | | | | | | | | | | |
| | MAX | 26.90 | 4.90 | 4.90 | 1.60 | 185.00 | | | | 22.00 | 3.80 | 1.00 | 0.98 | 0.25 | 2.80 | 2.82 | 1.00 | | | | | 5.60 | 0.33 | 0.01 | | | | | | | | | | |
| DP-E05-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.80 | | 33.00 | 2.96 | 171.80 | | | | | 3.16 | 3.10 | 0.50 | 2.60 | 0.06 | 2.66 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.80 | 6.00 | 33.00 | 2.96 | 171.80 | | | | | 3.16 | 3.10 | 0.50 | 2.60 | 0.06 | 2.66 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.80 | 6.00 | 33.00 | 2.96 | 171.80 | | | | | 3.16 | 3.10 | 0.50 | 2.60 | 0.06 | 2.66 | | | | | | | | | | | | | | | | | | |
| DP-E06-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.80 | | 2.00 | 1.89 | 162.80 | | | | | 3.20 | 1.30 | 1.29 | 0.01 | 1.90 | 1.91 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.80 | 4.40 | 2.00 | 1.89 | 162.80 | | | | | 3.20 | 1.30 | 1.29 | 0.01 | 1.90 | 1.91 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.80 | 4.40 | 2.00 | 1.89 | 162.80 | | | | | 3.20 | 1.30 | 1.29 | 0.01 | 1.90 | 1.91 | | | | | | | | | | | | | | | | | | |
| DP-E06-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.70 | | 2.00 | 10.90 | 180.60 | | | | | 3.22 | 0.82 | 0.81 | 0.01 | 2.40 | 2.41 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.70 | 4.50 | 2.00 | 10.90 | 180.60 | | | | | 3.22 | 0.82 | 0.81 | 0.01 | 2.40 | 2.41 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.70 | 4.50 | 2.00 | 10.90 | 180.60 | | | | | 3.22 | 0.82 | 0.81 | 0.01 | 2.40 | 2.41 | | | | | | | | | | | | | | | | | | |
| DP-E07-10 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.83 | | 5.45 | 0.80 | 266.00 | | | | 11.00 | 9.25 | 1.75 | 1.66 | 0.09 | 7.50 | 7.59 | 0.12 | | | | | 12.00 | 7.20 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.08 | | 0.64 | 0.53 | 22.07 | | | | | 1.20 | 0.78 | 0.83 | 0.05 | 0.42 | 0.38 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 22.50 | 4.00 | 5.00 | 0.20 | 245.00 | | | | 11.00 | 8.40 | 1.20 | 1.08 | 0.05 | 7.20 | 7.32 | 0.12 | | | | | 12.00 | 7.20 | 0.01 | | | | | | | | | | |
| | MAX | 26.50 | 4.90 | 5.90 | 1.19 | 289.00 | | | | 11.00 | 10.10 | 2.30 | 2.25 | 0.12 | 7.80 | 7.85 | 0.12 | | | | | 12.00 | 7.20 | 0.01 | | | | | | | | | | |
| DP-E08-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.40 | | 3.00 | 1.83 | 326.00 | | | | | 12.00 | 2.10 | 2.09 | 0.01 | 9.90 | 9.91 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.40 | 5.00 | 3.00 | 1.83 | 326.00 | | | | | 12.00 | 2.10 | 2.09 | 0.01 | 9.90 | 9.91 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.40 | 5.00 | 3.00 | 1.83 | 326.00 | | | | | 12.00 | 2.10 | 2.09 | 0.01 | 9.90 | 9.91 | | | | | | | | | | | | | | | | | | |
| DP-E08-8 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.07 | | 3.00 | 0.84 | 333.33 | | | | 13.00 | 11.70 | 1.65 | 1.60 | 0.05 | 10.05 | 10.10 | 0.09 | | | | | 24.00 | 9.10 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.19 | | 0.00 | 0.62 | 25.40 | | | | | 1.27 | 0.07 | 0.01 | 0.06 | 1.34 | 1.28 | | | | | | 2.83 | | | | | | | | | | | | |
| | MIN | 22.60 | 4.20 | 3.00 | 0.30 | 304.00 | | | | 13.00 | 10.80 | 1.60 | 1.60 | 0.01 | 9.10 | 9.19 | 0.09 | | | | | 22.00 | 9.10 | 0.01 | | | | | | | | | | |
| | MAX | 26.80 | 5.00 | 3.00 | 1.52 | 348.00 | | | | 13.00 | 12.60 | 1.70 | 1.61 | 0.09 | 11.00 | 11.01 | 0.09 | | | | | 26.00 | 9.10 | 0.01 | | | | | | | | | | |



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Table G.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_2$-$N^-$ | $NO_3$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-E10-6 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.05 | | 2.50 | 0.70 | 379.50 | | | | | 10.15 | 1.35 | 1.33 | 0.03 | 8.80 | 8.83 | | | | | | 31.00 | 9.10 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.90 | | 0.71 | 0.14 | 38.89 | | | | | 0.64 | 0.21 | 0.18 | 0.03 | 0.42 | 0.45 | | | | | | | | | | | | | | | | | | |
| | MIN | 23.00 | 3.90 | 2.00 | 0.60 | 352.00 | | | | | 9.70 | 1.20 | 1.20 | 0.01 | 8.50 | 8.51 | | | | | | 31.00 | 9.10 | 0.01 | | | | | | | | | | |
| | MAX | 27.10 | 4.60 | 3.00 | 0.80 | 407.00 | | | | | 10.60 | 1.50 | 1.46 | 0.05 | 9.10 | 9.15 | | | | | | 31.00 | 9.10 | 0.01 | | | | | | | | | | |
| DP-E11-12 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.77 | | 8.45 | 0.53 | 478.67 | | | | 10.00 | 16.65 | 1.65 | 1.62 | 0.03 | 15.00 | 15.03 | 0.03 | | | | | 35.50 | 17.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.70 | | 0.64 | 0.40 | 33.71 | | | | | 2.90 | 0.07 | 0.05 | 0.02 | 2.83 | 2.85 | | | | | | 4.95 | | | | | | | | | | | | |
| | MIN | 23.00 | 5.00 | 8.00 | 0.30 | 441.00 | | | | 10.00 | 14.60 | 1.60 | 1.58 | 0.02 | 13.00 | 13.02 | 0.03 | | | | | 32.00 | 17.00 | 0.01 | | | | | | | | | | |
| | MAX | 26.40 | 5.10 | 8.90 | 0.99 | 506.00 | | | | 10.00 | 18.70 | 1.70 | 1.66 | 0.05 | 17.00 | 17.05 | 0.03 | | | | | 39.00 | 17.00 | 0.01 | | | | | | | | | | |
| DP-E12-10 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 0 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 23.53 | | 6.97 | 1.43 | 493.75 | | | | 17.00 | 22.60 | 1.60 | 1.47 | 0.13 | 21.00 | 21.13 | 0.03 | | 1.80 | 1.14 | 0.04 | 36.33 | 19.00 | 0.01 | 0.01 | 48.00 | 0.09 | 36.00 | 0.18 | 8.85 | 0.18 | 11.00 | 32.00 | |
| | STD. DEV. | 3.00 | | 4.34 | 2.17 | 24.31 | | | | 9.90 | 5.03 | 0.61 | 0.54 | 0.11 | 4.58 | 4.69 | 0.01 | | 0.85 | 0.37 | 0.04 | 4.51 | 4.24 | 0.00 | 0.00 | 1.41 | 0.02 | 4.24 | 0.13 | 1.48 | 0.04 | 0.00 | 1.41 | |
| | MIN | 19.20 | 4.90 | 2.00 | 0.30 | 462.00 | | | | 10.00 | 17.30 | 1.20 | 1.04 | 0.01 | 16.00 | 16.01 | 0.03 | | 1.20 | 0.88 | 0.01 | 32.00 | 16.00 | 0.01 | 0.01 | 47.00 | 0.08 | 33.00 | 0.09 | 7.80 | 0.15 | 11.00 | 31.00 | |
| | MAX | 25.90 | 5.48 | 10.00 | 4.68 | 520.00 | | | | 24.00 | 27.30 | 2.30 | 2.07 | 0.23 | 25.00 | 25.23 | 0.03 | | 2.40 | 1.40 | 0.06 | 41.00 | 22.00 | 0.01 | 0.01 | 49.00 | 0.10 | 39.00 | 0.27 | 9.90 | 0.21 | 11.00 | 33.00 | |
| DP-E12-15 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 0 | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 23.63 | | 5.97 | 1.12 | 519.75 | | | | 12.00 | 25.19 | 1.53 | 1.44 | 0.09 | 23.67 | 23.76 | 0.03 | | 2.20 | 1.16 | 0.05 | 37.00 | 22.50 | 0.01 | 0.10 | 54.00 | 0.11 | 37.50 | 0.04 | 8.55 | 0.04 | 12.50 | 38.50 | |
| | STD. DEV. | 1.87 | | 3.56 | 0.94 | 71.72 | | | | 2.83 | 5.07 | 0.86 | 0.96 | 0.14 | 5.86 | 5.92 | 0.02 | | | 0.34 | 0.03 | 6.56 | 7.78 | 0.00 | 0.12 | 0.00 | 0.01 | 3.54 | 0.01 | 2.05 | 0.01 | 0.71 | 7.78 | |
| | MIN | 21.90 | 4.88 | 2.00 | 0.40 | 460.00 | | | | 10.00 | 19.50 | 0.88 | 0.63 | 0.01 | 17.00 | 17.01 | 0.01 | | 2.20 | 0.92 | 0.03 | 31.00 | 17.00 | 0.01 | 0.01 | 54.00 | 0.10 | 35.00 | 0.03 | 7.10 | 0.03 | 12.00 | 33.00 | |
| | MAX | 25.70 | 5.20 | 8.90 | 2.47 | 607.00 | | | | 14.00 | 29.20 | 2.50 | 2.50 | 0.25 | 28.00 | 28.02 | 0.04 | | 2.20 | 1.40 | 0.08 | 44.00 | 28.00 | 0.01 | 0.18 | 54.00 | 0.12 | 40.00 | 0.05 | 10.00 | 0.05 | 13.00 | 44.00 | |
| DP-E12-22 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 0 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3.00 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 |
| | MEAN | 23.08 | | 6.23 | 0.79 | 350.00 | | | | 10.00 | 13.18 | 1.75 | 1.64 | 0.11 | 11.43 | 11.53 | 0.08 | | 2.10 | 1.46 | 0.04 | 11.63 | 9.23 | 0.01 | 0.09 | 63.67 | 0.08 | 28.00 | 0.04 | 7.57 | 0.18 | 11.33 | 7.87 | |
| | STD. DEV. | 2.10 | | 4.20 | 0.79 | 77.05 | | | | 0.00 | 4.23 | 0.83 | 0.72 | 0.12 | 4.60 | 4.57 | | | 0.62 | 0.52 | 0.05 | 2.57 | 1.70 | 0.00 | 0.13 | 6.66 | 0.03 | 2.65 | 0.02 | 1.29 | 0.02 | 1.53 | 0.92 | |
| | MIN | 20.40 | 4.80 | 2.00 | 0.20 | 297.00 | | | | 10.00 | 8.90 | 1.00 | 0.95 | 0.01 | 7.60 | 7.61 | 0.04 | | 1.20 | 0.83 | 0.01 | 8.90 | 7.60 | 0.01 | 0.01 | 56.00 | 0.05 | 25.00 | 0.02 | 6.10 | 0.16 | 10.00 | 6.80 | |
| | MAX | 25.20 | 5.30 | 12.00 | 1.95 | 464.00 | | | | 10.00 | 19.00 | 2.90 | 2.61 | 0.29 | 18.00 | 18.05 | 0.13 | | 2.60 | 2.10 | 0.10 | 14.00 | 11.00 | 0.01 | 0.24 | 68.00 | 0.10 | 30.00 | 0.07 | 8.50 | 0.19 | 13.00 | 8.40 | |
| DP-E12-28 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 1 | 1 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.50 | | 3.33 | 0.85 | 305.50 | | | | 10.00 | 9.47 | 1.70 | 1.66 | 0.04 | 7.77 | 7.81 | 0.07 | | | 0.50 | 0.02 | 14.67 | 7.70 | 0.01 | 0.07 | 59.00 | 0.05 | 27.00 | 0.02 | 9.50 | 0.11 | 15.00 | 5.30 | |
| | STD. DEV. | 1.43 | | 1.15 | 0.78 | 11.73 | | | | | 2.68 | 0.72 | 0.71 | 0.03 | 2.10 | 2.09 | | | | | | 0.58 | 2.97 | 0.00 | | | | | | | | | | |
| | MIN | 21.90 | 4.80 | 2.00 | 0.40 | 295.00 | | | | 10.00 | 6.50 | 0.90 | 0.86 | 0.01 | 5.60 | 5.64 | 0.07 | | | 0.50 | 0.02 | 14.00 | 5.60 | 0.01 | 0.07 | 59.00 | 0.05 | 27.00 | 0.02 | 9.50 | 0.11 | 15.00 | 5.30 | |
| | MAX | 25.10 | 5.30 | 4.00 | 2.01 | 320.00 | | | | 10.00 | 11.70 | 2.30 | 2.23 | 0.07 | 9.80 | 9.81 | 0.07 | | | 0.50 | 0.02 | 15.00 | 9.80 | 0.01 | 0.07 | 59.00 | 0.05 | 27.00 | 0.02 | 9.50 | 0.11 | 15.00 | 5.30 | |
| DP-F03-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.70 | | 18.00 | 1.22 | 145.60 | | | | | 3.30 | 1.60 | 1.21 | 0.39 | 1.70 | 2.09 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.70 | 6.20 | 18.00 | 1.22 | 145.60 | | | | | 3.30 | 1.60 | 1.21 | 0.39 | 1.70 | 2.09 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.70 | 6.20 | 18.00 | 1.22 | 145.60 | | | | | 3.30 | 1.60 | 1.21 | 0.39 | 1.70 | 2.09 | | | | | | | | | | | | | | | | | | |
| DP-F04-17 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.97 | | 71.00 | 0.56 | 356.57 | | | | 11.00 | 2.42 | 0.35 | 0.32 | 0.03 | 2.07 | 2.10 | 0.08 | | | | | 13.30 | 2.10 | 0.24 | | | | | | | | | | |
| | STD. DEV. | 2.90 | | 26.87 | 0.25 | 69.51 | | | | | 0.38 | 0.00 | 0.00 | 0.00 | 0.38 | 0.38 | | | | | | 10.89 | | | | | | | | | | | | |
| | MIN | 22.00 | 5.80 | 52.00 | 0.30 | 280.00 | | | | 11.00 | 2.15 | 0.35 | 0.32 | 0.03 | 1.80 | 1.83 | 0.08 | | | | | 5.60 | 2.10 | 0.24 | | | | | | | | | | |
| | MAX | 27.80 | 7.30 | 90.00 | 0.80 | 415.70 | | | | 11.00 | 2.69 | 0.35 | 0.32 | 0.03 | 2.34 | 2.37 | 0.08 | | | | | 21.00 | 2.10 | 0.24 | | | | | | | | | | |
| DP-F04-22 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.35 | | 9.95 | 0.66 | 292.05 | | | | | 9.28 | 1.38 | 1.36 | 0.02 | 7.90 | 7.92 | | | | | | 12.00 | 7.60 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.19 | | 0.07 | 0.08 | 31.18 | | | | | 2.30 | 1.87 | 1.88 | 0.00 | 0.42 | 0.42 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.80 | 5.20 | 9.90 | 0.60 | 270.00 | | | | | 7.65 | 0.05 | 0.03 | 0.02 | 7.60 | 7.62 | | | | | | 12.00 | 7.60 | 0.01 | | | | | | | | | | |
| | MAX | 25.90 | 6.00 | 10.00 | 0.72 | 314.10 | | | | | 10.90 | 2.70 | 2.68 | 0.02 | 8.20 | 8.22 | | | | | | 12.00 | 7.60 | 0.01 | | | | | | | | | | |
| DP-F04-32 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.57 | | 55.50 | 0.61 | 323.53 | | | | 10.00 | 0.81 | 0.22 | 0.16 | 0.05 | 0.60 | 0.65 | 0.21 | | | | | 12.30 | 0.48 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.45 | | 19.09 | 0.38 | 29.52 | | | | | 0.21 | 0.05 | 0.06 | 0.01 | 0.16 | 0.15 | | | | | | 9.48 | | | | | | | | | | | | |
| | MIN | 23.10 | 5.90 | 42.00 | 0.30 | 290.00 | | | | 10.00 | 0.66 | 0.18 | 0.12 | 0.04 | 0.48 | 0.54 | 0.21 | | | | | 5.60 | 0.48 | 0.01 | | | | | | | | | | |
| | MAX | 26.00 | 6.90 | 69.00 | 1.04 | 345.60 | | | | 10.00 | 0.96 | 0.25 | 0.21 | 0.06 | 0.71 | 0.75 | 0.21 | | | | | 19.00 | 0.48 | 0.01 | | | | | | | | | | |
| DP-F05-5 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 28.25 | | 8.45 | 3.98 | 175.65 | | | | 10.00 | 1.69 | 1.42 | 1.29 | 0.13 | 0.27 | 0.40 | 0.18 | | | | | 4.30 | 0.42 | 0.10 | | | | | | | | | | |
| | STD. DEV. | 0.78 | | 2.19 | 4.78 | 3.32 | | | | | 1.03 | 1.39 | 1.39 | 0.00 | 0.36 | 0.36 | | | | | | | | | | | | | | | | | | |
| | MIN | 27.70 | 4.80 | 6.90 | 0.60 | 173.30 | | | | 10.00 | 0.96 | 0.44 | 0.31 | 0.13 | 0.01 | 0.14 | 0.18 | | | | | 4.30 | 0.42 | 0.10 | | | | | | | | | | |
| | MAX | 28.80 | 5.80 | 10.00 | 7.36 | 178.00 | | | | 10.00 | 2.41 | 2.40 | 2.27 | 0.13 | 0.52 | 0.65 | 0.18 | | | | | 4.30 | 0.42 | 0.10 | | | | | | | | | | |
| DP-F05-31 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.10 | | 69.00 | 1.70 | 187.10 | | | | 18.00 | 2.02 | 0.62 | 0.55 | 0.07 | 1.40 | 1.47 | 0.29 | | | 1.70 | 0.58 | 10.00 | 1.30 | 0.11 | 0.01 | 23.00 | 0.05 | 31.00 | 1.50 | 6.40 | 0.06 | 2.90 | 11.00 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.10 | 7.30 | 69.00 | 1.70 | 187.10 | | | | 18.00 | 2.02 | 0.62 | 0.55 | 0.07 | 1.40 | 1.47 | 0.29 | | | 1.70 | 0.58 | 10.00 | 1.30 | 0.11 | 0.01 | 23.00 | 0.05 | 31.00 | 1.50 | 6.40 | 0.06 | 2.90 | 11.00 | |
| | MAX | 24.10 | 7.30 | 69.00 | 1.70 | 187.10 | | | | 18.00 | 2.02 | 0.62 | 0.55 | 0.07 | 1.40 | 1.47 | 0.29 | | | 1.70 | 0.58 | 10.00 | 1.30 | 0.11 | 0.01 | 23.00 | 0.05 | 31.00 | 1.50 | 6.40 | 0.06 | 2.90 | 11.00 | |
| DP-F06-10 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.80 | | 4.00 | 0.30 | 190.60 | | | | | 1.83 | 0.33 | 0.27 | 0.06 | 1.50 | 1.56 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.80 | 5.20 | 4.00 | 0.30 | 190.60 | | | | | 1.83 | 0.33 | 0.27 | 0.06 | 1.50 | 1.56 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.80 | 5.20 | 4.00 | 0.30 | 190.60 | | | | | 1.83 | 0.33 | 0.27 | 0.06 | 1.50 | 1.56 | | | | | | | | | | | | | | | | | | |
| DP-F08-14 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.45 | | 225.00 | 3.69 | 956.50 | | | | | 7.05 | 1.05 | 0.91 | 0.14 | 6.00 | 6.14 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 0.07 | | 120.21 | 3.40 | 644.17 | | | | | 3.32 | 0.21 | 0.28 | 0.07 | 3.54 | 3.61 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.40 | 7.04 | 140.00 | 1.28 | 501.00 | | | | | 4.70 | 0.90 | 0.71 | 0.09 | 3.50 | 3.59 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.50 | 7.60 | 310.00 | 6.09 | 1412.00 | | | | | 9.40 | 1.20 | 1.11 | 0.19 | 8.50 | 8.69 | | | | | | | | | | | | | | | | | | |
| DP-F08-20 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 0 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.23 | | 7.63 | 0.80 | 337.15 | | | | 10.00 | 9.99 | 1.39 | 1.36 | 0.03 | 8.60 | 8.63 | 0.33 | | 3.00 | 1.60 | 0.03 | 12.33 | 7.90 | 0.01 | 0.01 | 65.00 | 0.05 | 32.00 | 0.07 | 7.30 | 0.22 | 14.00 | 6.40 | |
| | STD. DEV. | 1.34 | | 4.01 | 0.66 | 29.35 | | | | 0.00 | 1.38 | 0.64 | 0.64 | 0.00 | 1.40 | 1.40 | 0.00 | | | 1.13 | | 1.53 | 0.99 | 0.00 | | | | | | | | | | |
| | MIN | 23.10 | 5.00 | 3.00 | 0.40 | 298.00 | | | | 10.00 | 8.40 | 0.87 | 0.83 | 0.03 | 7.20 | 7.23 | 0.33 | | 3.00 | 0.80 | 0.03 | 11.00 | 7.20 | 0.01 | 0.01 | 65.00 | 0.05 | 32.00 | 0.07 | 7.30 | 0.22 | 14.00 | 6.40 | |
| | MAX | 25.90 | 6.34 | 10.00 | 1.77 | 368.00 | | | | 10.00 | 10.87 | 2.10 | 2.07 | 0.04 | 10.00 | 10.04 | 0.33 | | 3.00 | 2.40 | 0.03 | 14.00 | 8.60 | 0.01 | 0.01 | 65.00 | 0.05 | 32.00 | 0.07 | 7.30 | 0.22 | 14.00 | 6.40 | |



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# Table G.1 (con't)
# Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 |
| DP-F08-28 | MEAN | 24.05 | | 21.00 | 0.73 | 319.48 | | | | | 3.26 | 0.69 | 0.63 | 0.06 | 2.57 | 2.63 | | | | |
| | STD. DEV. | 1.03 | | 12.77 | 0.68 | 14.81 | | | | | 1.23 | 0.38 | 0.41 | 0.08 | 0.95 | 0.99 | | | | |
| | MIN | 23.10 | 5.10 | 10.00 | 0.30 | 298.00 | | | | | 1.84 | 0.34 | 0.31 | 0.01 | 1.50 | 1.53 | | | | |
| | MAX | 25.40 | 6.30 | 35.00 | 1.73 | 332.00 | | | | | 4.00 | 1.10 | 1.09 | 0.15 | 3.30 | 3.45 | | | | |
| | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| DP-F09-05 | MEAN | 24.80 | | 22.00 | 1.15 | 191.10 | | | | 24.00 | 3.40 | 1.50 | 1.27 | 0.23 | 1.90 | 2.13 | 0.27 | | | 7.70 |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.80 | 6.60 | 22.00 | 1.15 | 191.10 | | | | 24.00 | 3.40 | 1.50 | 1.27 | 0.23 | 1.90 | 2.13 | 0.27 | | | 7.70 |
| | MAX | 24.80 | 6.60 | 22.00 | 1.15 | 191.10 | | | | 24.00 | 3.40 | 1.50 | 1.27 | 0.23 | 1.90 | 2.13 | 0.27 | | | 7.70 |
| | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 |
| DP-F10-11 | MEAN | 24.53 | | 6.00 | 0.57 | 471.30 | | | | 10.00 | 24.50 | 2.50 | 1.76 | 0.74 | 22.00 | 22.74 | 0.08 | | 2.00 | 1.50 |
| | STD. DEV. | 2.93 | | 5.66 | 0.21 | 23.34 | | | | | 11.03 | 0.28 | 0.79 | 0.51 | 11.31 | 11.82 | | | | |
| | MIN | 21.30 | 4.20 | 2.00 | 0.40 | 446.00 | | | | 10.00 | 16.70 | 2.30 | 1.20 | 0.38 | 14.00 | 14.38 | 0.08 | | 2.00 | 1.50 |
| | MAX | 27.00 | 4.90 | 10.00 | 0.80 | 492.00 | | | | 10.00 | 32.30 | 2.70 | 2.32 | 1.10 | 30.00 | 31.10 | 0.08 | | 2.00 | 1.50 |
| | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 |
| DP-F11-11 | MEAN | 23.53 | | 6.97 | 1.99 | 403.68 | | | | 10.00 | 16.53 | 1.53 | 0.85 | 0.68 | 15.00 | 15.68 | 0.10 | | | |
| | STD. DEV. | 3.67 | | 4.34 | 2.23 | 34.61 | | | | | 5.29 | 0.15 | 0.57 | 0.73 | 5.29 | 5.27 | | | | |
| | MIN | 19.50 | 4.80 | 2.00 | 0.30 | 366.00 | | | | 10.00 | 12.40 | 1.40 | 0.20 | 0.11 | 11.00 | 11.11 | 0.10 | | | |
| | MAX | 27.20 | 5.35 | 10.00 | 5.26 | 447.00 | | | | 10.00 | 22.50 | 1.70 | 1.29 | 1.50 | 21.00 | 21.44 | 0.10 | | | |
| | n | 4 | 4 | 3 | 4 | | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 |
| DP-F11-15 | MEAN | 23.85 | | 6.63 | 1.16 | 494.08 | | | | 10.00 | 26.37 | 1.37 | 1.18 | 0.19 | 25.00 | 25.19 | 0.28 | | | |
| | STD. DEV. | 1.95 | | 4.15 | 1.66 | 38.93 | | | | | 5.95 | 0.23 | 0.40 | 0.17 | 6.08 | 6.21 | | | | |
| | MIN | 21.80 | 4.70 | 2.00 | 0.20 | 453.30 | | | | 10.00 | 19.50 | 1.10 | 0.72 | 0.05 | 18.00 | 18.05 | 0.28 | | | |
| | MAX | 26.20 | 5.10 | 10.00 | 3.64 | 547.00 | | | | 10.00 | 30.10 | 1.50 | 1.45 | 0.38 | 29.00 | 29.38 | 0.28 | | | |
| | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 |
| DP-F11-18 | MEAN | 23.90 | | 6.63 | 1.07 | 390.23 | | | | 11.00 | 16.58 | 0.91 | 0.87 | 0.04 | 15.67 | 15.71 | 0.09 | | 4.10 | 1.30 |
| | STD. DEV. | 1.58 | | 4.15 | 1.03 | 97.46 | | | | | 8.24 | 0.96 | 0.94 | 0.02 | 7.77 | 7.77 | | | | |
| | MIN | 22.20 | 5.00 | 2.00 | 0.30 | 271.00 | | | | 11.00 | 7.18 | 0.18 | 0.14 | 0.02 | 7.00 | 7.04 | 0.09 | | 4.10 | 1.30 |
| | MAX | 25.80 | 5.40 | 10.00 | 2.48 | 497.00 | | | | 11.00 | 22.55 | 2.00 | 1.93 | 0.07 | 22.00 | 22.02 | 0.09 | | 4.10 | 1.30 |
| | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 |
| DP-F11-21 | MEAN | 23.80 | | 5.97 | 0.83 | 346.10 | | | | 34.00 | 16.39 | 0.89 | 0.86 | 0.02 | 15.50 | 15.52 | 0.81 | | | |
| | STD. DEV. | 1.47 | | 4.00 | 0.85 | 75.07 | | | | | 6.94 | 0.23 | 0.24 | 0.02 | 6.95 | 6.93 | | | | |
| | MIN | 22.50 | 4.90 | 2.00 | 0.40 | 298.00 | | | | 34.00 | 8.42 | 0.64 | 0.62 | 0.01 | 7.50 | 7.55 | 0.81 | | | |
| | MAX | 25.60 | 5.20 | 10.00 | 2.10 | 458.00 | | | | 34.00 | 21.10 | 1.10 | 1.10 | 0.05 | 20.00 | 20.01 | 0.81 | | | |
| | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 |
| DP-F11-24 | MEAN | 23.88 | | 5.33 | 0.56 | 345.53 | | | | 10.00 | 16.89 | 0.89 | 0.87 | 0.02 | 16.00 | 16.02 | 0.35 | | | |
| | STD. DEV. | 1.25 | | 4.16 | 0.43 | 86.51 | | | | | 6.22 | 0.36 | 0.37 | 0.01 | 6.56 | 6.55 | | | | |
| | MIN | 22.80 | 4.80 | 2.00 | 0.20 | 296.00 | | | | 10.00 | 11.10 | 0.47 | 0.45 | 0.01 | 10.00 | 10.03 | 0.35 | | | |
| | MAX | 25.40 | 5.10 | 10.00 | 1.15 | 475.00 | | | | 10.00 | 23.47 | 1.10 | 1.09 | 0.03 | 23.00 | 23.02 | 0.35 | | | |
| | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 |
| DP-F11-27 | MEAN | 24.03 | | 5.63 | 0.45 | 310.38 | | | | 10.00 | 6.08 | 0.84 | 0.82 | 0.03 | 5.23 | 5.26 | 0.55 | | | |
| | STD. DEV. | 0.98 | | 4.05 | 0.26 | 14.51 | | | | | 2.20 | 0.45 | 0.47 | 0.02 | 1.86 | 1.85 | | | | |
| | MIN | 23.20 | 4.90 | 2.00 | 0.20 | 297.00 | | | | 10.00 | 4.53 | 0.40 | 0.36 | 0.01 | 3.70 | 3.73 | 0.55 | | | |
| | MAX | 25.30 | 5.30 | 10.00 | 0.82 | 331.00 | | | | 10.00 | 8.60 | 1.30 | 1.29 | 0.04 | 7.30 | 7.31 | 0.55 | | | |
| | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 |
| DP-F12-10 | MEAN | 24.50 | | 2.00 | 0.57 | 450.00 | | | | 10.00 | 18.39 | 0.89 | 0.77 | 0.12 | 17.50 | 17.62 | 0.10 | | | |
| | STD. DEV. | 2.69 | | 0.00 | 0.35 | 43.35 | | | | | 8.64 | 0.86 | 0.80 | 0.06 | 7.78 | 7.84 | | | | |
| | MIN | 21.50 | 3.80 | 2.00 | 0.20 | 423.00 | | | | 10.00 | 12.28 | 0.28 | 0.21 | 0.07 | 12.00 | 12.07 | 0.10 | | | |
| | MAX | 26.70 | 5.00 | 2.00 | 0.90 | 500.00 | | | | 10.00 | 24.50 | 1.50 | 1.34 | 0.16 | 23.00 | 23.16 | 0.10 | | | |
| | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 |
| DP-F15-14 | MEAN | 23.38 | | 14.00 | 0.59 | 466.15 | | | | 10.00 | 22.50 | 0.83 | 0.71 | 0.13 | 21.67 | 21.79 | 0.07 | | 1.90 | 2.00 |
| | STD. DEV. | 2.19 | | 7.00 | 0.36 | 44.47 | | | | | 8.03 | 0.63 | 0.69 | 0.06 | 8.08 | 8.08 | | | | |
| | MIN | 21.50 | 4.50 | 9.00 | 0.30 | 408.60 | | | | 10.00 | 17.26 | 0.26 | 0.07 | 0.07 | 17.00 | 17.07 | 0.07 | | 1.90 | 2.00 |
| | MAX | 26.10 | 5.20 | 22.00 | 1.11 | 512.00 | | | | 10.00 | 31.74 | 1.50 | 1.43 | 0.19 | 31.00 | 31.12 | 0.07 | | 1.90 | 2.00 |
| | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 |
| DP-F15-20 | MEAN | 23.53 | | 9.33 | 0.53 | 420.25 | | | | 10.00 | 19.32 | 0.68 | 0.62 | 0.06 | 18.63 | 18.69 | 0.50 | | 1.10 | 1.20 |
| | STD. DEV. | 1.58 | | 3.79 | 0.22 | 157.51 | | | | | 10.58 | 0.62 | 0.67 | 0.09 | 10.55 | 10.48 | | | | |
| | MIN | 22.10 | 4.60 | 5.00 | 0.30 | 290.00 | | | | 10.00 | 8.24 | 0.31 | 0.18 | 0.01 | 7.90 | 8.06 | 0.50 | | 1.10 | 1.20 |
| | MAX | 25.30 | 5.40 | 12.00 | 0.78 | 649.00 | | | | 10.00 | 29.31 | 1.40 | 1.40 | 0.16 | 29.00 | 29.02 | 0.50 | | 1.10 | 1.20 |
| | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 |
| DP-F15-26 | MEAN | 23.43 | | 3.33 | 0.45 | 299.20 | | | | 10.00 | 13.45 | 1.11 | 1.07 | 0.04 | 12.33 | 12.37 | 0.12 | | | |
| | STD. DEV. | 1.55 | | 1.15 | 0.26 | 17.49 | | | | | 4.42 | 0.51 | 0.48 | 0.03 | 4.16 | 4.19 | | | | |
| | MIN | 21.80 | 4.30 | 2.00 | 0.20 | 280.00 | | | | 10.00 | 10.30 | 0.54 | 0.52 | 0.02 | 9.00 | 9.03 | 0.12 | | | |
| | MAX | 25.20 | 5.20 | 4.00 | 0.78 | 320.00 | | | | 10.00 | 18.50 | 1.50 | 1.43 | 0.07 | 17.00 | 17.07 | 0.12 | | | |
| | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| DP-G05-6 | MEAN | 26.20 | | 22.00 | 2.49 | 151.90 | | | | 32.00 | 2.04 | 1.90 | 0.50 | 1.40 | 0.14 | 1.54 | 0.43 | | | 8.70 |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | |
| | MIN | 26.20 | 6.10 | 22.00 | 2.49 | 151.90 | | | | 32.00 | 2.04 | 1.90 | 0.50 | 1.40 | 0.14 | 1.54 | 0.43 | | | 8.70 |
| | MAX | 26.20 | 6.10 | 22.00 | 2.49 | 151.90 | | | | 32.00 | 2.04 | 1.90 | 0.50 | 1.40 | 0.14 | 1.54 | 0.43 | | | 8.70 |
| | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| DP-G06-7 | MEAN | 28.90 | | 34.00 | 2.36 | 184.00 | | | | | 0.68 | 0.55 | 0.28 | 0.27 | 0.13 | 0.40 | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | |
| | MIN | 28.90 | 6.20 | 34.00 | 2.36 | 184.00 | | | | | 0.68 | 0.55 | 0.28 | 0.27 | 0.13 | 0.40 | | | | |
| | MAX | 28.90 | 6.20 | 34.00 | 2.36 | 184.00 | | | | | 0.68 | 0.55 | 0.28 | 0.27 | 0.13 | 0.40 | | | | |

| Sample ID | Statistical Parameter | Anions: $F^-$ | $Cl^-$ | $NO_2$-N | $NO_3$-N | $PO_4$-P | $SO_4^-$ | Cations: B | Ca | Fe | Mg | Mn | K | Na | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-F08-28 | MEAN | | 19.00 | 1.50 | 0.01 | | | | | | | | | | |
| | STD. DEV. | | 1.41 | | | | | | | | | | | | |
| | MIN | | 18.00 | 1.50 | 0.01 | | | | | | | | | | |
| | MAX | | 20.00 | 1.50 | 0.01 | | | | | | | | | | |
| | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| DP-F09-05 | MEAN | 0.10 | 10.00 | 1.90 | 0.01 | 0.03 | 26.00 | 0.05 | 14.00 | 5.80 | 3.50 | 0.37 | 4.70 | 9.10 | |
| | STD. DEV. | | | | | | | | | | | | | | |
| | MIN | 0.10 | 10.00 | 1.90 | 0.01 | 0.03 | 26.00 | 0.05 | 14.00 | 5.80 | 3.50 | 0.37 | 4.70 | 9.10 | |
| | MAX | 0.10 | 10.00 | 1.90 | 0.01 | 0.03 | 26.00 | 0.05 | 14.00 | 5.80 | 3.50 | 0.37 | 4.70 | 9.10 | |
| | n | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| DP-F10-11 | MEAN | 0.18 | 31.50 | 14.00 | 0.01 | 0.04 | 55.00 | 0.09 | 30.00 | 0.05 | 7.90 | 0.15 | 9.10 | 29.00 | |
| | STD. DEV. | | 0.71 | | | | | | | | | | | | |
| | MIN | 0.18 | 31.00 | 14.00 | 0.01 | 0.04 | 55.00 | 0.09 | 30.00 | 0.05 | 7.90 | 0.15 | 9.10 | 29.00 | |
| | MAX | 0.18 | 32.00 | 14.00 | 0.01 | 0.04 | 55.00 | 0.09 | 30.00 | 0.05 | 7.90 | 0.15 | 9.10 | 29.00 | |
| | n | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-F11-11 | MEAN | | 31.50 | 11.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | | 0.71 | | | | | | | | | | | | |
| | MIN | | 31.00 | 11.00 | 0.01 | | | | | | | | | | |
| | MAX | | 32.00 | 11.00 | 0.01 | | | | | | | | | | |
| | n | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-F11-15 | MEAN | | 33.00 | 18.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | | 1.41 | | | | | | | | | | | | |
| | MIN | | 32.00 | 18.00 | 0.01 | | | | | | | | | | |
| | MAX | | 34.00 | 18.00 | 0.01 | | | | | | | | | | |
| | n | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-F11-18 | MEAN | | 13.95 | 7.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | | 7.14 | | | | | | | | | | | | |
| | MIN | | 8.90 | 7.00 | 0.01 | | | | | | | | | | |
| | MAX | | 19.00 | 7.00 | 0.01 | | | | | | | | | | |
| | n | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-F11-21 | MEAN | | 11.50 | 7.50 | 0.01 | | | | | | | | | | |
| | STD. DEV. | | 2.12 | | | | | | | | | | | | |
| | MIN | | 10.00 | 7.50 | 0.01 | | | | | | | | | | |
| | MAX | | 13.00 | 7.50 | 0.01 | | | | | | | | | | |
| | n | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-F11-24 | MEAN | | 15.50 | 10.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | | 0.71 | | | | | | | | | | | | |
| | MIN | | 15.00 | 10.00 | 0.01 | | | | | | | | | | |
| | MAX | | 16.00 | 10.00 | 0.01 | | | | | | | | | | |
| | n | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-F11-27 | MEAN | | 16.00 | 4.70 | 0.01 | | | | | | | | | | |
| | STD. DEV. | | 0.00 | | | | | | | | | | | | |
| | MIN | | 16.00 | 4.70 | 0.01 | | | | | | | | | | |
| | MAX | | 16.00 | 4.70 | 0.01 | | | | | | | | | | |
| | n | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-F12-10 | MEAN | | 34.00 | 12.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | | 0.00 | | | | | | | | | | | | |
| | MIN | | 34.00 | 12.00 | 0.01 | | | | | | | | | | |
| | MAX | | 34.00 | 12.00 | 0.01 | | | | | | | | | | |
| | n | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| DP-F15-14 | MEAN | 0.10 | 32.50 | 17.00 | 0.01 | 0.01 | 61.00 | 0.11 | 33.00 | 0.05 | 9.20 | 0.17 | 14.00 | 34.00 | |
| | STD. DEV. | | 2.12 | | | | | | | | | | | | |
| | MIN | 0.10 | 31.00 | 17.00 | 0.01 | 0.01 | 61.00 | 0.11 | 33.00 | 0.05 | 9.20 | 0.17 | 14.00 | 34.00 | |
| | MAX | 0.10 | 34.00 | 17.00 | 0.01 | 0.01 | 61.00 | 0.11 | 33.00 | 0.05 | 9.20 | 0.17 | 14.00 | 34.00 | |
| | n | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-F15-20 | MEAN | | 14.00 | 7.90 | 0.01 | | | | | | | | | | |
| | STD. DEV. | | 5.66 | | | | | | | | | | | | |
| | MIN | | 10.00 | 7.90 | 0.01 | | | | | | | | | | |
| | MAX | | 18.00 | 7.90 | 0.01 | | | | | | | | | | |
| | n | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-F15-26 | MEAN | | 13.50 | 9.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | | 0.71 | | | | | | | | | | | | |
| | MIN | | 13.00 | 9.00 | 0.01 | | | | | | | | | | |
| | MAX | | 14.00 | 9.00 | 0.01 | | | | | | | | | | |
| | n | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| DP-G05-6 | MEAN | 0.08 | 4.10 | 0.14 | 0.01 | 0.18 | 30.00 | 0.05 | 11.00 | 8.20 | 3.30 | 0.40 | 2.80 | 2.60 | |
| | STD. DEV. | | | | | | | | | | | | | | |
| | MIN | 0.08 | 4.10 | 0.14 | 0.01 | 0.18 | 30.00 | 0.05 | 11.00 | 8.20 | 3.30 | 0.40 | 2.80 | 2.60 | |
| | MAX | 0.08 | 4.10 | 0.14 | 0.01 | 0.18 | 30.00 | 0.05 | 11.00 | 8.20 | 3.30 | 0.40 | 2.80 | 2.60 | |
| | n | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DP-G06-7 | MEAN | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | |
| | MIN | | | | | | | | | | | | | | |
| | MAX | | | | | | | | | | | | | | |



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Table G.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_2$-N | $NO_3$-N | $PO_4$-P | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-G07-13 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 28.3 | | 10.5 | 2.0 | 237.0 | | | | | 2.79 | 1.00 | 0.83 | 0.17 | 1.79 | 1.96 | | | | | | 5.8 | 0.88 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.7 | | 4.9 | 1.2 | 16.1 | | | | | 0.86 | 0.42 | 0.65 | 0.23 | 1.29 | 1.51 | | | | | | 0.1 | | | | | | | | | | | | |
| | MIN | 25.2 | 5.2 | 7 | 0.8 | 224 | | | | | 2.18 | 0.70 | 0.37 | 0.01 | 0.88 | 0.89 | | | | | | 5.7 | 0.88 | 0.01 | | | | | | | | | | |
| | MAX | 29.9 | 5.8 | 14 | 3.1 | 255 | | | | | 3.40 | 1.30 | 1.29 | 0.33 | 2.7 | 3.03 | | | | | | 5.8 | 0.88 | 0.01 | | | | | | | | | | |
| DP-G07-15 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.78 | | 5.37 | 1.51 | 273.25 | | | | 10.00 | 4.14 | 0.61 | 0.59 | 0.02 | 3.53 | 3.55 | 1.40 | | | | | 5.65 | 1.80 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 3.13 | | 1.18 | 1.23 | 17.27 | | | | | 1.27 | 0.24 | 0.24 | 0.02 | 1.50 | 1.51 | | | | | | 0.92 | | | | | | | | | | | | |
| | MIN | 21.40 | 4.70 | 4.00 | 0.70 | 254.00 | | | | 10.00 | 2.68 | 0.45 | 0.45 | 0.01 | 1.80 | 1.81 | 1.40 | | | | | 5.00 | 1.80 | 0.01 | | | | | | | | | | |
| | MAX | 28.70 | 5.53 | 6.10 | 3.33 | 296.00 | | | | 10.00 | 4.95 | 0.88 | 0.87 | 0.04 | 4.50 | 4.51 | 1.40 | | | | | 6.30 | 1.80 | 0.01 | | | | | | | | | | |
| DP-G07-17 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.03 | | 5.00 | 1.23 | 316.50 | | | | | 7.77 | 1.04 | 1.03 | 0.01 | 6.73 | 6.74 | | | | | | 8.30 | 4.60 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.71 | | 0.10 | 0.79 | 15.42 | | | | | 1.96 | 0.70 | 0.69 | 0.00 | 2.15 | 2.15 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 21.90 | 4.80 | 4.90 | 0.40 | 300.00 | | | | | 6.30 | 0.31 | 0.31 | 0.01 | 4.60 | 4.61 | | | | | | 7.30 | 4.60 | 0.01 | | | | | | | | | | |
| | MAX | 26.00 | 5.36 | 5.10 | 2.19 | 337.00 | | | | | 10.00 | 1.70 | 1.69 | 0.01 | 8.90 | 8.91 | | | | | | 9.30 | 4.60 | 0.01 | | | | | | | | | | |
| DP-G07-21 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 23.80 | | 5.05 | 0.98 | 319.00 | | | | 10.00 | 12.33 | 1.58 | 1.55 | 0.02 | 10.75 | 10.77 | 0.57 | | 1.70 | 1.24 | 0.07 | 14.00 | 9.00 | 0.01 | 0.01 | 60.00 | 0.06 | 24.00 | 0.06 | 8.65 | 0.19 | 12.35 | 7.45 | |
| | STD. DEV. | 1.49 | | 0.87 | 0.60 | 30.80 | | | | 0.00 | 2.45 | 0.89 | 0.86 | 0.03 | 2.10 | 2.12 | | | 0.85 | 0.79 | 0.07 | 2.83 | 0.71 | 0.00 | 0.00 | 24.04 | 0.01 | 7.07 | 0.03 | 0.21 | 0.02 | 3.75 | 0.07 | |
| | MIN | 22.20 | 4.60 | 4.00 | 0.40 | 274.00 | | | | 10.00 | 9.80 | 0.51 | 0.51 | 0.01 | 8.50 | 8.51 | 0.57 | | 1.10 | 0.68 | 0.02 | 12.00 | 8.50 | 0.01 | 0.01 | 43.00 | 0.05 | 19.00 | 0.05 | 8.50 | 0.17 | 9.70 | 7.40 | |
| | MAX | 25.30 | 5.60 | 6.10 | 1.66 | 343.00 | | | | 10.00 | 15.60 | 2.60 | 2.53 | 0.07 | 13.00 | 13.07 | 0.57 | | 2.30 | 1.80 | 0.12 | 16.00 | 9.50 | 0.01 | 0.01 | 77.00 | 0.07 | 29.00 | 0.08 | 8.80 | 0.20 | 15.00 | 7.50 | |
| DP-G07-24 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.85 | | 5.67 | 0.82 | 289.25 | | | | | 13.31 | 1.60 | 1.59 | 0.01 | 11.71 | 11.72 | | | | | | 13.50 | 8.00 | 0.14 | | | | | | | | | | |
| | STD. DEV. | 1.52 | | 1.24 | 0.26 | 13.84 | | | | | 2.96 | 1.01 | 1.01 | 0.00 | 3.13 | 3.13 | | | | | | 3.54 | | | | | | | | | | | | |
| | MIN | 22.30 | 4.70 | 4.90 | 0.60 | 271.00 | | | | | 9.94 | 0.50 | 0.50 | 0.01 | 8.14 | 8.15 | | | | | | 11.00 | 8.00 | 0.14 | | | | | | | | | | |
| | MAX | 25.60 | 5.70 | 7.10 | 1.13 | 300.00 | | | | | 15.50 | 2.50 | 2.50 | 0.01 | 14.00 | 14.01 | | | | | | 16.00 | 8.00 | 0.14 | | | | | | | | | | |
| DP-G07-27 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.88 | | 4.70 | 1.33 | 305.25 | | | | | 11.85 | 1.71 | 1.71 | 0.01 | 10.13 | 10.14 | | | | | | 15.00 | 7.70 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.73 | | 0.61 | 0.36 | 13.82 | | | | | 5.17 | 1.03 | 1.03 | 0.00 | 4.21 | 4.21 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 22.30 | 4.70 | 4.00 | 0.95 | 293.00 | | | | | 8.44 | 0.74 | 0.74 | 0.01 | 7.70 | 7.71 | | | | | | 15.00 | 7.70 | 0.01 | | | | | | | | | | |
| | MAX | 25.70 | 5.20 | 5.10 | 1.80 | 325.00 | | | | | 17.80 | 2.80 | 2.80 | 0.01 | 15.00 | 15.01 | | | | | | 15.00 | 7.70 | 0.01 | | | | | | | | | | |
| DP-G08-05 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 27.10 | | 7.95 | 4.32 | 165.90 | | | | 10.00 | 2.00 | 0.93 | 0.88 | 0.04 | 1.08 | 1.12 | 0.14 | | 3.90 | 3.40 | 0.50 | 3.80 | 0.55 | 0.01 | 0.05 | 46.00 | 0.05 | 13.00 | 3.60 | 3.70 | 0.26 | 4.30 | 3.30 | |
| | STD. DEV. | 1.41 | | 4.31 | 4.70 | 11.46 | | | | | 0.74 | 0.01 | 0.05 | 0.05 | 0.74 | 0.69 | | | | | | | | | | | | | | | | | | |
| | MIN | 26.10 | 5.60 | 4.90 | 1.00 | 157.80 | | | | 10.00 | 1.48 | 0.92 | 0.85 | 0.01 | 0.55 | 0.63 | 0.14 | | 3.90 | 3.40 | 0.50 | 3.80 | 0.55 | 0.01 | 0.05 | 46.00 | 0.05 | 13.00 | 3.60 | 3.70 | 0.26 | 4.30 | 3.30 | |
| | MAX | 28.10 | 5.70 | 11.00 | 7.64 | 174.00 | | | | 10.00 | 2.52 | 0.93 | 0.92 | 0.08 | 1.60 | 1.61 | 0.14 | | 3.90 | 3.40 | 0.50 | 3.80 | 0.55 | 0.01 | 0.05 | 46.00 | 0.05 | 13.00 | 3.60 | 3.70 | 0.26 | 4.30 | 3.30 | |
| DP-G09-11 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 26.73 | | 9.45 | 2.13 | 287.67 | | | | 25.50 | 7.21 | 0.66 | 0.65 | 0.01 | 6.55 | 6.56 | 0.22 | | | 1.30 | 0.04 | 10.67 | 6.55 | 0.01 | 0.01 | 51.00 | 0.05 | 27.00 | 1.10 | 5.60 | 0.26 | 7.00 | 12.00 | |
| | STD. DEV. | 2.38 | | 2.19 | 0.75 | 10.26 | | | | 21.92 | 4.23 | 0.62 | 0.62 | 0.00 | 3.61 | 3.61 | 0.16 | | | | | 2.08 | 3.61 | 0.00 | | | | | | | | | | |
| | MIN | 24.00 | 5.40 | 7.90 | 1.40 | 279.00 | | | | 10.00 | 4.22 | 0.22 | 0.21 | 0.01 | 4.00 | 4.01 | 0.11 | | | 1.30 | 0.04 | 9.00 | 4.00 | 0.01 | 0.01 | 51.00 | 0.05 | 27.00 | 1.10 | 5.60 | 0.26 | 7.00 | 12.00 | |
| | MAX | 28.30 | 5.60 | 11.00 | 2.90 | 299.00 | | | | 41.00 | 10.20 | 1.10 | 1.09 | 0.01 | 9.10 | 9.11 | 0.33 | | | 1.30 | 0.04 | 13.00 | 9.10 | 0.01 | 0.01 | 51.00 | 0.05 | 27.00 | 1.10 | 5.60 | 0.26 | 7.00 | 12.00 | |
| DP-G11-8 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.33 | | 3.50 | 1.03 | 308.67 | | | | 10.00 | 12.65 | 2.25 | 2.24 | 0.01 | 10.40 | 10.41 | 0.06 | | | | | 22.00 | 8.80 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 3.59 | | 0.71 | 0.34 | 12.34 | | | | | 2.19 | 0.07 | 0.07 | 0.00 | 2.26 | 2.27 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 21.20 | 4.60 | 3.00 | 0.70 | 295.00 | | | | 10.00 | 11.10 | 2.20 | 2.19 | 0.01 | 8.80 | 8.81 | 0.06 | | | | | 21.00 | 8.80 | 0.01 | | | | | | | | | | |
| | MAX | 27.60 | 5.10 | 4.00 | 1.38 | 319.00 | | | | 10.00 | 14.20 | 2.30 | 2.29 | 0.02 | 12.00 | 12.02 | 0.06 | | | | | 23.00 | 8.80 | 0.01 | | | | | | | | | | |
| DP-G12-9 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.23 | | 2.33 | 2.07 | 354.33 | | | | 11.00 | 11.63 | 1.80 | 1.98 | 0.03 | 9.83 | 9.86 | 0.19 | | 4.60 | 2.20 | 0.17 | 26.50 | 9.65 | 0.11 | 0.01 | 60.00 | 0.06 | 22.00 | 0.81 | 5.90 | 0.15 | 5.60 | 23.00 | |
| | STD. DEV. | 2.60 | | 0.58 | 1.67 | 11.72 | | | | 1.41 | 0.80 | 0.46 | 0.44 | 0.02 | 0.38 | 0.37 | | | | | | 0.71 | 0.35 | 0.13 | | | | | | | | | | |
| | MIN | 21.40 | 4.20 | 2.00 | 0.20 | 341.00 | | | | 10.00 | 10.80 | 1.40 | 1.66 | 0.01 | 9.40 | 9.44 | 0.19 | | 4.60 | 2.20 | 0.17 | 26.00 | 9.40 | 0.01 | 0.01 | 60.00 | 0.06 | 22.00 | 0.81 | 5.90 | 0.15 | 5.60 | 23.00 | |
| | MAX | 26.50 | 5.00 | 3.00 | 3.40 | 363.00 | | | | 12.00 | 12.40 | 2.30 | 2.29 | 0.04 | 10.10 | 10.11 | 0.19 | | 4.60 | 2.20 | 0.17 | 27.00 | 9.90 | 0.20 | 0.01 | 60.00 | 0.06 | 22.00 | 0.81 | 5.90 | 0.15 | 5.60 | 23.00 | |
| DP-G12-15 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 23.88 | | 5.80 | 0.61 | 472.00 | | | | 10.00 | 23.33 | 2.08 | 1.76 | 0.31 | 21.25 | 21.56 | 1.10 | | 2.90 | 1.75 | 0.04 | 30.50 | 17.50 | 0.01 | 0.03 | 53.50 | 0.07 | 31.00 | 0.34 | 8.00 | 0.20 | 10.70 | 26.50 | |
| | STD. DEV. | 2.16 | | 0.84 | 0.37 | 40.02 | | | | 0.00 | 5.24 | 1.16 | 1.15 | 0.08 | 4.86 | 4.79 | | | 0.99 | 0.49 | 0.03 | 3.54 | 3.54 | 0.00 | 0.02 | 0.71 | 0.02 | 5.66 | 0.23 | 1.56 | 0.02 | 1.84 | 3.54 | |
| | MIN | 21.80 | 4.70 | 5.10 | 0.20 | 415.00 | | | | 10.00 | 16.20 | 1.00 | 0.78 | 0.22 | 15.00 | 15.39 | 1.10 | | 2.20 | 1.40 | 0.01 | 28.00 | 15.00 | 0.01 | 0.01 | 53.00 | 0.06 | 27.00 | 0.17 | 6.90 | 0.18 | 9.40 | 24.00 | |
| | MAX | 26.20 | 5.50 | 6.90 | 0.96 | 508.00 | | | | 10.00 | 28.70 | 3.40 | 3.04 | 0.39 | 26.00 | 26.28 | 1.10 | | 3.60 | 2.10 | 0.06 | 33.00 | 20.00 | 0.01 | 0.04 | 54.00 | 0.09 | 35.00 | 0.50 | 9.10 | 0.21 | 12.00 | 29.00 | |
| DP-G12-18 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.20 | | 8.45 | 0.73 | 400.33 | | | | 26.00 | 18.15 | 1.45 | 1.44 | 0.01 | 16.70 | 16.71 | 1.10 | | 3.30 | 2.10 | 0.06 | 18.35 | 4.40 | 0.01 | 0.06 | 67.00 | 0.10 | 21.00 | 0.59 | 5.70 | 0.11 | 8.90 | 12.00 | |
| | STD. DEV. | 1.83 | | 2.19 | 0.61 | 120.79 | | | | | 17.75 | 0.35 | 0.36 | 0.00 | 17.39 | 17.39 | | | | | | 15.06 | | | | | | | | | | | | |
| | MIN | 22.20 | 4.80 | 6.90 | 0.20 | 264.00 | | | | 26.00 | 5.60 | 1.20 | 1.19 | 0.01 | 4.40 | 4.40 | 1.10 | | 3.30 | 2.10 | 0.06 | 7.70 | 4.40 | 0.01 | 0.06 | 67.00 | 0.10 | 21.00 | 0.59 | 5.70 | 0.11 | 8.90 | 12.00 | |
| | MAX | 25.80 | 5.30 | 10.00 | 1.40 | 494.00 | | | | 26.00 | 30.70 | 1.70 | 1.70 | 0.01 | 29.00 | 29.01 | 1.10 | | 3.30 | 2.10 | 0.06 | 29.00 | 4.40 | 0.01 | 0.06 | 67.00 | 0.10 | 21.00 | 0.59 | 5.70 | 0.11 | 8.90 | 12.00 | |
| DP-G12-21 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.83 | | 7.58 | 0.52 | 413.25 | | | | 10.00 | 18.07 | 2.02 | 1.98 | 0.03 | 16.05 | 16.08 | 0.37 | | 3.50 | 2.00 | 0.01 | 11.90 | 10.10 | 0.01 | 0.01 | 62.00 | 0.07 | 33.00 | 0.18 | 7.60 | 0.18 | 15.00 | 12.00 | |
| | STD. DEV. | 1.37 | | 2.57 | 0.36 | 156.40 | | | | 0.00 | 9.39 | 1.66 | 1.62 | 0.05 | 10.33 | 10.32 | | | | | | 2.97 | 4.10 | 0.00 | | | | | | | | | | |
| | MIN | 22.70 | 4.90 | 4.10 | 0.10 | 271.00 | | | | 10.00 | 8.70 | 0.06 | 0.06 | 0.01 | 7.20 | 7.21 | 0.37 | | 3.50 | 2.00 | 0.01 | 9.80 | 7.20 | 0.01 | 0.01 | 62.00 | 0.07 | 33.00 | 0.18 | 7.60 | 0.18 | 15.00 | 12.00 | |
| | MAX | 25.50 | 5.40 | 10.00 | 0.99 | 636.00 | | | | 10.00 | 31.06 | 4.00 | 3.90 | 0.10 | 31.00 | 31.01 | 0.37 | | 3.50 | 2.00 | 0.01 | 14.00 | 13.00 | 0.01 | 0.01 | 62.00 | 0.07 | 33.00 | 0.18 | 7.60 | 0.18 | 15.00 | 12.00 | |
| DP-G12-24 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.30 | | 6.37 | 0.47 | 320.00 | | | | 30.50 | 12.23 | 1.16 | 1.15 | 0.01 | 11.07 | 11.07 | 0.71 | | 1.80 | 1.40 | 0.19 | 15.00 | 10.60 | 0.01 | 0.01 | 59.00 | 0.07 | 27.00 | 0.04 | 11.00 | 0.18 | 15.00 | 6.70 | |
| | STD. DEV. | 1.42 | | 3.21 | 0.32 | 16.37 | | | | 28.99 | 1.50 | 0.16 | 0.16 | 0.00 | 1.62 | 1.61 | | | | | | 0.00 | 1.98 | 0.00 | | | | | | | | | | |
| | MIN | 22.70 | 4.80 | 3.90 | 0.20 | 302.00 | | | | 10.00 | 10.50 | 0.98 | 0.98 | 0.01 | 9.20 | 9.21 | 0.71 | | 1.80 | 1.40 | 0.19 | 15.00 | 9.20 | 0.01 | 0.01 | 59.00 | 0.07 | 27.00 | 0.04 | 11.00 | 0.18 | 15.00 | 6.70 | |
| | MAX | 25.40 | 5.40 | 10.00 | 0.82 | 334.00 | | | | 51.00 | 13.20 | 1.30 | 1.29 | 0.01 | 12.00 | 12.01 | 0.71 | | 1.80 | 1.40 | 0.19 | 15.00 | 12.00 | 0.01 | 0.01 | 59.00 | 0.07 | 27.00 | 0.04 | 11.00 | 0.18 | 15.00 | 6.70 | |
| DP-G12-27 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.90 | | 7.00 | 0.32 | 363.75 | | | | 10.00 | 14.23 | 1.13 | 1.01 | 0.12 | 13.10 | 13.22 | 0.14 | | | | | 14.00 | 8.30 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.12 | | 2.67 | 0.16 | 99.64 | | | | | 5.02 | 0.41 | 0.52 | 0.11 | 5.43 | 5.54 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 22.90 | 4.70 | 4.90 | 0.10 | 289.00 | | | | 10.00 | 9.80 | 0.68 | 0.46 | 0.01 | 8.30 | 8.31 | 0.14 | | | | | 13.00 | 8.30 | 0.01 | | | | | | | | | | |
| | MAX | 25.30 | 5.40 | 10.00 | 0.45 | 509.00 | | | | 10.00 | 19.68 | 1.50 | 1.49 | 0.22 | 19.00 | 19.22 | 0.14 | | | | | 15.00 | 8.30 | 0.01 | | | | | | | | | | |



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Table G.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | F | $Cl^-$ | $NO_3$-$N^-$ | $NO_2$-$N^-$ | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-H05-7 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.60 | | 15.00 | 6.73 | 136.70 | | | | | 1.75 | 1.70 | 0.10 | 1.60 | 0.05 | 1.65 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.60 | 6.30 | 15.00 | 6.73 | 136.70 | | | | | 1.75 | 1.70 | 0.10 | 1.60 | 0.05 | 1.65 | | | | | | | | | | | | | | | | | | | |
| | MAX | 25.60 | 6.30 | 15.00 | 6.73 | 136.70 | | | | | 1.75 | 1.70 | 0.10 | 1.60 | 0.05 | 1.65 | | | | | | | | | | | | | | | | | | | |
| DP-H06-7 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.17 | | 24.50 | 4.31 | 152.13 | | | | 10.00 | 1.47 | 1.15 | 0.61 | 0.55 | 0.32 | 0.86 | 0.78 | | | | | 4.50 | 0.48 | 0.01 | | | | | | | | | | | |
| | STD. DEV. | 5.21 | | 9.19 | 0.34 | 12.00 | | | | | 0.16 | 0.07 | 0.08 | 0.15 | 0.23 | 0.08 | | | | | | 0.00 | | | | | | | | | | | | | |
| | MIN | 19.80 | 5.80 | 18.00 | 4.04 | 140.00 | | | | 10.00 | 1.35 | 1.10 | 0.55 | 0.44 | 0.15 | 0.80 | 0.78 | | | | | 4.50 | 0.48 | 0.01 | | | | | | | | | | | |
| | MAX | 30.20 | 6.00 | 31.00 | 4.70 | 164.00 | | | | 10.00 | 1.58 | 1.20 | 0.66 | 0.65 | 0.48 | 0.92 | 0.78 | | | | | 4.50 | 0.48 | 0.01 | | | | | | | | | | | |
| DP-H07-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 20.20 | | 2.00 | 1.57 | 151.30 | | | | | 1.69 | 0.71 | 0.66 | 0.05 | 0.98 | 1.03 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 20.20 | 5.10 | 2.00 | 1.57 | 151.30 | | | | | 1.69 | 0.71 | 0.66 | 0.05 | 0.98 | 1.03 | | | | | | | | | | | | | | | | | | | |
| | MAX | 20.20 | 5.10 | 2.00 | 1.57 | 151.30 | | | | | 1.69 | 0.71 | 0.66 | 0.05 | 0.98 | 1.03 | | | | | | | | | | | | | | | | | | | |
| DP-H08-10 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.70 | | 24.00 | 2.97 | 189.00 | | | | | 2.95 | 2.20 | 1.32 | 0.88 | 0.75 | 1.63 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.70 | 6.20 | 24.00 | 2.97 | 189.00 | | | | | 2.95 | 2.20 | 1.32 | 0.88 | 0.75 | 1.63 | | | | | | | | | | | | | | | | | | | |
| | MAX | 22.70 | 6.20 | 24.00 | 2.97 | 189.00 | | | | | 2.95 | 2.20 | 1.32 | 0.88 | 0.75 | 1.63 | | | | | | | | | | | | | | | | | | | |
| DP-H09-12 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.53 | | 6.45 | 1.63 | 257.00 | | | | 50.00 | 6.02 | 1.02 | 1.01 | 0.01 | 5.00 | 5.01 | 0.08 | | | | | 5.65 | 2.60 | 0.01 | | | | | | | | | | | |
| | STD. DEV. | 2.28 | | 0.64 | 1.53 | 14.73 | | | | | 3.65 | 0.25 | 0.25 | 0.00 | 3.39 | 3.39 | | | | | | 0.07 | | | | | | | | | | | | | |
| | MIN | 21.90 | 5.00 | 6.00 | 0.70 | 248.00 | | | | 50.00 | 3.44 | 0.84 | 0.83 | 0.01 | 2.60 | 2.61 | 0.08 | | | | | 5.60 | 2.60 | 0.01 | | | | | | | | | | | |
| | MAX | 25.90 | 5.70 | 6.90 | 3.40 | 274.00 | | | | 50.00 | 8.60 | 1.20 | 1.19 | 0.01 | 7.40 | 7.41 | 0.08 | | | | | 5.70 | 2.60 | 0.01 | | | | | | | | | | | |
| DP-H10-11 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 25.35 | | 21.00 | 5.47 | 216.25 | | | | 10.00 | 2.07 | 0.42 | 0.30 | 0.11 | 1.65 | 1.76 | | | 4.30 | 3.60 | 0.03 | 7.20 | 1.20 | 0.11 | 0.01 | 51.00 | 0.06 | 20.00 | 4.10 | 4.70 | 0.42 | 9.30 | 6.30 | | |
| | STD. DEV. | 4.45 | | 5.66 | 0.52 | 16.62 | | | | | 0.06 | 0.29 | 0.25 | 0.04 | 0.35 | 0.32 | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.20 | 5.60 | 17.00 | 5.10 | 204.50 | | | | 10.00 | 2.02 | 0.21 | 0.12 | 0.09 | 1.40 | 1.54 | | | 4.30 | 3.60 | 0.03 | 7.20 | 1.20 | 0.11 | 0.01 | 51.00 | 0.06 | 20.00 | 4.10 | 4.70 | 0.42 | 9.30 | 6.30 | | |
| | MAX | 28.50 | 6.20 | 25.00 | 5.83 | 228.00 | | | | 10.00 | 2.11 | 0.62 | 0.48 | 0.14 | 1.90 | 1.99 | | | 4.30 | 3.60 | 0.03 | 7.20 | 1.20 | 0.11 | 0.01 | 51.00 | 0.06 | 20.00 | 4.10 | 4.70 | 0.42 | 9.30 | 6.30 | | |
| DP-H12-5 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.90 | | 7.90 | 0.94 | 188.50 | | | | | 2.81 | 0.81 | 0.76 | 0.05 | 2.00 | 2.05 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.90 | 5.60 | 7.90 | 0.94 | 188.50 | | | | | 2.81 | 0.81 | 0.76 | 0.05 | 2.00 | 2.05 | | | | | | | | | | | | | | | | | | | |
| | MAX | 21.90 | 5.60 | 7.90 | 0.94 | 188.50 | | | | | 2.81 | 0.81 | 0.76 | 0.05 | 2.00 | 2.05 | | | | | | | | | | | | | | | | | | | |
| DP-I06-14 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 22.78 | | 6.30 | 0.98 | 222.58 | | | | 10.00 | 3.08 | 0.73 | 0.73 | 0.01 | 2.35 | 2.36 | 0.61 | | 3.10 | 2.45 | 0.13 | 5.70 | 2.35 | 0.01 | 0.09 | 61.50 | 0.05 | 22.00 | 0.08 | 4.90 | 0.18 | 10.20 | 3.10 | | |
| | STD. DEV. | 2.50 | | 0.48 | 0.67 | 12.07 | | | | 0.00 | 0.96 | 0.26 | 0.26 | 0.00 | 0.72 | 0.72 | | | 0.14 | 0.07 | 0.09 | 0.42 | 0.35 | 0.00 | 0.09 | 0.71 | 0.01 | 1.41 | 0.08 | 0.14 | 0.01 | 1.13 | 0.00 | | |
| | MIN | 20.40 | 4.70 | 5.90 | 0.30 | 212.30 | | | | 10.00 | 2.07 | 0.55 | 0.55 | 0.01 | 1.50 | 1.51 | 0.61 | | 3.00 | 2.40 | 0.06 | 5.40 | 2.10 | 0.01 | 0.02 | 61.00 | 0.05 | 21.00 | 0.02 | 4.80 | 0.17 | 9.40 | 3.10 | | |
| | MAX | 25.40 | 5.30 | 7.00 | 1.66 | 240.00 | | | | 10.00 | 4.30 | 1.10 | 1.10 | 0.01 | 3.20 | 3.21 | 0.61 | | 3.20 | 2.50 | 0.19 | 6.00 | 2.60 | 0.01 | 0.15 | 62.00 | 0.06 | 23.00 | 0.14 | 5.00 | 0.19 | 11.00 | 3.10 | | |
| DP-I06-20 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 22.93 | | 3.30 | 0.88 | 354.25 | | | | 10.00 | 15.22 | 1.19 | 1.18 | 0.01 | 14.03 | 14.04 | 0.17 | | 1.70 | 1.80 | 0.10 | 12.50 | 9.10 | 0.01 | 0.05 | 73.00 | 0.05 | 28.00 | 0.05 | 6.70 | 0.06 | 16.00 | 6.90 | | |
| | STD. DEV. | 1.78 | | 1.13 | 0.69 | 16.58 | | | | | 4.01 | 0.77 | 0.77 | 0.00 | 4.53 | 4.53 | | | | | | 0.71 | | | | | | | | | | | | | |
| | MIN | 21.40 | 4.90 | 2.00 | 0.30 | 330.00 | | | | 10.00 | 11.10 | 0.46 | 0.46 | 0.01 | 9.10 | 9.11 | 0.17 | | 1.70 | 1.80 | 0.10 | 12.00 | 9.10 | 0.01 | 0.05 | 73.00 | 0.05 | 28.00 | 0.05 | 6.70 | 0.06 | 16.00 | 6.90 | | |
| | MAX | 24.80 | 5.10 | 4.00 | 1.80 | 367.00 | | | | 10.00 | 19.10 | 2.00 | 1.99 | 0.01 | 18.00 | 18.01 | 0.17 | | 1.70 | 1.80 | 0.10 | 13.00 | 9.10 | 0.01 | 0.05 | 73.00 | 0.05 | 28.00 | 0.05 | 6.70 | 0.06 | 16.00 | 6.90 | | |
| DP-I06-26 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.93 | | 2.67 | 1.00 | 303.50 | | | | | 12.56 | 1.56 | 1.55 | 0.01 | 11.00 | 11.01 | | | 0.75 | 1.00 | | 14.00 | 9.00 | 0.01 | | | | | | | | | | | |
| | STD. DEV. | 1.72 | | 0.58 | 1.00 | 7.05 | | | | | 3.17 | 1.02 | 1.02 | 0.00 | 2.65 | 2.64 | | | | | | 0.00 | | | | | | | | | | | | | |
| | MIN | 21.30 | 4.90 | 2.00 | 0.20 | 295.00 | | | | | 10.38 | 0.38 | 0.38 | 0.01 | 9.00 | 9.01 | | | 0.75 | 1.00 | | 14.00 | 9.00 | 0.01 | | | | | | | | | | | |
| | MAX | 24.60 | 5.01 | 3.00 | 2.36 | 312.00 | | | | | 16.20 | 2.20 | 2.20 | 0.01 | 14.00 | 14.01 | | | 0.75 | 1.00 | | 14.00 | 9.00 | 0.01 | | | | | | | | | | | |
| DP-I07-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 19.40 | | 17.00 | 2.23 | 170.70 | | | | | 1.28 | 0.42 | 0.38 | 0.04 | 0.86 | 0.90 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 19.40 | 5.80 | 17.00 | 2.23 | 170.70 | | | | | 1.28 | 0.42 | 0.38 | 0.04 | 0.86 | 0.90 | | | | | | | | | | | | | | | | | | | |
| | MAX | 19.40 | 5.80 | 17.00 | 2.23 | 170.70 | | | | | 1.28 | 0.42 | 0.38 | 0.04 | 0.86 | 0.90 | | | | | | | | | | | | | | | | | | | |
| DP-I08-5 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.00 | | 15.00 | 4.69 | 191.50 | | | | | 2.44 | 2.10 | 0.90 | 1.20 | 0.34 | 1.54 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.00 | 6.50 | 15.00 | 4.69 | 191.50 | | | | | 2.44 | 2.10 | 0.90 | 1.20 | 0.34 | 1.54 | | | | | | | | | | | | | | | | | | | |
| | MAX | 23.00 | 6.50 | 15.00 | 4.69 | 191.50 | | | | | 2.44 | 2.10 | 0.90 | 1.20 | 0.34 | 1.54 | | | | | | | | | | | | | | | | | | | |
| DPI09-11 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.50 | | 3.00 | 0.77 | 180.60 | | | | | 2.22 | 0.72 | 0.72 | 0.01 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.50 | 5.10 | 3.00 | 0.77 | 180.60 | | | | | 2.22 | 0.72 | 0.72 | 0.01 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | | | |
| | MAX | 21.50 | 5.10 | 3.00 | 0.77 | 180.60 | | | | | 2.22 | 0.72 | 0.72 | 0.01 | 1.50 | 1.51 | | | | | | | | | | | | | | | | | | | |
| DP-I10-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 20.20 | | 27.00 | 5.10 | 173.40 | | | | | 1.75 | 1.40 | 0.74 | 0.66 | 0.35 | 1.01 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 20.20 | 6.20 | 27.00 | 5.10 | 173.40 | | | | | 1.75 | 1.40 | 0.74 | 0.66 | 0.35 | 1.01 | | | | | | | | | | | | | | | | | | | |
| | MAX | 20.20 | 6.20 | 27.00 | 5.10 | 173.40 | | | | | 1.75 | 1.40 | 0.74 | 0.66 | 0.35 | 1.01 | | | | | | | | | | | | | | | | | | | |
| DP-I11-10 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.40 | | 17.00 | 0.90 | 166.80 | | | | | 1.03 | 0.64 | 0.38 | 0.26 | 0.39 | 0.65 | | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.40 | 5.70 | 17.00 | 0.90 | 166.80 | | | | | 1.03 | 0.64 | 0.38 | 0.26 | 0.39 | 0.65 | | | | | | | | | | | | | | | | | | | |
| | MAX | 21.40 | 5.70 | 17.00 | 0.90 | 166.80 | | | | | 1.03 | 0.64 | 0.38 | 0.26 | 0.39 | 0.65 | | | | | | | | | | | | | | | | | | | |



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Table G.1 (con't)
Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-$P^-$ | $SO_4^-$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-I12-6 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.90 | | 8.50 | 0.96 | 120.20 | | | | 10.00 | 4.55 | 0.83 | 0.82 | 0.01 | 3.72 | 3.73 | 0.30 | | | | | 3.85 | 0.34 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.61 | | | 0.80 | 22.43 | | | | | 4.55 | 0.23 | 0.22 | 0.00 | 4.78 | 4.78 | | | | | | 1.06 | | | | | | | | | | | | |
| | MIN | 21.90 | 4.70 | 6.00 | 0.40 | 95.00 | | | | 10.00 | 1.33 | 0.67 | 0.67 | 0.01 | 0.34 | 0.35 | 0.30 | | | | | 3.10 | 0.34 | 0.01 | | | | | | | | | | |
| | MAX | 26.60 | 5.60 | 11.00 | 1.87 | 138.00 | | | | 10.00 | 7.77 | 0.99 | 0.98 | 0.01 | 7.10 | 7.11 | 0.30 | | | | | 4.60 | 0.34 | 0.01 | | | | | | | | | | |
| DP-J08-6 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.50 | | 15.00 | 2.90 | 161.65 | | | | | 3.75 | 3.70 | 0.70 | 3.00 | 0.05 | 3.05 | | | | | | 4.30 | | | | | | | | | | | | |
| | STD. DEV. | 5.37 | | | 0.28 | 30.19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 19.70 | 5.90 | 15.00 | 2.70 | 140.30 | | | | | 3.75 | 3.70 | 0.70 | 3.00 | 0.05 | 3.05 | | | | | | 4.30 | | | | | | | | | | | | |
| | MAX | 27.30 | 6.00 | 15.00 | 3.10 | 183.00 | | | | | 3.75 | 3.70 | 0.70 | 3.00 | 0.05 | 3.05 | | | | | | 4.30 | | | | | | | | | | | | |
| DP-J09-12 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.33 | | 2.50 | 0.70 | 175.67 | | | | | 1.49 | 0.51 | 0.50 | 0.01 | 0.98 | 0.99 | | | | | | 4.90 | 0.86 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.81 | | 0.71 | 0.27 | 11.72 | | | | | 0.08 | 0.08 | 0.08 | 0.00 | 0.17 | 0.17 | | | | | | 0.42 | | | | | | | | | | | | |
| | MIN | 21.10 | 4.80 | 2.00 | 0.40 | 167.00 | | | | | 1.43 | 0.45 | 0.45 | 0.01 | 0.86 | 0.87 | | | | | | 4.60 | 0.86 | 0.01 | | | | | | | | | | |
| | MAX | 26.20 | 5.00 | 3.00 | 0.90 | 189.00 | | | | | 1.55 | 0.57 | 0.56 | 0.01 | 1.10 | 1.11 | | | | | | 5.20 | 0.86 | 0.01 | | | | | | | | | | |
| DP-J09-14 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.55 | | 3.00 | 1.18 | 229.28 | | | | 10.00 | 5.03 | 0.63 | 0.62 | 0.01 | 4.40 | 4.41 | 0.40 | | | | | 6.70 | 2.30 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.27 | | 1.00 | 1.42 | 16.12 | | | | | 2.78 | 0.19 | 0.19 | 0.00 | 2.67 | 2.66 | | | | | | 1.56 | | | | | | | | | | | | |
| | MIN | 21.40 | 4.50 | 2.00 | 0.30 | 210.00 | | | | 10.00 | 2.98 | 0.42 | 0.42 | 0.01 | 2.30 | 2.31 | 0.40 | | | | | 5.60 | 2.30 | 0.01 | | | | | | | | | | |
| | MAX | 26.10 | 4.80 | 4.00 | 3.29 | 249.00 | | | | 10.00 | 8.19 | 0.79 | 0.79 | 0.01 | 7.40 | 7.41 | 0.40 | | | | | 7.80 | 2.30 | 0.01 | | | | | | | | | | |
| DP-J09-20 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 1 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.73 | | 3.67 | 0.68 | 347.78 | | | | 10.00 | 11.87 | 0.64 | 0.63 | 0.01 | 11.23 | 11.24 | 0.73 | | | 0.91 | | 11.50 | 8.60 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.44 | | 1.53 | 0.62 | 22.88 | | | | | 5.51 | 0.58 | 0.58 | 0.00 | 5.00 | 5.00 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.10 | 4.40 | 2.00 | 0.20 | 320.00 | | | | 10.00 | 8.15 | 0.05 | 0.05 | 0.01 | 8.10 | 8.11 | 0.73 | | | 0.91 | | 10.00 | 8.60 | 0.01 | | | | | | | | | | |
| | MAX | 25.50 | 5.00 | 5.00 | 1.57 | 368.00 | | | | 10.00 | 18.20 | 1.20 | 1.20 | 0.01 | 17.00 | 17.01 | 0.73 | | | 0.91 | | 13.00 | 8.60 | 0.01 | | | | | | | | | | |
| DP-J09-26 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.73 | | 3.00 | 0.99 | 298.30 | | | | | 13.03 | 1.30 | 1.29 | 0.01 | 11.73 | 11.74 | | | | | | 13.50 | 9.90 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.28 | | 1.00 | 1.04 | 5.79 | | | | | 4.05 | 0.35 | 0.35 | 0.00 | 3.71 | 3.71 | | | | | | 0.71 | | | | | | | | | | | | |
| | MIN | 22.50 | 4.50 | 2.00 | 0.20 | 292.00 | | | | | 10.40 | 1.10 | 1.09 | 0.01 | 9.30 | 9.31 | | | | | | 13.00 | 9.90 | 0.01 | | | | | | | | | | |
| | MAX | 25.40 | 5.00 | 4.00 | 2.51 | 306.00 | | | | | 17.70 | 1.70 | 1.70 | 0.01 | 16.00 | 16.01 | | | | | | 14.00 | 9.90 | 0.01 | | | | | | | | | | |
| DP-J10-6 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.00 | | 14.00 | 3.48 | 186.60 | | | | | 3.40 | 2.40 | 0.00 | 2.40 | 1.00 | 3.40 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.00 | 5.90 | 14.00 | 3.48 | 186.60 | | | | | 3.40 | 2.40 | 0.00 | 2.40 | 1.00 | 3.40 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.00 | 5.90 | 14.00 | 3.48 | 186.60 | | | | | 3.40 | 2.40 | 0.00 | 2.40 | 1.00 | 3.40 | | | | | | | | | | | | | | | | | | |
| DP-J11-12 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.70 | | 2.00 | 1.02 | 196.70 | | | | 14.00 | 2.65 | 0.55 | 0.55 | 0.01 | 2.10 | 2.11 | 0.01 | | | 1.10 | 0.16 | 6.30 | 2.10 | 0.01 | 0.01 | 65.00 | 0.05 | 16.00 | 0.04 | 4.20 | 0.15 | 3.80 | 2.90 | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.70 | 4.40 | 2.00 | 1.02 | 196.70 | | | | 14.00 | 2.65 | 0.55 | 0.55 | 0.01 | 2.10 | 2.11 | 0.01 | | | 1.10 | 0.16 | 6.30 | 2.10 | 0.01 | 0.01 | 65.00 | 0.05 | 16.00 | 0.04 | 4.20 | 0.15 | 3.80 | 2.90 | |
| | MAX | 23.70 | 4.40 | 2.00 | 1.02 | 196.70 | | | | 14.00 | 2.65 | 0.55 | 0.55 | 0.01 | 2.10 | 2.11 | 0.01 | | | 1.10 | 0.16 | 6.30 | 2.10 | 0.01 | 0.01 | 65.00 | 0.05 | 16.00 | 0.04 | 4.20 | 0.15 | 3.80 | 2.90 | |
| DP-J12-13 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.63 | | 4.50 | 0.71 | 231.00 | | | | | 4.40 | 0.55 | 0.54 | 0.01 | 3.85 | 3.86 | | | | | | 5.55 | 2.10 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.62 | | 0.71 | 0.72 | 22.34 | | | | | 2.57 | 0.09 | 0.10 | 0.00 | 2.47 | 2.47 | | | | | | 0.35 | | | | | | | | | | | | |
| | MIN | 22.90 | 4.60 | 4.00 | 0.30 | 206.00 | | | | | 2.58 | 0.48 | 0.47 | 0.01 | 2.10 | 2.11 | | | | | | 5.30 | 2.10 | 0.01 | | | | | | | | | | |
| | MAX | 26.10 | 4.90 | 5.00 | 1.54 | 249.00 | | | | | 6.21 | 0.61 | 0.61 | 0.01 | 5.60 | 5.61 | | | | | | 5.80 | 2.10 | 0.01 | | | | | | | | | | |
| DP-J12-15 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.23 | | 3.97 | 0.86 | 280.13 | | | | 10.00 | 6.19 | 0.49 | 0.49 | 0.01 | 5.70 | 5.71 | 0.77 | | | | | 6.75 | 3.60 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.02 | | 1.95 | 0.56 | 10.51 | | | | | 2.41 | 0.46 | 0.46 | 0.00 | 2.52 | 2.52 | | | | | | 0.78 | | | | | | | | | | | | |
| | MIN | 22.10 | 4.60 | 2.00 | 0.30 | 265.00 | | | | 10.00 | 4.57 | 0.05 | 0.05 | 0.01 | 3.60 | 3.61 | 0.77 | | | | | 6.20 | 3.60 | 0.01 | | | | | | | | | | |
| | MAX | 26.80 | 5.10 | 5.90 | 1.50 | 287.50 | | | | 10.00 | 8.96 | 0.97 | 0.96 | 0.01 | 8.50 | 8.51 | 0.77 | | | | | 7.30 | 3.60 | 0.01 | | | | | | | | | | |
| DP-J12-20 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2.00 | 0 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.13 | | 4.63 | 0.78 | 344.98 | | | | 14.00 | 9.40 | 0.87 | 0.86 | 0.01 | 8.53 | 8.54 | 0.50 | | 2.60 | 1.40 | 0.01 | 12.00 | 8.90 | 0.01 | 0.01 | 88.00 | 0.05 | 33.00 | 0.02 | 9.60 | 0.06 | 21.00 | 4.30 | |
| | STD. DEV. | 1.24 | | 2.28 | 0.44 | 13.30 | | | | 5.66 | 1.84 | 0.61 | 0.61 | 0.00 | 1.27 | 1.27 | 0.54 | | | 0.14 | | 2.00 | 1.56 | 0.00 | | | | | | | | | | |
| | MIN | 22.90 | 4.90 | 2.00 | 0.40 | 327.00 | | | | 10.00 | 8.08 | 0.28 | 0.27 | 0.01 | 7.80 | 7.81 | 0.11 | | 2.60 | 1.30 | 0.01 | 10.00 | 7.80 | 0.01 | 0.01 | 88.00 | 0.05 | 33.00 | 0.02 | 9.60 | 0.06 | 21.00 | 4.30 | |
| | MAX | 25.70 | 5.60 | 6.00 | 1.20 | 356.00 | | | | 18.00 | 11.50 | 1.50 | 1.50 | 0.01 | 10.00 | 10.01 | 0.88 | | 2.60 | 1.50 | 0.01 | 14.00 | 10.00 | 0.01 | 0.01 | 88.00 | 0.05 | 33.00 | 0.02 | 9.60 | 0.06 | 21.00 | 4.30 | |
| DP-J12-27 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.88 | | 3.33 | 0.67 | 300.53 | | | | | 14.13 | 0.80 | 0.79 | 0.01 | 13.33 | 13.34 | | | | | | 15.00 | 12.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.00 | | 1.15 | 0.44 | 12.68 | | | | | 2.52 | 0.44 | 0.44 | 0.00 | 2.31 | 2.31 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 22.60 | 4.70 | 2.00 | 0.20 | 282.00 | | | | | 12.29 | 0.29 | 0.28 | 0.01 | 12.00 | 12.01 | | | | | | 15.00 | 12.00 | 0.01 | | | | | | | | | | |
| | MAX | 24.90 | 5.10 | 4.00 | 1.14 | 310.00 | | | | | 17.00 | 1.10 | 1.10 | 0.01 | 16.00 | 16.01 | | | | | | 15.00 | 12.00 | 0.01 | | | | | | | | | | |
| DP-K10-7 | n | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.80 | | 6.90 | 2.55 | 169.90 | | | | | 2.33 | 2.00 | 0.40 | 1.60 | 0.33 | 1.93 | | | | | | 5.20 | | | | | | | | | | | | |
| | STD. DEV. | 2.26 | | | 1.76 | 8.63 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.20 | 5.10 | 6.90 | 1.30 | 163.80 | | | | | 2.33 | 2.00 | 0.40 | 1.60 | 0.33 | 1.93 | | | | | | 5.20 | | | | | | | | | | | | |
| | MAX | 27.40 | 6.00 | 6.90 | 3.79 | 176.00 | | | | | 2.33 | 2.00 | 0.40 | 1.60 | 0.33 | 1.93 | | | | | | 5.20 | | | | | | | | | | | | |
| DP-K11-13 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.10 | | 4.00 | 1.84 | 168.30 | | | | | 1.89 | 0.59 | 0.59 | 0.01 | 1.30 | 1.31 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.10 | 4.90 | 4.00 | 1.84 | 168.30 | | | | | 1.89 | 0.59 | 0.59 | 0.01 | 1.30 | 1.31 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.10 | 4.90 | 4.00 | 1.84 | 168.30 | | | | | 1.89 | 0.59 | 0.59 | 0.01 | 1.30 | 1.31 | | | | | | | | | | | | | | | | | | |
| DP-K12-5 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 1 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 25.77 | | 8.45 | 0.90 | 69.77 | | | | 32.50 | 0.71 | 0.54 | 0.49 | 0.05 | 0.17 | 0.22 | 0.41 | | | 7.30 | 0.08 | 2.93 | 0.17 | 0.01 | 0.01 | 11.00 | 0.05 | 5.50 | 2.20 | 0.86 | 0.21 | 0.40 | 1.90 | |
| | STD. DEV. | 3.00 | | 2.19 | 0.44 | 10.35 | | | | 31.82 | 0.15 | 0.33 | 0.27 | 0.06 | 0.18 | 0.12 | 0.09 | | | | | 1.31 | 0.18 | 0.00 | | | | | | | | | | |
| | MIN | 22.30 | 4.70 | 6.90 | 0.60 | 59.30 | | | | 10.00 | 0.60 | 0.31 | 0.30 | 0.01 | 0.04 | 0.13 | 0.34 | | | 7.30 | 0.08 | 1.90 | 0.04 | 0.01 | 0.01 | 11.00 | 0.05 | 5.50 | 2.20 | 0.86 | 0.21 | 0.40 | 1.90 | |
| | MAX | 27.50 | 5.60 | 10.00 | 1.40 | 80.00 | | | | 55.00 | 0.81 | 0.77 | 0.68 | 0.09 | 0.29 | 0.30 | 0.47 | | | 7.30 | 0.08 | 4.40 | 0.29 | 0.01 | 0.01 | 11.00 | 0.05 | 5.50 | 2.20 | 0.86 | 0.21 | 0.40 | 1.90 | |



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# Table G.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_2$-N | $NO_3$-N | $PO_4$-P | $SO_4$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-M07-15 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.70 | | 5.97 | 0.60 | 281.67 | | | | | 6.26 | 0.41 | 0.41 | 0.01 | 5.85 | 5.85 | | | | | | 9.10 | 5.10 | 0.24 | | | | | | | | | | |
| | STD. DEV. | 1.95 | | 4.00 | 0.27 | 19.66 | | | | | 0.61 | 0.20 | 0.20 | 0.00 | 0.45 | 0.45 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.20 | 4.80 | 2.00 | 0.30 | 267.00 | | | | | 5.55 | 0.21 | 0.20 | 0.01 | 5.34 | 5.35 | | | | | | 9.10 | 5.10 | 0.24 | | | | | | | | | | |
| | MAX | 25.90 | 5.20 | 10.00 | 0.80 | 304.00 | | | | | 6.62 | 0.61 | 0.61 | 0.01 | 6.20 | 6.21 | | | | | | 9.10 | 5.10 | 0.24 | | | | | | | | | | |
| DP-M07-21 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.08 | | 4.67 | 0.52 | 363.48 | | | | 10.00 | 13.18 | 0.84 | 0.84 | 0.01 | 12.33 | 12.34 | 1.10 | | | | | 13.50 | 12.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.18 | | 4.62 | 0.28 | 9.91 | | | | | 0.89 | 0.67 | 0.67 | 0.00 | 0.58 | 0.58 | | | | | | 0.71 | | | | | | | | | | | | |
| | MIN | 22.50 | 4.90 | 2.00 | 0.30 | 351.00 | | | | 10.00 | 12.17 | 0.17 | 0.16 | 0.01 | 12.00 | 12.01 | 1.10 | | | | | 13.00 | 12.00 | 0.01 | | | | | | | | | | |
| | MAX | 25.30 | 5.20 | 10.00 | 0.88 | 374.90 | | | | 10.00 | 13.86 | 1.50 | 1.50 | 0.01 | 13.00 | 13.01 | 1.10 | | | | | 14.00 | 12.00 | 0.01 | | | | | | | | | | |
| DP-M07-27 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.93 | | 5.97 | 0.49 | 296.88 | | | | | 9.25 | 1.05 | 1.05 | 0.01 | 8.20 | 8.21 | 0.09 | | | | | 12.50 | 8.10 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.09 | | 4.00 | 0.41 | 6.36 | | | | 0.00 | 0.89 | 1.03 | 1.03 | 0.00 | 0.36 | 0.36 | | | | | | 0.71 | | | | | | | | | | | | |
| | MIN | 22.50 | 4.80 | 2.00 | 0.20 | 290.00 | | | | 10.00 | 8.32 | 0.22 | 0.21 | 0.01 | 7.90 | 7.91 | 0.09 | | | | | 12.00 | 8.10 | 0.01 | | | | | | | | | | |
| | MAX | 25.10 | 5.20 | 10.00 | 1.08 | 303.00 | | | | 10.00 | 10.10 | 2.20 | 2.20 | 0.01 | 8.60 | 8.61 | 0.09 | | | | | 13.00 | 8.10 | 0.01 | | | | | | | | | | |
| DP-M12-10 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.73 | | 9.45 | 1.51 | 166.87 | | | | 10.00 | 1.40 | 0.70 | 0.63 | 0.06 | 0.71 | 0.77 | 0.13 | | | | | 4.60 | 0.37 | 0.15 | | | | | | | | | | |
| | STD. DEV. | 1.55 | | 0.78 | 0.53 | 8.78 | | | | | 0.13 | 0.13 | 0.16 | 0.03 | 0.26 | 0.29 | | | | | | 0.28 | | | | | | | | | | | | |
| | MIN | 24.00 | 5.10 | 8.90 | 0.90 | 161.60 | | | | 10.00 | 1.31 | 0.60 | 0.52 | 0.05 | 0.52 | 0.57 | 0.13 | | | | | 4.40 | 0.37 | 0.15 | | | | | | | | | | |
| | MAX | 27.00 | 5.70 | 10.00 | 1.83 | 177.00 | | | | 10.00 | 1.49 | 0.79 | 0.74 | 0.08 | 0.89 | 0.97 | 0.13 | | | | | 4.80 | 0.37 | 0.15 | | | | | | | | | | |
| DP-N12-14 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.23 | | 3.00 | 0.67 | 175.00 | | | | 10.00 | 2.52 | 0.46 | 0.46 | 0.01 | 2.06 | 2.06 | 0.35 | | 2.00 | 1.90 | 0.07 | 4.70 | 1.30 | 0.01 | 0.01 | 53.00 | 0.05 | 17.00 | 0.10 | 3.40 | 0.17 | 6.00 | 2.70 | |
| | STD. DEV. | 2.07 | | 1.00 | 0.51 | 7.91 | | | | | 2.23 | 0.45 | 0.45 | 0.00 | 1.79 | 1.79 | | | | | | 0.14 | | | | | | | | | | | | |
| | MIN | 22.10 | 4.40 | 2.00 | 0.20 | 163.40 | | | | 10.00 | 1.03 | 0.15 | 0.14 | 0.01 | 0.77 | 0.78 | 0.35 | | 2.00 | 1.90 | 0.07 | 4.60 | 1.30 | 0.01 | 0.01 | 53.00 | 0.05 | 17.00 | 0.10 | 3.40 | 0.17 | 6.00 | 2.70 | |
| | MAX | 26.50 | 5.00 | 4.00 | 1.28 | 181.00 | | | | 10.00 | 5.08 | 0.98 | 0.98 | 0.01 | 4.10 | 4.11 | 0.35 | | 2.00 | 1.90 | 0.07 | 4.80 | 1.30 | 0.01 | 0.01 | 53.00 | 0.05 | 17.00 | 0.10 | 3.40 | 0.17 | 6.00 | 2.70 | |
| DP-N12-18 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.03 | | 5.00 | 0.60 | 243.67 | | | | 10.00 | 5.84 | 0.84 | 0.83 | 0.01 | 5.00 | 5.01 | 1.10 | | | | | 6.95 | 3.90 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.76 | | 1.41 | 0.44 | 8.50 | | | | | 1.93 | 0.37 | 0.38 | 0.00 | 1.56 | 1.55 | | | | | | 1.06 | | | | | | | | | | | | |
| | MIN | 23.20 | 4.70 | 4.00 | 0.30 | 234.00 | | | | 10.00 | 4.47 | 0.57 | 0.56 | 0.01 | 3.90 | 3.91 | 1.10 | | | | | 6.20 | 3.90 | 0.01 | | | | | | | | | | |
| | MAX | 26.70 | 5.10 | 6.00 | 1.11 | 250.00 | | | | 10.00 | 7.20 | 1.10 | 1.10 | 0.01 | 6.10 | 6.11 | 1.10 | | | | | 7.70 | 3.90 | 0.01 | | | | | | | | | | |
| DP-N12-21 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 24.13 | | 4.78 | 0.86 | 302.03 | | | | 10.00 | 6.02 | 0.49 | 0.48 | 0.01 | 5.53 | 5.53 | 0.09 | | 2.70 | 1.60 | 0.13 | 9.60 | 5.90 | 0.01 | 0.02 | 84.50 | 0.05 | 31.50 | 0.03 | 8.60 | 0.09 | 16.00 | 4.50 | |
| | STD. DEV. | 1.65 | | 1.88 | 0.79 | 16.11 | | | | 0.00 | 0.99 | 0.25 | 0.25 | 0.00 | 1.16 | 1.16 | | | 0.14 | 0.85 | 0.10 | 0.28 | 1.13 | 0.00 | 0.01 | 0.71 | 0.00 | 0.71 | 0.02 | 0.57 | 0.00 | 1.41 | 0.28 | |
| | MIN | 22.30 | 4.80 | 2.00 | 0.20 | 279.00 | | | | 10.00 | 4.70 | 0.13 | 0.12 | 0.01 | 4.10 | 4.11 | 0.09 | | 2.60 | 1.00 | 0.06 | 9.40 | 5.10 | 0.01 | 0.01 | 84.00 | 0.05 | 31.00 | 0.02 | 8.20 | 0.09 | 15.00 | 4.30 | |
| | MAX | 26.00 | 5.30 | 6.00 | 1.91 | 316.00 | | | | 10.00 | 6.83 | 0.69 | 0.69 | 0.01 | 6.70 | 6.71 | 0.09 | | 2.80 | 2.20 | 0.20 | 9.80 | 6.70 | 0.01 | 0.03 | 85.00 | 0.05 | 32.00 | 0.04 | 9.00 | 0.09 | 17.00 | 4.70 | |
| DP-N12-24 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.90 | | 5.45 | 0.36 | 353.67 | | | | 67.00 | 12.68 | 0.68 | 0.67 | 0.01 | 12.00 | 12.01 | 0.13 | | 2.30 | 2.20 | 0.09 | 15.00 | 12.00 | 0.01 | 0.05 | 83.00 | 0.05 | 31.00 | 0.10 | 11.00 | 0.04 | 23.00 | 6.70 | |
| | STD. DEV. | 0.92 | | 0.78 | 0.37 | 5.51 | | | | | 0.88 | 0.88 | 0.89 | 0.00 | 0.00 | 0.00 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 24.10 | 4.60 | 4.90 | 0.10 | 348.00 | | | | 67.00 | 12.05 | 0.05 | 0.04 | 0.01 | 12.00 | 12.01 | 0.13 | | 2.30 | 2.20 | 0.09 | 14.00 | 12.00 | 0.01 | 0.05 | 83.00 | 0.05 | 31.00 | 0.10 | 11.00 | 0.04 | 23.00 | 6.70 | |
| | MAX | 25.90 | 5.20 | 6.00 | 0.78 | 359.00 | | | | 67.00 | 13.30 | 1.30 | 1.30 | 0.01 | 12.00 | 12.01 | 0.13 | | 2.30 | 2.20 | 0.09 | 16.00 | 12.00 | 0.01 | 0.05 | 83.00 | 0.05 | 31.00 | 0.10 | 11.00 | 0.04 | 23.00 | 6.70 | |
| DP-N12-27 | n | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 1 | 0 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 23.98 | | 3.78 | 0.88 | 340.40 | | | | 10.00 | 14.85 | 1.70 | 1.69 | 0.01 | 13.15 | 13.16 | 0.31 | | 1.77 | 1.83 | 0.13 | 14.00 | 10.80 | 0.01 | 0.02 | 71.50 | 0.05 | 29.50 | 0.03 | 9.65 | 0.06 | 20.50 | 6.40 | |
| | STD. DEV. | 1.77 | | 1.53 | 1.07 | 18.15 | | | | 0.00 | 4.88 | 0.69 | 0.68 | 0.00 | 4.67 | 4.67 | | | 0.38 | 0.47 | 0.10 | 1.41 | 1.70 | 0.00 | 0.01 | 17.68 | 0.00 | 3.54 | 0.01 | 1.91 | 0.03 | 2.12 | 1.70 | |
| | MIN | 21.60 | 4.70 | 2.00 | 0.10 | 323.00 | | | | 10.00 | 11.00 | 0.99 | 0.99 | 0.01 | 9.60 | 9.61 | 0.31 | | 1.50 | 1.30 | 0.06 | 13.00 | 9.60 | 0.01 | 0.01 | 59.00 | 0.05 | 27.00 | 0.02 | 8.30 | 0.04 | 19.00 | 5.20 | |
| | MAX | 25.80 | 5.10 | 5.20 | 2.45 | 365.00 | | | | 10.00 | 21.80 | 2.60 | 2.59 | 0.01 | 20.00 | 20.01 | 0.31 | | 2.20 | 2.20 | 0.20 | 15.00 | 12.00 | 0.01 | 0.02 | 84.00 | 0.05 | 32.00 | 0.04 | 11.00 | 0.09 | 22.00 | 7.60 | |
| DP-O10-12 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.00 | | 2.00 | 1.22 | 186.15 | | | | | 0.19 | 0.14 | 0.14 | 0.01 | 0.05 | 0.06 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | 1.27 | | 0.00 | 0.13 | 0.35 | | | | | 0.04 | 0.06 | 0.06 | 0.00 | 0.01 | 0.01 | | | | | | | | | | | | | | | | | | |
| | MIN | 21.10 | 4.30 | 2.00 | 1.13 | 185.90 | | | | | 0.16 | 0.10 | 0.10 | 0.01 | 0.04 | 0.05 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.90 | 4.30 | 2.00 | 1.31 | 186.40 | | | | | 0.22 | 0.18 | 0.18 | 0.01 | 0.06 | 0.07 | | | | | | | | | | | | | | | | | | |
| DP-O10-18 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.53 | | 3.30 | 0.80 | 271.90 | | | | 10.00 | 5.02 | 0.99 | 0.98 | 0.01 | 4.03 | 4.03 | 0.08 | | | | | 6.65 | 0.47 | 0.11 | | | | | | | | | | |
| | STD. DEV. | 2.20 | | 2.25 | 0.16 | 76.82 | | | | | 4.36 | 0.97 | 0.97 | 0.00 | 3.46 | 3.46 | | | | | | 4.31 | | | | | | | | | | | | |
| | MIN | 22.20 | 4.20 | 2.00 | 0.70 | 160.00 | | | | 10.00 | 0.91 | 0.33 | 0.32 | 0.01 | 0.58 | 0.59 | 0.08 | | | | | 3.60 | 0.47 | 0.11 | | | | | | | | | | |
| | MAX | 27.30 | 5.30 | 5.90 | 1.04 | 335.00 | | | | 10.00 | 9.60 | 2.10 | 2.10 | 0.01 | 7.50 | 7.51 | 0.08 | | | | | 9.70 | 0.47 | 0.11 | | | | | | | | | | |
| DP-O10-24 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.38 | | 5.00 | 0.64 | 297.05 | | | | 10.00 | 8.28 | 1.65 | 1.63 | 0.02 | 6.62 | 6.65 | 0.14 | | 2.40 | 2.60 | 0.07 | 10.90 | 3.80 | 0.01 | 0.05 | 77.00 | 0.05 | 32.00 | 0.05 | 7.20 | 0.16 | 14.00 | 3.50 | |
| | STD. DEV. | 2.05 | | 4.36 | 0.27 | 86.33 | | | | | 10.70 | 2.39 | 2.40 | 0.03 | 8.33 | 8.32 | | | | | | 5.80 | | | | | | | | | | | | |
| | MIN | 21.80 | 4.20 | 2.00 | 0.30 | 182.20 | | | | 10.00 | 0.16 | 0.09 | 0.09 | 0.01 | 0.07 | 0.08 | 0.14 | | 2.40 | 2.60 | 0.07 | 6.80 | 3.80 | 0.01 | 0.05 | 77.00 | 0.05 | 32.00 | 0.05 | 7.20 | 0.16 | 14.00 | 3.50 | |
| | MAX | 26.80 | 5.10 | 10.00 | 0.95 | 366.00 | | | | 10.00 | 20.40 | 4.40 | 4.40 | 0.06 | 16.00 | 16.01 | 0.14 | | 2.40 | 2.60 | 0.07 | 15.00 | 3.80 | 0.01 | 0.05 | 77.00 | 0.05 | 32.00 | 0.05 | 7.20 | 0.16 | 14.00 | 3.50 | |
| DP-Q15-15 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.73 | | 2.67 | 1.21 | 301.47 | | | | | 4.39 | 0.39 | 0.38 | 0.01 | 4.00 | 4.01 | | | | | | 9.50 | 5.60 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 3.66 | | 0.58 | 0.96 | 15.59 | | | | | 2.28 | 0.10 | 0.09 | 0.00 | 2.19 | 2.19 | | | | | | | | | | | | | | | | | | |
| | MIN | 20.70 | 4.60 | 2.00 | 0.61 | 285.00 | | | | | 1.79 | 0.29 | 0.29 | 0.01 | 1.50 | 1.51 | | | | | | 9.50 | 5.60 | 0.01 | | | | | | | | | | |
| | MAX | 27.80 | 4.80 | 3.00 | 2.31 | 316.00 | | | | | 6.08 | 0.48 | 0.47 | 0.01 | 5.60 | 5.61 | | | | | | 9.50 | 5.60 | 0.01 | | | | | | | | | | |
| DP-Q15-21 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.48 | | 4.30 | 0.74 | 329.40 | | | | | 8.13 | 0.60 | 0.59 | 0.01 | 7.53 | 7.54 | | | | | | 14.00 | 9.10 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.78 | | 2.04 | 0.50 | 19.27 | | | | | 1.96 | 0.27 | 0.27 | 0.00 | 2.21 | 2.22 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 22.60 | 4.80 | 2.00 | 0.30 | 317.00 | | | | | 5.90 | 0.41 | 0.41 | 0.01 | 5.00 | 5.01 | | | | | | 13.00 | 9.10 | 0.01 | | | | | | | | | | |
| | MAX | 26.60 | 5.20 | 5.90 | 1.44 | 358.00 | | | | | 9.58 | 0.90 | 0.90 | 0.01 | 9.10 | 9.11 | | | | | | 15.00 | 9.10 | 0.01 | | | | | | | | | | |



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# Table G.1 (con't)
# Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_2$-N | $NO_3$-N | $PO_4$-P | $SO_4$ | B | Ca | Fe | Mg | Mn | K | Na | |
| DP-Q15-26 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.20 | | 5.97 | 0.75 | 333.75 | | | | | 9.35 | 0.68 | 0.67 | 0.02 | 8.67 | 8.68 | | | | | | 14.00 | 11.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.33 | | 4.00 | 0.48 | 38.22 | | | | | 1.96 | 0.22 | 0.20 | 0.02 | 2.17 | 2.16 | | | | | | 1.41 | | | | | | | | | | | | |
| | MIN | 21.50 | 4.80 | 2.00 | 0.30 | 293.00 | | | | | 7.59 | 0.46 | 0.45 | 0.01 | 6.70 | 6.74 | | | | | | 13.00 | 11.00 | 0.01 | | | | | | | | | | |
| | MAX | 26.80 | 5.20 | 10.00 | 1.33 | 385.00 | | | | | 11.46 | 0.89 | 0.85 | 0.04 | 11.00 | 11.01 | | | | | | 15.00 | 11.00 | 0.01 | | | | | | | | | | |
| **Standpipe Piezometers** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PZ01-BKG-9 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 22.80 | | 2.00 | 6.78 | 146.80 | | | | | 0.37 | 0.36 | 0.25 | 0.11 | 0.01 | 0.12 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 22.80 | 4.60 | 2.00 | 6.78 | 146.80 | | | | | 0.37 | 0.36 | 0.25 | 0.11 | 0.01 | 0.12 | | | | | | | | | | | | | | | | | | |
| | MAX | 22.80 | 4.60 | 2.00 | 6.78 | 146.80 | | | | | 0.37 | 0.36 | 0.25 | 0.11 | 0.01 | 0.12 | | | | | | | | | | | | | | | | | | |
| PZ02-P02-9 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.40 | | 2.00 | 4.63 | 73.60 | | | | | 1.73 | 0.96 | 0.96 | 0.01 | 0.77 | 0.78 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.40 | 4.70 | 2.00 | 4.63 | 73.60 | | | | | 1.73 | 0.96 | 0.96 | 0.01 | 0.77 | 0.78 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.40 | 4.70 | 2.00 | 4.63 | 73.60 | | | | | 1.73 | 0.96 | 0.96 | 0.01 | 0.77 | 0.78 | | | | | | | | | | | | | | | | | | |
| PZ03-H11-6 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 26.93 | | 2.00 | 2.69 | 146.47 | | | | 12.50 | 2.13 | 1.13 | 1.51 | 0.01 | 1.01 | 1.02 | 0.01 | | 4.80 | 3.40 | 0.14 | 7.35 | 0.76 | 0.01 | 0.01 | 44.00 | 0.05 | 11.00 | 0.02 | 2.70 | 0.05 | 4.80 | 5.80 | |
| | STD. DEV. | 1.31 | | 0.00 | 1.17 | 16.10 | | | | 3.54 | 1.45 | 1.04 | 1.12 | 0.01 | 0.44 | 0.43 | | | | | | 1.63 | 0.13 | 0.00 | | | | | | | | | | |
| | MIN | 25.90 | 4.40 | 2.00 | 1.40 | 136.00 | | | | 10.00 | 1.19 | 0.34 | 0.72 | 0.01 | 0.67 | 0.69 | 0.01 | | 4.80 | 3.40 | 0.14 | 6.20 | 0.67 | 0.01 | 0.01 | 44.00 | 0.05 | 11.00 | 0.02 | 2.70 | 0.05 | 4.80 | 5.80 | |
| | MAX | 28.40 | 4.80 | 2.00 | 3.68 | 165.00 | | | | 15.00 | 3.80 | 2.30 | 2.29 | 0.02 | 1.50 | 1.51 | 0.01 | | 4.80 | 3.40 | 0.14 | 8.50 | 0.85 | 0.01 | 0.01 | 44.00 | 0.05 | 11.00 | 0.02 | 2.70 | 0.05 | 4.80 | 5.80 | |
| PZ04-BKG-9 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 0 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 24.35 | | 6.67 | 2.71 | 92.78 | | | | 19.50 | 2.41 | 0.47 | 0.45 | 0.02 | 1.94 | 1.96 | 0.02 | | 3.15 | 3.07 | 0.17 | 2.80 | 2.90 | 0.01 | 0.03 | 11.00 | 0.05 | 8.80 | 0.09 | 2.20 | 0.06 | 0.79 | 1.75 | |
| | STD. DEV. | 3.26 | | 1.56 | 1.54 | 21.61 | | | | 12.02 | 3.51 | 0.43 | 0.43 | 0.02 | 3.09 | 3.09 | 0.01 | | 0.35 | 0.64 | 0.11 | 0.95 | 3.68 | 0.00 | 0.02 | 1.41 | 0.00 | 4.53 | 0.03 | 0.85 | 0.01 | 0.21 | 0.07 | |
| | MIN | 21.60 | 5.00 | 5.00 | 1.10 | 72.90 | | | | 11.00 | 0.12 | 0.11 | 0.11 | 0.01 | 0.01 | 0.02 | 0.01 | | 2.90 | 2.60 | 0.09 | 1.70 | 0.30 | 0.01 | 0.01 | 10.00 | 0.05 | 5.60 | 0.07 | 1.60 | 0.05 | 0.64 | 1.70 | |
| | MAX | 28.20 | 5.60 | 8.10 | 4.20 | 120.00 | | | | 28.00 | 6.45 | 0.95 | 0.93 | 0.04 | 5.50 | 5.52 | 0.02 | | 3.40 | 3.80 | 0.24 | 3.40 | 5.50 | 0.01 | 0.04 | 12.00 | 0.05 | 12.00 | 0.11 | 2.80 | 0.07 | 0.94 | 1.80 | |
| PZ05-BKG-9 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.80 | | 6.90 | 4.38 | 98.80 | | | | | 4.80 | 1.20 | 1.17 | 0.03 | 3.60 | 3.63 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.80 | 5.10 | 6.90 | 4.38 | 98.80 | | | | | 4.80 | 1.20 | 1.17 | 0.03 | 3.60 | 3.63 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.80 | 5.10 | 6.90 | 4.38 | 98.80 | | | | | 4.80 | 1.20 | 1.17 | 0.03 | 3.60 | 3.63 | | | | | | | | | | | | | | | | | | |
| PZ06-BKG-12 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.10 | | 3.00 | 5.41 | 59.40 | | | | | 0.26 | 0.25 | 0.21 | 0.04 | 0.01 | 0.05 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.10 | 4.70 | 3.00 | 5.41 | 59.40 | | | | | 0.26 | 0.25 | 0.21 | 0.04 | 0.01 | 0.05 | | | | | | | | | | | | | | | | | | |
| | MAX | 23.10 | 4.70 | 3.00 | 5.41 | 59.40 | | | | | 0.26 | 0.25 | 0.21 | 0.04 | 0.01 | 0.05 | | | | | | | | | | | | | | | | | | |
| PZ07-D05-7 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 26.03 | | 4.00 | 1.26 | 290.20 | | | | 22.00 | 8.25 | 1.45 | 1.43 | 0.02 | 6.80 | 6.82 | 0.01 | | | | | 25.00 | 10.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.10 | | 1.41 | 1.10 | 69.73 | | | | | 4.31 | 0.21 | 0.24 | 0.03 | 4.53 | 4.55 | | | | | | 5.66 | | | | | | | | | | | | |
| | MIN | 25.30 | 4.60 | 3.00 | 0.39 | 221.60 | | | | 22.00 | 5.20 | 1.30 | 1.26 | 0.01 | 3.60 | 3.61 | 0.01 | | | | | 21.00 | 10.00 | 0.01 | | | | | | | | | | |
| | MAX | 27.30 | 4.70 | 5.00 | 2.50 | 361.00 | | | | 22.00 | 11.30 | 1.60 | 1.60 | 0.04 | 10.00 | 10.04 | 0.01 | | | | | 29.00 | 10.00 | 0.01 | | | | | | | | | | |
| PZ08-FG7-12 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.60 | | 2.00 | 3.33 | 126.90 | | | | | 2.13 | 1.30 | 1.30 | 0.01 | 0.83 | 0.84 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 23.60 | 4.80 | 2.00 | 3.33 | 126.90 | | | | | 2.13 | 1.30 | 1.30 | 0.01 | 0.83 | 0.84 | | | | | | | | | | | | | | | | | | |
| | MAX | 23.60 | 4.80 | 2.00 | 3.33 | 126.90 | | | | | 2.13 | 1.30 | 1.30 | 0.01 | 0.83 | 0.84 | | | | | | | | | | | | | | | | | | |
| PZ09-I08-5 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.90 | | 2.00 | 6.03 | 94.20 | | | | | 1.99 | 1.40 | 1.40 | 0.01 | 0.59 | 0.60 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.90 | 5.20 | 2.00 | 6.03 | 94.20 | | | | | 1.99 | 1.40 | 1.40 | 0.01 | 0.59 | 0.60 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.90 | 5.20 | 2.00 | 6.03 | 94.20 | | | | | 1.99 | 1.40 | 1.40 | 0.01 | 0.59 | 0.60 | | | | | | | | | | | | | | | | | | |
| PZ10-CD6-13 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.60 | | 26.00 | 2.85 | 524.00 | | | | | 7.70 | 2.50 | 2.45 | 0.05 | 5.20 | 5.25 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 25.60 | 6.00 | 26.00 | 2.85 | 524.00 | | | | | 7.70 | 2.50 | 2.45 | 0.05 | 5.20 | 5.25 | | | | | | | | | | | | | | | | | | |
| | MAX | 25.60 | 6.00 | 26.00 | 2.85 | 524.00 | | | | | 7.70 | 2.50 | 2.45 | 0.05 | 5.20 | 5.25 | | | | | | | | | | | | | | | | | | |
| PZ11-E09-10 | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 26.47 | | 19.13 | 3.24 | 440.27 | | | | 75.00 | 18.93 | 1.93 | 1.48 | 0.21 | 17.00 | 17.21 | 0.02 | | 2.20 | 1.50 | 0.04 | 36.50 | 15.00 | 0.01 | 0.01 | 59.00 | 0.09 | 34.00 | 0.29 | 8.90 | 0.23 | 10.00 | 30.00 | |
| | STD. DEV. | 0.99 | | 14.66 | 2.06 | 23.61 | | | | 91.92 | 4.99 | 0.47 | 0.18 | 0.24 | 4.58 | 4.78 | | | | | | 0.71 | 4.24 | 0.00 | | | | | | | | | | |
| | MIN | 25.80 | 5.30 | 9.40 | 1.80 | 413.00 | | | | 10.00 | 13.40 | 1.40 | 1.35 | 0.05 | 12.00 | 12.05 | 0.02 | | 2.20 | 1.50 | 0.04 | 36.00 | 12.00 | 0.01 | 0.01 | 59.00 | 0.09 | 34.00 | 0.29 | 8.90 | 0.23 | 10.00 | 30.00 | |
| | MAX | 27.60 | 5.70 | 36.00 | 5.60 | 454.00 | | | | 140.00 | 23.10 | 2.30 | 1.61 | 0.49 | 21.00 | 21.49 | 0.02 | | 2.20 | 1.50 | 0.04 | 37.00 | 18.00 | 0.01 | 0.01 | 59.00 | 0.09 | 34.00 | 0.29 | 8.90 | 0.23 | 10.00 | 30.00 | |
| PZ13-F04-8 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 21.40 | | 7.90 | 2.48 | 125.50 | | | | | 2.15 | 0.75 | 0.71 | 0.04 | 1.40 | 1.44 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 21.40 | 5.60 | 7.90 | 2.48 | 125.50 | | | | | 2.15 | 0.75 | 0.71 | 0.04 | 1.40 | 1.44 | | | | | | | | | | | | | | | | | | |
| | MAX | 21.40 | 5.60 | 7.90 | 2.48 | 125.50 | | | | | 2.15 | 0.75 | 0.71 | 0.04 | 1.40 | 1.44 | | | | | | | | | | | | | | | | | | |
| PZ14-G13-7 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.50 | | 15.00 | 1.04 | 246.10 | | | | | 7.59 | 0.19 | 0.19 | 0.01 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.50 | 5.80 | 15.00 | 1.04 | 246.10 | | | | | 7.59 | 0.19 | 0.19 | 0.01 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.50 | 5.80 | 15.00 | 1.04 | 246.10 | | | | | 7.59 | 0.19 | 0.19 | 0.01 | 7.40 | 7.41 | | | | | | | | | | | | | | | | | | |
| PZ15-A11-6 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 27.10 | | 6.95 | 2.44 | 126.33 | | | | 38.00 | 1.07 | 0.68 | 0.63 | 0.04 | 0.40 | 0.44 | 0.01 | | | | | 11.90 | 0.52 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 2.30 | | 2.90 | 0.70 | 60.00 | | | | | 0.27 | 0.09 | 0.09 | 0.00 | 0.18 | 0.18 | | | | | | 7.21 | | | | | | | | | | | | |
| | MIN | 24.80 | 4.80 | 4.90 | 1.70 | 84.00 | | | | 38.00 | 0.88 | 0.61 | 0.57 | 0.04 | 0.27 | 0.31 | 0.01 | | | | | 6.80 | 0.52 | 0.01 | | | | | | | | | | |
| | MAX | 29.40 | 5.30 | 9.00 | 3.10 | 195.00 | | | | 38.00 | 1.26 | 0.74 | 0.70 | 0.04 | 0.52 | 0.56 | 0.01 | | | | | 17.00 | 0.52 | 0.01 | | | | | | | | | | |



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# Table G.1 (con't)
## Summary of Water Quality Data

| Sample ID | Statistical Parameter | Temp (°C) | pH | Total Alkalinity | DO (mg/L) | Specific Conductance | TDS (mg/L) | TSS (mg/L) | $CBOD_5$ (mg/L) | COD (mg/L) | TN (mg/L N)[1] | TKN (mg/L N) | Organic N (mg/L N)[2] | NH3-N (mg/L N) | NOx (mg/L N) | TIN (mg/L N)[3] | TP (mg/L) | Fecal (Ct/100 mL) | TOC (mg/L) | DOC (mg/L) | Anions | | | | | | Cations | | | | | | | TS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | $F^-$ | $Cl^-$ | $NO_3$-N | $NO_2$-N | $PO_4$-P | $SO_4$ | B | Ca | Fe | Mg | Mn | K | Na | |
| PZ16-C12-28 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.68 | | 10.30 | 0.54 | 300.98 | | | | 10.00 | 0.99 | 0.74 | 0.73 | 0.02 | 0.25 | 0.27 | 0.48 | | | | | 19.00 | 0.27 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.33 | | 0.61 | 0.18 | 9.03 | | | | | 1.06 | 1.00 | 1.00 | 0.00 | 0.07 | 0.07 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 24.60 | 5.30 | 9.90 | 0.30 | 291.80 | | | | 10.00 | 0.29 | 0.12 | 0.10 | 0.02 | 0.17 | 0.19 | 0.48 | | | | | 19.00 | 0.27 | 0.01 | | | | | | | | | | |
| | MAX | 27.60 | 5.70 | 11.00 | 0.70 | 311.00 | | | | 10.00 | 2.21 | 1.90 | 1.88 | 0.02 | 0.31 | 0.33 | 0.48 | | | | | 19.00 | 0.27 | 0.01 | | | | | | | | | | |
| PZ17-I15-26 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.88 | | 3.37 | 1.20 | 297.80 | | | | | 12.73 | 0.76 | 0.63 | 0.13 | 11.97 | 12.10 | | | 4.00 | 1.00 | | 14.00 | 9.20 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.54 | | 0.64 | 1.03 | 11.60 | | | | | 3.86 | 0.67 | 0.47 | 0.22 | 4.37 | 4.25 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 22.10 | 4.80 | 3.00 | 0.20 | 283.00 | | | | | 10.30 | 0.18 | 0.17 | 0.01 | 9.20 | 9.58 | | | 4.00 | 1.00 | | 14.00 | 9.20 | 0.01 | | | | | | | | | | |
| | MAX | 25.40 | 5.70 | 4.10 | 2.46 | 307.10 | | | | | 17.18 | 1.50 | 1.12 | 0.38 | 17.00 | 17.01 | | | 4.00 | 1.00 | | 14.00 | 9.20 | 0.01 | | | | | | | | | | |
| PZ18-R12-26 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 25.43 | | 8.45 | 0.56 | 267.70 | | | | 10.00 | 8.07 | 1.81 | 1.79 | 0.02 | 6.26 | 6.28 | 0.59 | | | | | 12.50 | 0.51 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 1.77 | | 0.64 | 0.35 | 54.28 | | | | | 10.37 | 2.25 | 2.25 | 0.00 | 8.12 | 8.13 | | | | | | 0.71 | | | | | | | | | | | | |
| | MIN | 23.40 | 5.00 | 8.00 | 0.20 | 223.00 | | | | 10.00 | 0.73 | 0.22 | 0.20 | 0.02 | 0.51 | 0.53 | 0.59 | | | | | 12.00 | 0.51 | 0.01 | | | | | | | | | | |
| | MAX | 26.60 | 5.10 | 8.90 | 0.89 | 328.10 | | | | 10.00 | 15.40 | 3.40 | 3.38 | 0.02 | 12.00 | 12.02 | 0.59 | | | | | 13.00 | 0.51 | 0.01 | | | | | | | | | | |
| PZ19-G10-26 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 23.87 | | 4.00 | 0.69 | 299.37 | | | | 10.00 | 14.30 | 1.60 | 1.59 | 0.02 | 12.70 | 12.72 | 0.05 | | 0.77 | 1.10 | 0.19 | 15.00 | 8.40 | 0.01 | 0.09 | 52.00 | 0.05 | 22.00 | 0.03 | 8.20 | 0.21 | 11.00 | 6.20 | |
| | STD. DEV. | 0.75 | | 0.00 | 0.34 | 4.65 | | | | | 5.09 | 0.99 | 0.99 | 0.00 | 6.08 | 6.08 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 23.10 | 5.00 | 4.00 | 0.40 | 294.00 | | | | 10.00 | 10.70 | 0.90 | 0.89 | 0.01 | 8.40 | 8.42 | 0.05 | | 0.77 | 1.10 | 0.19 | 15.00 | 8.40 | 0.01 | 0.09 | 52.00 | 0.05 | 22.00 | 0.03 | 8.20 | 0.21 | 11.00 | 6.20 | |
| | MAX | 24.60 | 5.10 | 4.00 | 1.07 | 302.10 | | | | 10.00 | 17.90 | 2.30 | 2.28 | 0.02 | 17.00 | 17.01 | 0.05 | | 0.77 | 1.10 | 0.19 | 15.00 | 8.40 | 0.01 | 0.09 | 52.00 | 0.05 | 22.00 | 0.03 | 8.20 | 0.21 | 11.00 | 6.20 | |
| PZ20-G10-15 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| | MEAN | 24.50 | | 11.50 | 1.59 | 321.37 | | | | 26.00 | 16.38 | 2.55 | 2.53 | 0.02 | 13.83 | 13.85 | 1.10 | | 6.80 | 2.30 | 0.21 | 16.50 | 8.50 | 0.16 | 0.05 | 54.00 | 0.05 | 26.00 | 0.05 | 6.20 | 0.22 | 7.80 | 11.00 | |
| | STD. DEV. | 1.99 | | 4.95 | 1.24 | 30.34 | | | | | 8.94 | 1.63 | 1.65 | 0.03 | 7.31 | 7.29 | | | | | | 0.71 | | | | | | | | | | | | |
| | MIN | 22.20 | 4.90 | 8.00 | 0.20 | 300.00 | | | | 26.00 | 10.06 | 1.40 | 1.36 | 0.01 | 8.66 | 8.70 | 1.10 | | 6.80 | 2.30 | 0.21 | 16.00 | 8.50 | 0.16 | 0.05 | 54.00 | 0.05 | 26.00 | 0.05 | 6.20 | 0.22 | 7.80 | 11.00 | |
| | MAX | 25.70 | 5.60 | 15.00 | 2.60 | 356.10 | | | | 26.00 | 22.70 | 3.70 | 3.70 | 0.04 | 19.00 | 19.01 | 1.10 | | 6.80 | 2.30 | 0.21 | 17.00 | 8.50 | 0.16 | 0.05 | 54.00 | 0.05 | 26.00 | 0.05 | 6.20 | 0.22 | 7.80 | 11.00 | |
| PZ21-E11-26 | n | 3 | 3 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.37 | | 6.00 | 0.72 | 293.87 | | | | | 10.16 | 0.98 | 0.91 | 0.07 | 9.19 | 9.25 | | | | | | 15.00 | 8.90 | 0.17 | | | | | | | | | | |
| | STD. DEV. | 0.67 | | 2.83 | 0.31 | 5.22 | | | | | 0.44 | 0.60 | 0.52 | 0.08 | 0.16 | 0.09 | | | | | | 2.83 | | | | | | | | | | | | |
| | MIN | 23.60 | 4.90 | 4.00 | 0.36 | 288.00 | | | | | 9.85 | 0.55 | 0.54 | 0.01 | 9.07 | 9.19 | | | | | | 13.00 | 8.90 | 0.17 | | | | | | | | | | |
| | MAX | 24.80 | 5.20 | 8.00 | 0.90 | 298.00 | | | | | 10.47 | 1.40 | 1.28 | 0.12 | 9.30 | 9.31 | | | | | | 17.00 | 8.90 | 0.17 | | | | | | | | | | |
| PZ22-E11-15 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.40 | | 8.90 | 1.36 | 416.00 | | | | | 5.60 | 1.40 | 1.39 | 0.01 | 4.20 | 4.21 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.40 | 5.30 | 8.90 | 1.36 | 416.00 | | | | | 5.60 | 1.40 | 1.39 | 0.01 | 4.20 | 4.21 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.40 | 5.30 | 8.90 | 1.36 | 416.00 | | | | | 5.60 | 1.40 | 1.39 | 0.01 | 4.20 | 4.21 | | | | | | | | | | | | | | | | | | |
| PZ23-D09-27 | n | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.40 | | 5.90 | 0.18 | 306.20 | | | | | 8.50 | 1.20 | 1.20 | 0.01 | 7.30 | 7.31 | | | | | | | | | | | | | | | | | | |
| | STD. DEV. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | MIN | 24.40 | 5.40 | 5.90 | 0.18 | 306.20 | | | | | 8.50 | 1.20 | 1.20 | 0.01 | 7.30 | 7.31 | | | | | | | | | | | | | | | | | | |
| | MAX | 24.40 | 5.40 | 5.90 | 0.18 | 306.20 | | | | | 8.50 | 1.20 | 1.20 | 0.01 | 7.30 | 7.31 | | | | | | | | | | | | | | | | | | |
| PZ24-BKG-26 | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 0 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| | MEAN | 24.28 | | 4.03 | 0.58 | 290.53 | | | | 11.00 | 11.97 | 1.23 | 1.21 | 0.03 | 10.74 | 10.77 | 0.61 | | 1.85 | 1.10 | 0.07 | 16.33 | 10.05 | 0.07 | 0.07 | 42.50 | 0.05 | 20.50 | 0.07 | 10.35 | 0.17 | 8.45 | 7.75 | |
| | STD. DEV. | 0.99 | | 0.06 | 0.15 | 13.15 | | | | 1.41 | 0.85 | 0.65 | 0.62 | 0.03 | 1.49 | 1.46 | 0.83 | | 1.55 | 0.31 | 0.08 | 2.31 | 1.34 | 0.08 | 0.08 | 0.71 | 0.00 | 0.71 | 0.05 | 0.92 | 0.01 | 0.64 | 0.07 | |
| | MIN | 23.10 | 4.80 | 4.00 | 0.40 | 270.90 | | | | 10.00 | 11.00 | 0.60 | 0.60 | 0.01 | 9.10 | 9.16 | 0.03 | | 0.64 | 0.79 | 0.01 | 15.00 | 9.10 | 0.01 | 0.01 | 42.00 | 0.05 | 20.00 | 0.04 | 9.70 | 0.16 | 8.00 | 7.70 | |
| | MAX | 25.50 | 5.10 | 4.10 | 0.70 | 299.00 | | | | 12.00 | 12.60 | 1.90 | 1.84 | 0.06 | 12.00 | 12.01 | 1.20 | | 3.60 | 1.40 | 0.12 | 19.00 | 11.00 | 0.12 | 0.12 | 43.00 | 0.05 | 21.00 | 0.11 | 11.00 | 0.17 | 8.90 | 7.80 | |
| PZ25-A6.5-10 | n | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 24.70 | | 57.00 | 3.93 | 689.00 | | | | 26.00 | 21.65 | 2.15 | 2.13 | 0.02 | 19.50 | 19.52 | 0.49 | | | | | 37.00 | 19.00 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 3.82 | | 12.73 | 2.44 | 114.55 | | | | | 0.92 | 0.21 | 0.21 | 0.00 | 0.71 | 0.71 | | | | | | | | | | | | | | | | | | |
| | MIN | 22.00 | 6.00 | 48.00 | 2.20 | 608.00 | | | | 26.00 | 21.00 | 2.00 | 1.98 | 0.02 | 19.00 | 19.02 | 0.49 | | | | | 37.00 | 19.00 | 0.01 | | | | | | | | | | |
| | MAX | 27.40 | 6.00 | 66.00 | 5.65 | 770.00 | | | | 26.00 | 22.30 | 2.30 | 2.28 | 0.02 | 20.00 | 20.02 | 0.49 | | | | | 37.00 | 19.00 | 0.01 | | | | | | | | | | |
| **Blanks** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FB-DI | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 19.57 | | 2.00 | 7.53 | 1.23 | | | | 10.00 | 0.06 | 0.05 | 0.04 | 0.01 | 0.01 | 0.02 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 6.71 | | 0.00 | 2.58 | 0.25 | | | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 12.10 | 5.60 | 2.00 | 4.60 | 1.00 | | | | 10.00 | 0.06 | 0.05 | 0.04 | 0.01 | 0.01 | 0.02 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | | |
| | MAX | 25.10 | 6.10 | 2.00 | 9.44 | 1.49 | | | | 10.00 | 0.06 | 0.05 | 0.05 | 0.01 | 0.01 | 0.02 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | | |
| FB-TAP | n | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 20.73 | | 133.33 | 8.13 | 435.67 | | | | 10.00 | 0.16 | 0.05 | 0.04 | 0.01 | 0.11 | 0.11 | 0.01 | | | | | 19.00 | 0.26 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 10.01 | | 11.55 | 2.94 | 8.14 | | | | | 0.13 | 0.00 | 0.00 | 0.00 | 0.13 | 0.14 | | | | | | | | | | | | | | | | | | |
| | MIN | 9.60 | 6.97 | 120.00 | 5.20 | 430.00 | | | | 10.00 | 0.06 | 0.05 | 0.04 | 0.01 | 0.01 | 0.02 | 0.01 | | | | | 19.00 | 0.26 | 0.01 | | | | | | | | | | |
| | MAX | 29.00 | 7.70 | 140.00 | 11.07 | 445.00 | | | | 10.00 | 0.31 | 0.05 | 0.05 | 0.01 | 0.26 | 0.27 | 0.01 | | | | | 19.00 | 0.26 | 0.01 | | | | | | | | | | |
| Equipment Rinsate | n | 4 | 4 | 3 | 4 | 4 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | MEAN | 23.33 | | 3.33 | 4.93 | 6.40 | | | | 10.00 | 0.12 | 0.10 | 0.09 | 0.02 | 0.02 | 0.03 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | | |
| | STD. DEV. | 7.77 | | 2.31 | 2.29 | 6.15 | | | | | 0.09 | 0.09 | 0.09 | 0.01 | 0.01 | 0.02 | | | | | | 0.00 | | | | | | | | | | | | |
| | MIN | 11.90 | 5.60 | 2.00 | 2.31 | 1.00 | | | | 10.00 | 0.06 | 0.05 | 0.02 | 0.01 | 0.01 | 0.02 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | | |
| | MAX | 28.80 | 7.20 | 6.00 | 7.90 | 13.20 | | | | 10.00 | 0.22 | 0.21 | 0.19 | 0.03 | 0.03 | 0.06 | 0.01 | | | | | 0.05 | 0.01 | 0.01 | | | | | | | | | | |

NOTES:
All results in milligrams per liter (mg/L) except where indicated
Blank - Not sampled
D.O. - Dissolved oxygen
G - Grab sample
Gray-shaded data points indicate values below method detection level (mdl), mdl value used for statistical analyses.
Yellow-shaded data points indicate the reported value is between the laboratory method detection limit and the laboratory practical quantitation limit, value used for statistical analysis.
Orange - shaded data points indicate too many colonies were present. The numberic value represents the dilution factor times the maximum reportable number of colonies.
Blue-shaded data points indicate the number is greater than reported value.

# Appendix H: Laboratory Report

o:\44237-001\Wpdocs\Report\Draft

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108619**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **STE-EX Pump Tank** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108619-01** | | | | | | |
| Date/Time Collected | | **09/28/11 12:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 7.0 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 12:00 | SDH |
| Water Temperature | °C | 29.4 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 12:00 | SDH |
| Specific conductance | umhos/cm | 721 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 12:00 | SDH |
| Dissolved Oxygen | mg/L | 0.9 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 12:00 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 28 | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Carbonaceous BOD | mg/L | 32 | SM 5210B | 2 | 2 | 09/30/11 09:50 | 10/05/11 09:30 | JAG |
| Chloride | mg/L | 68 | EPA 300.0 | 0.20 | 0.050 | | 10/04/11 18:43 | MEJ |
| Nitrate (as N) | mg/L | 0.24 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 3.2 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:46 | 10/06/11 13:23 | SMD |
| Total Alkalinity | mg/L | 250 | SM 2320B | 8.0 | 2.0 | 10/04/11 10:00 | 10/04/11 12:09 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 32 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:26 | 10/14/11 15:43 | SMD |
| Total Solids | mg/L | 10 U | SM 2540B | 10 | 10 | 09/30/11 14:33 | 10/04/11 08:12 | JEW |
| Total Suspended Solids | mg/L | 20 | SM 2540D | 1 | 1 | 09/29/11 09:49 | 09/30/11 12:11 | JEW |
| **Microbiology** | | | | | | | | |
| Fecal Coliforms Confirmed | MPN/100 mL | 50 | SM 9223B | 2 | 2 | 09/28/11 15:52 | 09/29/11 16:20 | MAS |
| Sample Description | | **STE-EX Pump Tank** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108619-01RE1** | | | | | | |
| Date/Time Collected | | **09/28/11 12:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Inorganics** | | | | | | | | |
| Nitrate (as N) | mg/L | 2.3 | EPA 300.0 | 0.04 | 0.01 | | 10/04/11 18:43 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 10/04/11 18:43 | MEJ |
| Sample Description | | **STE-EX Pump Tank-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108619-02** | | | | | | |
| Date/Time Collected | | **09/28/11 12:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 7.0 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 12:05 | SDH |

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**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108619**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **STE-EX Pump Tank-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108619-02** | | | | | | |
| Date/Time Collected | | **09/28/11 12:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| Water Temperature | °C | 29.4 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 12:05 | SDH |
| Specific conductance | umhos/cm | 721 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 12:05 | SDH |
| Dissolved Oxygen | mg/L | 0.9 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 12:05 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 28 | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Carbonaceous BOD | mg/L | 33 | SM 5210B | 2 | 2 | 09/30/11 09:50 | 10/05/11 09:30 | JAG |
| Chloride | mg/L | 42 | EPA 300.0 | 0.20 | 0.050 | | 10/04/11 18:43 | MEJ |
| Nitrate (as N) | mg/L | 0.24 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 3.0 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:46 | 10/06/11 13:23 | SMD |
| Total Alkalinity | mg/L | 250 | SM 2320B | 8.0 | 2.0 | 10/04/11 10:00 | 10/04/11 12:09 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 31 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:26 | 10/14/11 15:43 | SMD |
| Total Solids | mg/L | 10 U | SM 2540B | 10 | 10 | 09/30/11 14:33 | 10/04/11 08:12 | JEW |
| Total Suspended Solids | mg/L | 17 | SM 2540D | 1 | 1 | 09/29/11 09:49 | 09/30/11 12:11 | JEW |
| **Microbiology** | | | | | | | | |
| Fecal Coliforms Confirmed | MPN/100 mL | 50 | SM 9223B | 2 | 2 | 09/28/11 15:52 | 09/29/11 16:20 | MAS |

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**Tampa, FL 33619**

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12836 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12836-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BI12836-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 1.56 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | | |
| Nitrite (as N) | 1.30 | 0.04 | 0.01 | mg/L | 1.4 | | 93 | 85-115 | | |
| **LCS Dup (BI12836-BSD1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 1.57 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 0.6 | 200 |
| Nitrite (as N) | 1.33 | 0.04 | 0.01 | mg/L | 1.4 | | 95 | 85-115 | 2 | 200 |
| **Matrix Spike (BI12836-MS1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 16.7 | 0.04 | 0.01 | mg/L | 1.7 | 14.8 | 112 | 85-115 | | |
| Nitrite (as N) | 1.35 | 0.04 | 0.01 | mg/L | 1.4 | ND | 96 | 85-115 | | |
| **Matrix Spike (BI12836-MS2)** | | **Source: 1108647-05** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 10.8 +O | 0.04 | 0.01 | mg/L | 1.7 | 8.64 | 127 | 85-115 | | |
| Nitrite (as N) | 1.37 | 0.04 | 0.01 | mg/L | 1.4 | ND | 98 | 85-115 | | |
| **Batch BI12906 - TSS prep** | | | | | | | | | | |
| **Blank (BI12906-BLK1)** | | | | | Prepared: 09/29/11 Analyzed: 09/30/11 | | | | | |
| Total Suspended Solids | 1 U | 1 | 1 | mg/L | | | | | | |
| **LCS (BI12906-BS1)** | | | | | Prepared: 09/29/11 Analyzed: 09/30/11 | | | | | |
| Total Suspended Solids | 49.5 | 1 | 1 | mg/L | 50 | | 99 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12906 - TSS prep** | | | | | | | | | | |
| **Duplicate (BI12906-DUP1)** | | **Source: 1107648-01** | | | Prepared: 09/29/11 | Analyzed: 09/30/11 | | | | |
| Total Suspended Solids | 151 | 1 | 1 | mg/L | | 156 | | | 3 | 30 |
| **Duplicate (BI12906-DUP2)** | | **Source: 1108855-01** | | | Prepared: 09/29/11 | Analyzed: 09/30/11 | | | | |
| Total Suspended Solids | 122 | 1 | 1 | mg/L | | 120 | | | 2 | 30 |
| **Batch BI13016 - BOD** | | | | | | | | | | |
| **Blank (BI13016-BLK1)** | | | | | Prepared: 09/30/11 | Analyzed: 10/05/11 | | | | |
| Carbonaceous BOD | 2 U | 2 | 2 | mg/L | | | | | | |
| **LCS (BI13016-BS1)** | | | | | Prepared: 09/30/11 | Analyzed: 10/05/11 | | | | |
| Carbonaceous BOD | 183 | 2 | 2 | mg/L | 200 | | 91 | 85-115 | | |
| **LCS Dup (BI13016-BSD1)** | | | | | Prepared: 09/30/11 | Analyzed: 10/05/11 | | | | |
| Carbonaceous BOD | 193 | 2 | 2 | mg/L | 200 | | 97 | 85-115 | 6 | 200 |
| **Duplicate (BI13016-DUP1)** | | **Source: 1107658-01** | | | Prepared: 09/30/11 | Analyzed: 10/05/11 | | | | |
| Carbonaceous BOD | 110 | 2 | 2 | mg/L | | 130 | | | 18 | 25 |
| **Batch BJ10401 - TS prep** | | | | | | | | | | |
| **Blank (BJ10401-BLK1)** | | | | | Prepared: 09/30/11 | Analyzed: 10/04/11 | | | | |
| Total Solids | 10 U | 10 | 10 | mg/L | | | | | | |
| **Duplicate (BJ10401-DUP1)** | | **Source: 1108619-02** | | | Prepared: 09/30/11 | Analyzed: 10/04/11 | | | | |
| Total Solids | 400 | 10 | 10 | mg/L | | ND | | | | 20 |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
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**Revised Report**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10414 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10414-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BJ10414-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **Matrix Spike (BJ10414-MS1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 360 | 8.0 | 2.0 | mg/L | 120 | 250 | 92 | 80-120 | | |
| **Matrix Spike Dup (BJ10414-MSD1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 360 | 8.0 | 2.0 | mg/L | 120 | 250 | 92 | 80-120 | 0 | 26 |
| **Batch BJ10421 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BJ10421-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BJ10421-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Nitrite (as N) | 1.36 | 0.04 | 0.01 | mg/L | 1.4 | | 97 | 85-115 | | |
| Nitrate (as N) | 1.60 | 0.04 | 0.01 | mg/L | 1.7 | | 94 | 85-115 | | |
| Chloride | 2.78 | 0.20 | 0.050 | mg/L | 3.0 | | 93 | 85-115 | | |
| **LCS Dup (BJ10421-BSD1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chloride | 2.72 | 0.20 | 0.050 | mg/L | 3.0 | | 91 | 85-115 | 2 | 200 |
| Nitrate (as N) | 1.57 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 2 | 200 |
| Nitrite (as N) | 1.35 | 0.04 | 0.01 | mg/L | 1.4 | | 96 | 85-115 | 0.7 | 200 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10421 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BJ10421-MS1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Nitrite (as N) | 13.9 | 0.04 | 0.01 | mg/L | 14 | ND | 99 | 85-115 | | |
| Chloride | 68.5 +O | 0.20 | 0.050 | mg/L | 30 | 68.5 | 0 | 80-120 | | |
| Nitrate (as N) | 16.9 | 0.04 | 0.01 | mg/L | 17 | 2.32 | 86 | 85-115 | | |
| **Matrix Spike (BJ10421-MS2)** | | **Source: 1108761-04** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Nitrite (as N) | 1.36 | 0.04 | 0.01 | mg/L | 1.4 | ND | 97 | 85-115 | | |
| Nitrate (as N) | 1.68 | 0.04 | 0.01 | mg/L | 1.7 | ND | 99 | 85-115 | | |
| Chloride | 3.25 | 0.20 | 0.050 | mg/L | 3.0 | ND | 108 | 80-120 | | |
| **Batch BJ10510 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BJ10510-BLK1)** | | | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ10510-BS1)** | | | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 0.546 | 0.040 | 0.010 | mg/L | 0.50 | | 109 | 90-110 | | |
| **Matrix Spike (BJ10510-MS1)** | | **Source: 1108620-04** | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 0.653 | 0.040 | 0.010 | mg/L | 0.50 | 0.260 | 79 | 75-125 | | |
| **Matrix Spike Dup (BJ10510-MSD1)** | | **Source: 1108620-04** | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 0.746 | 0.040 | 0.010 | mg/L | 0.50 | 0.260 | 97 | 75-125 | 13 | 25 |
| **Batch BJ11018 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ11018-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11018 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **LCS (BJ11018-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.62 | 0.20 | 0.05 | mg/L | 2.5 | | 105 | 90-110 | | |
| **Matrix Spike (BJ11018-MS1)** | | **Source: 1108798-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.28 | 0.20 | 0.05 | mg/L | 2.5 | 1.01 | 91 | 80-120 | | |
| **Matrix Spike Dup (BJ11018-MSD1)** | | **Source: 1108798-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.24 | 0.20 | 0.05 | mg/L | 2.5 | 1.01 | 89 | 80-120 | 1 | 20 |
| **Batch BJ11409 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11409-BLK1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11409-BS1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.48 | 0.040 | 0.010 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BJ11409-MS1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.52 | 0.040 | 0.010 | mg/L | 0.50 | ND | 104 | 90-110 | | |
| **Matrix Spike Dup (BJ11409-MSD1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.48 | 0.040 | 0.010 | mg/L | 0.50 | ND | 97 | 90-110 | 7 | 10 |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108619**
**Revised Report**

## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

+O Matrix spike source sample was over the reccommended range for the method.

1108619

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| Lab Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool NO3, NO2, Cl, Alk-T, CBOD, TS, TSS | 250mL P, $H_2SO_4$ TKN, NH3, TotalP | | | 125ml P, Na2S2O3 Tcoliform/E. Coli (QT)-SM9223B | | | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | STE-EX Pump Tank | 092811 | 1206 | GW | | X | 1 | 1 | | | 2 | | | 721 | 0.90 | 7.0 | 29.4 | | |
| 02 | STE-EX Pump TanD | | 1205 | GW | | X | 1 | 1 | | | 2 | | | 721 | 0.90 | 7.0 | 29.4 | | |

| Containers Prepared/ Relinquished: | Date/Time: 0830 09-23-11 | Received: | Date/Time: 0830 092311 |
|---|---|---|---|
| Relinquished: | Date/Time: 1415 092811 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks:

1108619

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

Chain of Custody

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

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108620**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-AA9-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108620-01** | | | | | | |
| Date/Time Collected | | **09/28/11 09:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.6 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 09:55 | SDH |
| Water Temperature | °C | 25.4 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 09:55 | SDH |
| Specific conductance | umhos/cm | 554 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 09:55 | SDH |
| Dissolved Oxygen | mg/L | 2.0 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 09:55 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 52 | EPA 300.0 | 0.20 | 0.050 | | 09/30/11 08:16 | MEJ |
| Fluoride | mg/L | 0.091 | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 21 | EPA 300.0 | 0.04 | 0.01 | | 09/30/11 08:16 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.17 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:46 | 10/06/11 13:23 | SMD |
| Sulfate | mg/L | 52 | EPA 300.0 | 0.60 | 0.20 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 10/04/11 10:00 | 10/04/11 12:09 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 2.4 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:26 | 10/14/11 15:43 | SMD |
| Total Organic Carbon | mg/L | 2.6 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.1 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.13 | EPA 200.7 | 0.10 | 0.050 | 09/30/11 09:43 | 10/03/11 16:23 | VWC |
| Calcium | mg/L | 37 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:23 | VWC |
| Iron | mg/L | 0.076 I | EPA 200.7 | 0.10 | 0.020 | 09/30/11 09:43 | 10/03/11 16:23 | VWC |
| Magnesium | mg/L | 9.5 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:23 | VWC |
| Manganese | mg/L | 0.015 | EPA 200.7 | 0.010 | 0.0010 | 09/30/11 09:43 | 10/03/11 16:23 | VWC |
| Potassium | mg/L | 11 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:23 | VWC |
| Sodium | mg/L | 43 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:23 | VWC |

| | |
|---|---|
| Sample Description | **DP-AA9-14-D** |
| Matrix | **Groundwater** |
| SAL Sample Number | **1108620-02** |
| Date/Time Collected | **09/28/11 10:00** |
| Collected by | **Sean Harmon** |
| Date/Time Received | **09/28/11 14:15** |

**Field Parameters**

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108620**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-AA9-14-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108620-02** | | | | | | |
| Date/Time Collected | | **09/28/11 10:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| pH | SU | 4.6 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 10:00 | SDH |
| Water Temperature | °C | 25.4 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 10:00 | SDH |
| Specific conductance | umhos/cm | 554 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 10:00 | SDH |
| Dissolved Oxygen | mg/L | 2.0 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 10:00 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 50 | EPA 300.0 | 0.20 | 0.050 | | 09/30/11 08:16 | MEJ |
| Fluoride | mg/L | 0.072 | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 20 | EPA 300.0 | 0.04 | 0.01 | | 09/30/11 08:16 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.17 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:46 | 10/06/11 13:23 | SMD |
| Sulfate | mg/L | 51 | EPA 300.0 | 0.60 | 0.20 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 10/04/11 10:00 | 10/04/11 12:09 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 2.1 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:26 | 10/14/11 15:43 | SMD |
| Total Organic Carbon | mg/L | 2.6 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.6 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.13 | EPA 200.7 | 0.10 | 0.050 | 09/30/11 09:43 | 10/03/11 16:42 | VWC |
| Calcium | mg/L | 36 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:42 | VWC |
| Iron | mg/L | 0.56 | EPA 200.7 | 0.10 | 0.020 | 09/30/11 09:43 | 10/03/11 16:42 | VWC |
| Magnesium | mg/L | 9.3 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:42 | VWC |
| Manganese | mg/L | 0.019 | EPA 200.7 | 0.010 | 0.0010 | 09/30/11 09:43 | 10/03/11 16:42 | VWC |
| Potassium | mg/L | 11 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:42 | VWC |
| Sodium | mg/L | 44 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:42 | VWC |
| Sample Description | | **DP-AA9-22** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108620-03** | | | | | | |
| Date/Time Collected | | **09/28/11 10:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 10:10 | SDH |

**FDOH Laboratory No.E84129**
**NELAP Accredited**

**Francis I. Daniels, Laboratory Director**
**Leslie C. Boardman, Q.A. Manager**

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108620**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-AA9-22** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108620-03** | | | | | | |
| Date/Time Collected | | **09/28/11 10:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| Water Temperature | °C | 25.1 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 10:10 | SDH |
| Specific conductance | umhos/cm | 369 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 10:10 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 10:10 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 19 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 15 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.36 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:46 | 10/06/11 13:23 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 10/04/11 10:00 | 10/04/11 12:09 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 1.7 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:26 | 10/14/11 15:43 | SMD |
| Sample Description | | **DP-AA9-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108620-04** | | | | | | |
| Date/Time Collected | | **09/28/11 10:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 10:15 | SDH |
| Water Temperature | °C | 24.9 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 10:15 | SDH |
| Specific conductance | umhos/cm | 267 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 10:15 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 10:15 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 16 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 9.4 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.18 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.26 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:46 | 10/06/11 13:23 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 10/04/11 10:00 | 10/04/11 12:09 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 2.7 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:26 | 10/14/11 15:43 | SMD |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12836 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12836-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BI12836-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Sulfate | 8.19 | 0.60 | 0.20 | mg/L | 9.0 | | 91 | 85-115 | | |
| Orthophosphate as P | 0.875 | 0.040 | 0.010 | mg/L | 0.90 | | 97 | 85-115 | | |
| Nitrite (as N) | 1.30 | 0.04 | 0.01 | mg/L | 1.4 | | 93 | 85-115 | | |
| Nitrate (as N) | 1.56 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | | |
| Fluoride | 0.834 | 0.040 | 0.010 | mg/L | 0.90 | | 93 | 85-115 | | |
| Chloride | 2.77 | 0.20 | 0.050 | mg/L | 3.0 | | 92 | 85-115 | | |
| **LCS Dup (BI12836-BSD1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Orthophosphate as P | 0.871 | 0.040 | 0.010 | mg/L | 0.90 | | 97 | 85-115 | 0.5 | 200 |
| Chloride | 2.76 | 0.20 | 0.050 | mg/L | 3.0 | | 92 | 85-115 | 0.4 | 200 |
| Fluoride | 0.859 | 0.040 | 0.010 | mg/L | 0.90 | | 95 | 85-115 | 3 | 200 |
| Sulfate | 8.17 | 0.60 | 0.20 | mg/L | 9.0 | | 91 | 85-115 | 0.2 | 200 |
| Nitrate (as N) | 1.57 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 0.6 | 200 |
| Nitrite (as N) | 1.33 | 0.04 | 0.01 | mg/L | 1.4 | | 95 | 85-115 | 2 | 200 |
| **Matrix Spike (BI12836-MS1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chloride | 21.9 | 0.20 | 0.050 | mg/L | 3.0 | 18.9 | 100 | 80-120 | | |
| Fluoride | 0.937 | 0.040 | 0.010 | mg/L | 0.90 | 0.0599 | 97 | 85-115 | | |
| Nitrite (as N) | 1.35 | 0.04 | 0.01 | mg/L | 1.4 | ND | 96 | 85-115 | | |
| Sulfate | 71.7 +O | 0.60 | 0.20 | mg/L | 9.0 | ND | 797 | 85-115 | | |
| Orthophosphate as P | 0.952 | 0.040 | 0.010 | mg/L | 0.90 | ND | 106 | 85-115 | | |
| Nitrate (as N) | 16.7 | 0.04 | 0.01 | mg/L | 1.7 | 14.8 | 112 | 85-115 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12836 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BI12836-MS2)** | | **Source: 1108647-05** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 1.37 | 0.04 | 0.01 | mg/L | 1.4 | ND | 98 | 85-115 | | |
| Chloride | 14.5 +O | 0.20 | 0.050 | mg/L | 3.0 | 10.5 | 133 | 80-120 | | |
| Nitrate (as N) | 10.8 +O | 0.04 | 0.01 | mg/L | 1.7 | 8.64 | 127 | 85-115 | | |
| Orthophosphate as P | 0.856 | 0.040 | 0.010 | mg/L | 0.90 | 0.0440 | 90 | 85-115 | | |
| Fluoride | 0.963 | 0.040 | 0.010 | mg/L | 0.90 | 0.0689 | 99 | 85-115 | | |
| Sulfate | 85.8 +O | 0.60 | 0.20 | mg/L | 9.0 | 74.1 | 130 | 85-115 | | |
| **Batch BI13009 - TOC prep** | | | | | | | | | | |
| **Blank (BI13009-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI13009-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 10.1 | 1.0 | 0.50 | mg/L | 10 | | 101 | 90-110 | | |
| **Matrix Spike (BI13009-MS1)** | | **Source: 1108655-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 12.1 | 1.0 | 0.50 | mg/L | 10 | 2.05 | 101 | 85-115 | | |
| **Matrix Spike Dup (BI13009-MSD1)** | | **Source: 1108655-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 12.5 | 1.0 | 0.50 | mg/L | 10 | 2.05 | 104 | 85-115 | 3 | 10 |
| **Batch BI13022 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI13022-BLK1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13022 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS (BI13022-BS1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 2.91 | 0.20 | 0.050 | mg/L | 3.0 | | 97 | 85-115 | | |
| Nitrate (as N) | 1.69 | 0.04 | 0.01 | mg/L | 1.7 | | 99 | 85-115 | | |
| **LCS (BI13022-BS2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 2.95 | 0.20 | 0.050 | mg/L | 3.0 | | 98 | 85-115 | | |
| Nitrate (as N) | 1.69 | 0.04 | 0.01 | mg/L | 1.7 | | 99 | 85-115 | | |
| **LCS (BI13022-BS3)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Nitrate (as N) | 1.71 | 0.04 | 0.01 | mg/L | 1.7 | | 101 | 85-115 | | |
| Chloride | 2.99 | 0.20 | 0.050 | mg/L | 3.0 | | 100 | 85-115 | | |
| **LCS (BI13022-BS4)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Nitrate (as N) | 1.68 | 0.04 | 0.01 | mg/L | 1.7 | | 99 | 85-115 | | |
| Chloride | 3.02 | 0.20 | 0.050 | mg/L | 3.0 | | 101 | 85-115 | | |
| **LCS (BI13022-BS5)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 2.88 | 0.20 | 0.050 | mg/L | 3.0 | | 96 | 85-115 | | |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | | |
| **LCS Dup (BI13022-BSD1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 2.95 | 0.20 | 0.050 | mg/L | 3.0 | | 98 | 85-115 | 1 | 200 |
| Nitrate (as N) | 1.69 | 0.04 | 0.01 | mg/L | 1.7 | | 99 | 85-115 | 0 | 200 |
| **Matrix Spike (BI13022-MS1)** | | **Source: 1108850-01** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Nitrate (as N) | 169 | 0.04 | 0.01 | mg/L | 170 | ND | 99 | 85-115 | | |
| Chloride | 988 | 0.20 | 0.050 | mg/L | 300 | 676 | 104 | 80-120 | | |
| **Matrix Spike (BI13022-MS2)** | | **Source: 1108699-02** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 73.6 +O | 0.20 | 0.050 | mg/L | 3.0 | 84.2 | NR | 80-120 | | |
| Nitrate (as N) | 2.05 | 0.04 | 0.01 | mg/L | 1.7 | 0.444 | 94 | 85-115 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10314 - COD prep** | | | | | | | | | | |
| **Blank (BJ10314-BLK1)** | | | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BJ10314-BS1)** | | | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | | 110 | 90-110 | | |
| **Matrix Spike (BJ10314-MS1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | | |
| **Matrix Spike Dup (BJ10314-MSD1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | 0 | 32 |
| **Batch BJ10414 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10414-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BJ10414-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **Matrix Spike (BJ10414-MS1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 360 | 8.0 | 2.0 | mg/L | 120 | 250 | 92 | 80-120 | | |
| **Matrix Spike Dup (BJ10414-MSD1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 360 | 8.0 | 2.0 | mg/L | 120 | 250 | 92 | 80-120 | 0 | 26 |
| **Batch BJ10510 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BJ10510-BLK1)** | | | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10510 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **LCS (BJ10510-BS1)** | | | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 0.546 | 0.040 | 0.010 | mg/L | 0.50 | | 109 | 90-110 | | |
| **Matrix Spike (BJ10510-MS1)** | | **Source: 1108620-04** | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 0.653 | 0.040 | 0.010 | mg/L | 0.50 | 0.260 | 79 | 75-125 | | |
| **Matrix Spike Dup (BJ10510-MSD1)** | | **Source: 1108620-04** | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 0.746 | 0.040 | 0.010 | mg/L | 0.50 | 0.260 | 97 | 75-125 | 13 | 25 |
| **Batch BJ11018 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ11018-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ11018-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.62 | 0.20 | 0.05 | mg/L | 2.5 | | 105 | 90-110 | | |
| **Matrix Spike (BJ11018-MS1)** | | **Source: 1108798-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.28 | 0.20 | 0.05 | mg/L | 2.5 | 1.01 | 91 | 80-120 | | |
| **Matrix Spike Dup (BJ11018-MSD1)** | | **Source: 1108798-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.24 | 0.20 | 0.05 | mg/L | 2.5 | 1.01 | 89 | 80-120 | 1 | 20 |
| **Batch BJ11409 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11409-BLK1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11409 - Ammonia by SEAL** | | | | | | | | | | |
| **LCS (BJ11409-BS1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.48 | 0.040 | 0.010 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BJ11409-MS1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.52 | 0.040 | 0.010 | mg/L | 0.50 | ND | 104 | 90-110 | | |
| **Matrix Spike Dup (BJ11409-MSD1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.48 | 0.040 | 0.010 | mg/L | 0.50 | ND | 97 | 90-110 | 7 | 10 |

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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13008 - DOC prep** | | | | | | | | | | |
| **Blank (BI13008-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI13008-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 10.2 | 1.0 | 0.50 | mg/L | 10 | | 102 | 90-110 | | |
| **Matrix Spike (BI13008-MS1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 12.8 | 1.0 | 0.50 | mg/L | 10 | 2.08 | 107 | 85-125 | | |
| **Matrix Spike Dup (BI13008-MSD1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 12.9 | 1.0 | 0.50 | mg/L | 10 | 2.08 | 108 | 85-125 | 0.7 | 25 |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13006 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BI13006-BLK1)** | | | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Calcium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Iron | 0.020 U | 0.10 | 0.020 | mg/L | | | | | | |
| Sodium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Potassium | 0.016 I | 0.050 | 0.010 | mg/L | | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Magnesium | 0.025 I | 0.050 | 0.010 | mg/L | | | | | | |
| **LCS (BI13006-BS1)** | | | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Boron | 0.39 | 0.10 | 0.050 | mg/L | 0.40 | | 97 | 85-115 | | |
| Iron | 7.6 | 0.10 | 0.020 | mg/L | 8.0 | | 94 | 85-115 | | |
| Sodium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| Magnesium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| Manganese | 0.38 | 0.010 | 0.0010 | mg/L | 0.40 | | 96 | 85-115 | | |
| Potassium | 18 | 0.050 | 0.010 | mg/L | 20 | | 89 | 85-115 | | |
| Calcium | 18 | 0.050 | 0.010 | mg/L | 20 | | 92 | 85-115 | | |
| **Matrix Spike (BI13006-MS1)** | | **Source: 1108620-01** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.015 | 98 | 70-130 | | |
| Boron | 0.53 | 0.10 | 0.050 | mg/L | 0.40 | 0.13 | 101 | 70-130 | | |
| Sodium | 63 | 0.050 | 0.010 | mg/L | 20 | 43 | 98 | 70-130 | | |
| Magnesium | 29 | 0.050 | 0.010 | mg/L | 20 | 9.5 | 97 | 70-130 | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 11 | 91 | 70-130 | | |
| Iron | 7.9 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 98 | 70-130 | | |
| Calcium | 56 | 0.050 | 0.010 | mg/L | 20 | 37 | 93 | 70-130 | | |
| **Matrix Spike (BI13006-MS2)** | | **Source: 1108644-11** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Calcium | 40 | 0.050 | 0.010 | mg/L | 20 | 21 | 96 | 70-130 | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 8.9 | 99 | 70-130 | | |
| Magnesium | 25 | 0.050 | 0.010 | mg/L | 20 | 5.7 | 98 | 70-130 | | |
| Boron | 0.50 | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 98 | 70-130 | | |
| Sodium | 31 | 0.050 | 0.010 | mg/L | 20 | 12 | 96 | 70-130 | | |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | 0.59 | 98 | 70-130 | | |
| Manganese | 0.49 | 0.010 | 0.0010 | mg/L | 0.40 | 0.11 | 96 | 70-130 | | |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13006 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Matrix Spike Dup (BI13006-MSD1)** | | **Source: 1108620-01** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Magnesium | 29 | 0.050 | 0.010 | mg/L | 20 | 9.5 | 95 | 70-130 | 0.9 | 30 |
| Boron | 0.49 | 0.10 | 0.050 | mg/L | 0.40 | 0.13 | 91 | 70-130 | 8 | 30 |
| Calcium | 56 | 0.050 | 0.010 | mg/L | 20 | 37 | 94 | 70-130 | 0.5 | 30 |
| Potassium | 30 | 0.050 | 0.010 | mg/L | 20 | 11 | 94 | 70-130 | 1 | 30 |
| Sodium | 63 | 0.050 | 0.010 | mg/L | 20 | 43 | 96 | 70-130 | 0.6 | 30 |
| Iron | 7.8 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 97 | 70-130 | 1 | 30 |
| Manganese | 0.40 | 0.010 | 0.0010 | mg/L | 0.40 | 0.015 | 96 | 70-130 | 2 | 30 |
| **Matrix Spike Dup (BI13006-MSD2)** | | **Source: 1108644-11** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 8.9 | 99 | 70-130 | 0.03 | 30 |
| Manganese | 0.48 | 0.010 | 0.0010 | mg/L | 0.40 | 0.11 | 93 | 70-130 | 3 | 30 |
| Boron | 0.42 | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 80 | 70-130 | 16 | 30 |
| Sodium | 31 | 0.050 | 0.010 | mg/L | 20 | 12 | 99 | 70-130 | 2 | 30 |
| Iron | 8.4 | 0.10 | 0.020 | mg/L | 8.0 | 0.59 | 98 | 70-130 | 0.3 | 30 |
| Calcium | 41 | 0.050 | 0.010 | mg/L | 20 | 21 | 100 | 70-130 | 2 | 30 |
| Magnesium | 25 | 0.050 | 0.010 | mg/L | 20 | 5.7 | 97 | 70-130 | 0.1 | 30 |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108620**
**Revised Report**

## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below.
Questions regarding this report should be directed to Client Services at 813-855-1844.

+O Matrix spike source sample was over the reccommended range for the method.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1108620

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| Sample Number | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-AA9-14 | 09/28/11 | ~~0900~~ 0955 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 554 | 1.95 | 4.6 | 25.4 | | |
| 02 | DP-AA9-14-D | | ~~1005~~ 1000 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 554 | 1.95 | 4.6 | 25.4 | | |
| 03 | DP-AA9-22 | | 1010 | GW | | X | | 1 | 1 | | | | | 369.0 | 0.26 | 5.0 | 25.1 | | |
| 04 | DP-AA9-27 | | 1015 | GW | | X | | 1 | 1 | | | | | 266.9 | 0.28 | 4.9 | 24.9 | | |

| Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|
| Containers Prepared/ Relinquished: | 0835 09-23-11 | | 0835 092311 |
| Relinquished: | 1415 092811 | | |
| Relinquished: | | | |
| Relinquished: | | | |
| Relinquished: | | | |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks:

1108620

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

Chain of Custody

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108622**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D07-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-01** | | | | | | |
| Date/Time Collected | | **09/27/11 08:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.7 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 08:25 | SDH |
| Water Temperature | °C | 26.0 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 08:25 | SDH |
| Specific conductance | umhos/cm | 346 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 08:25 | SDH |
| Dissolved Oxygen | mg/L | 1.7 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 08:25 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.044 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 32 | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 29 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 23:29 | MEJ |
| Fluoride | mg/L | 0.072 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 23:29 | MEJ |
| Nitrate (as N) | mg/L | 9.1 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 23:29 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 23:29 | MEJ |
| Orthophosphate as P | mg/L | 0.043 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 23:29 | MEJ |
| Phosphorous - Total as P | mg/L | 0.078 | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Sulfate | mg/L | 32 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 23:29 | MEJ |
| Total Alkalinity | mg/L | 31 | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 1.7 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |
| Total Organic Carbon | mg/L | 12 | SM 5310B | 1.0 | 0.50 | | 09/28/11 11:42 | ARM |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 12 | SM 5310B | 1.0 | 0.50 | | 09/28/11 16:54 | ARM |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.091 I | EPA 200.7 | 0.10 | 0.050 | 09/27/11 09:32 | 10/03/11 14:39 | VWC |
| Calcium | mg/L | 28 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 14:39 | VWC |
| Iron | mg/L | 0.40 | EPA 200.7 | 0.10 | 0.020 | 09/27/11 09:32 | 10/03/11 14:39 | VWC |
| Magnesium | mg/L | 5.0 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 14:39 | VWC |
| Manganese | mg/L | 0.0074 I | EPA 200.7 | 0.010 | 0.0010 | 09/27/11 09:32 | 10/03/11 14:39 | VWC |
| Potassium | mg/L | 5.1 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 14:39 | VWC |
| Sodium | mg/L | 27 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 14:39 | VWC |

| | |
|---|---|
| Sample Description | **DP-D07-9** |
| Matrix | **Groundwater** |
| SAL Sample Number | **1108622-02** |
| Date/Time Collected | **09/27/11 08:40** |
| Collected by | **Sean Harmon** |
| Date/Time Received | **09/27/11 14:00** |

**Field Parameters**

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108622**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D07-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-02** | | | | | | |
| Date/Time Collected | | **09/27/11 08:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| pH | SU | 3.7 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 08:40 | SDH |
| Water Temperature | °C | 25.6 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 08:40 | SDH |
| Specific conductance | umhos/cm | 613 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 08:40 | SDH |
| Dissolved Oxygen | mg/L | 0.8 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 08:40 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 46 | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 43 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 11:37 | MEJ |
| Fluoride | mg/L | 0.21 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 23:29 | MEJ |
| Nitrate (as N) | mg/L | 23 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 11:37 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 23:29 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 23:29 | MEJ |
| Phosphorous - Total as P | mg/L | 0.046 | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Sulfate | mg/L | 68 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 23:29 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 3.3 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |
| Total Organic Carbon | mg/L | 2.9 | SM 5310B | 1.0 | 0.50 | | 09/28/11 11:42 | ARM |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.8 | SM 5310B | 1.0 | 0.50 | | 09/28/11 16:54 | ARM |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.12 | EPA 200.7 | 0.10 | 0.050 | 09/27/11 09:32 | 10/03/11 14:43 | VWC |
| Calcium | mg/L | 37 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 14:43 | VWC |
| Iron | mg/L | 0.061 I | EPA 200.7 | 0.10 | 0.020 | 09/27/11 09:32 | 10/03/11 14:43 | VWC |
| Magnesium | mg/L | 8.4 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 14:43 | VWC |
| Manganese | mg/L | 0.011 | EPA 200.7 | 0.010 | 0.0010 | 09/27/11 09:32 | 10/03/11 14:43 | VWC |
| Potassium | mg/L | 12 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 14:43 | VWC |
| Sodium | mg/L | 39 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 14:43 | VWC |
| Sample Description | | **DP-D08-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-03** | | | | | | |
| Date/Time Collected | | **09/27/11 08:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 08:00 | SDH |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108622**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D08-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-03** | | | | | | |
| Date/Time Collected | | **09/27/11 08:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| Water Temperature | °C | 25.3 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 08:00 | SDH |
| Specific conductance | umhos/cm | 449 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 08:00 | SDH |
| Dissolved Oxygen | mg/L | 2.8 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 08:00 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.11 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 28 | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 35 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 14:21 | MEJ |
| Nitrate (as N) | mg/L | 8.0 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 23:29 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 23:29 | MEJ |
| Phosphorous - Total as P | mg/L | 0.16 | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Total Alkalinity | mg/L | 42 | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |
| Sample Description | | **DP-D09-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-04** | | | | | | |
| Date/Time Collected | | **09/27/11 07:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 07:55 | SDH |
| Water Temperature | °C | 24.9 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 07:55 | SDH |
| Specific conductance | umhos/cm | 615 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 07:55 | SDH |
| Dissolved Oxygen | mg/L | 1.8 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 07:55 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 11 I | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 45 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 11:37 | MEJ |
| Nitrate (as N) | mg/L | 27 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 11:37 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 23:29 | MEJ |
| Phosphorous - Total as P | mg/L | 0.50 | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 2.4 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**October 26, 2011**
**Work Order: 1108622**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D09-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-05** | | | | | | |
| Date/Time Collected | | **09/27/11 07:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.6 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 07:50 | SDH |
| Water Temperature | °C | 25.8 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 07:50 | SDH |
| Specific conductance | umhos/cm | 591 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 07:50 | SDH |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 07:50 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.14 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 50 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 11:37 | MEJ |
| Fluoride | mg/L | 0.35 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 23:29 | MEJ |
| Nitrate (as N) | mg/L | 22 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 11:37 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 23:29 | MEJ |
| Orthophosphate as P | mg/L | 0.092 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 23:29 | MEJ |
| Phosphorous - Total as P | mg/L | 0.028 I | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Sulfate | mg/L | 64 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 23:29 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 2.8 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |
| Total Organic Carbon | mg/L | 2.9 | SM 5310B | 1.0 | 0.50 | | 09/28/11 11:42 | ARM |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.3 | SM 5310B | 1.0 | 0.50 | | 09/28/11 16:54 | ARM |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.12 | EPA 200.7 | 0.10 | 0.050 | 09/27/11 09:32 | 10/03/11 14:46 | VWC |
| Calcium | mg/L | 37 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 14:46 | VWC |
| Iron | mg/L | 0.033 I | EPA 200.7 | 0.10 | 0.020 | 09/27/11 09:32 | 10/03/11 14:46 | VWC |
| Magnesium | mg/L | 9.5 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 14:46 | VWC |
| Manganese | mg/L | 0.0095 I | EPA 200.7 | 0.010 | 0.0010 | 09/27/11 09:32 | 10/03/11 14:46 | VWC |
| Potassium | mg/L | 9.1 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 14:46 | VWC |
| Sodium | mg/L | 38 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 14:46 | VWC |

| | |
|---|---|
| Sample Description | **DP-D11-11** |
| Matrix | **Groundwater** |
| SAL Sample Number | **1108622-06** |
| Date/Time Collected | **09/27/11 07:45** |
| Collected by | **Sean Harmon** |
| Date/Time Received | **09/27/11 14:00** |

**Field Parameters**

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108622**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D11-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-06** | | | | | | |
| Date/Time Collected | | **09/27/11 07:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| pH | SU | 5.2 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 07:45 | SDH |
| Water Temperature | °C | 26.0 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 07:45 | SDH |
| Specific conductance | umhos/cm | 442 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 07:45 | SDH |
| Dissolved Oxygen | mg/L | 2.3 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 07:45 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 33 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 11:37 | MEJ |
| Nitrate (as N) | mg/L | 16 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 11:37 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | 09/27/11 23:29 | 09/28/11 11:37 | MEJ |
| Phosphorous - Total as P | mg/L | 0.12 | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Total Alkalinity | mg/L | 31 | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 1.6 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |
| Sample Description | | **DP-D11-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-06RE1** | | | | | | |
| Date/Time Collected | | **09/27/11 07:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 33 | EPA 300.0 | 0.20 | 0.050 | 09/30/11 11:37 | 09/28/11 11:37 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | 09/30/11 11:37 | 09/28/11 11:37 | MEJ |
| Sample Description | | **DP-D12-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-07** | | | | | | |
| Date/Time Collected | | **09/27/11 07:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.6 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 07:40 | SDH |
| Water Temperature | °C | 25.7 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 07:40 | SDH |
| Specific conductance | umhos/cm | 486 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 07:40 | SDH |
| Dissolved Oxygen | mg/L | 1.2 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 07:40 | SDH |
| **Inorganics** | | | | | | | | |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108622**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D12-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-07** | | | | | | |
| Date/Time Collected | | **09/27/11 07:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| Ammonia as N | mg/L | 0.29 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 11 I | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 36 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 11:37 | MEJ |
| Nitrate (as N) | mg/L | 18 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 11:37 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 23:29 | MEJ |
| Phosphorous - Total as P | mg/L | 0.11 | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 2.5 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |
| Sample Description | | **DP-D7.5-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-08** | | | | | | |
| Date/Time Collected | | **09/27/11 08:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 08:00 | SDH |
| Water Temperature | °C | 24.6 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 08:00 | SDH |
| Specific conductance | umhos/cm | 608 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 08:00 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 08:00 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.032 I | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 54 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 11:37 | MEJ |
| Fluoride | mg/L | 0.092 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 23:29 | MEJ |
| Nitrate (as N) | mg/L | 27 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 11:37 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 23:29 | MEJ |
| Orthophosphate as P | mg/L | 0.042 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 23:29 | MEJ |
| Phosphorous - Total as P | mg/L | 0.099 | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Sulfate | mg/L | 42 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 23:29 | MEJ |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 2.1 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |
| Total Organic Carbon | mg/L | 2.4 | SM 5310B | 1.0 | 0.50 | | 09/28/11 11:42 | ARM |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.3 | SM 5310B | 1.0 | 0.50 | | 09/28/11 16:54 | ARM |
| **Metals** | | | | | | | | |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108622**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D7.5-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-08** | | | | | | |
| Date/Time Collected | | **09/27/11 08:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| Boron | mg/L | 0.10 | EPA 200.7 | 0.10 | 0.050 | 09/27/11 09:32 | 10/03/11 14:59 | VWC |
| Calcium | mg/L | 39 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 14:59 | VWC |
| Iron | mg/L | 0.044 I | EPA 200.7 | 0.10 | 0.020 | 09/27/11 09:32 | 10/03/11 14:59 | VWC |
| Magnesium | mg/L | 11 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 14:59 | VWC |
| Manganese | mg/L | 0.12 | EPA 200.7 | 0.010 | 0.0010 | 09/27/11 09:32 | 10/03/11 14:59 | VWC |
| Potassium | mg/L | 11 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 14:59 | VWC |
| Sodium | mg/L | 38 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 14:59 | VWC |
| Sample Description | | **DP-D7.5-14-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-09** | | | | | | |
| Date/Time Collected | | **09/27/11 08:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 08:05 | SDH |
| Water Temperature | °C | 24.6 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 08:05 | SDH |
| Specific conductance | umhos/cm | 608 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 08:05 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 08:05 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.032 I | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 52 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 11:37 | MEJ |
| Fluoride | mg/L | 0.082 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 23:29 | MEJ |
| Nitrate (as N) | mg/L | 27 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 11:37 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 23:29 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 23:29 | MEJ |
| Phosphorous - Total as P | mg/L | 0.077 | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Sulfate | mg/L | 41 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 23:29 | MEJ |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 1.9 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |
| Total Organic Carbon | mg/L | 2.0 | SM 5310B | 1.0 | 0.50 | | 09/28/11 11:42 | ARM |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.2 | SM 5310B | 1.0 | 0.50 | | 09/28/11 16:54 | ARM |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.12 | EPA 200.7 | 0.10 | 0.050 | 09/30/11 09:43 | 10/03/11 16:46 | VWC |

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**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108622**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D7.5-14-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-09** | | | | | | |
| Date/Time Collected | | **09/27/11 08:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| Calcium | mg/L | 39 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:46 | VWC |
| Iron | mg/L | 0.049 I | EPA 200.7 | 0.10 | 0.020 | 09/30/11 09:43 | 10/03/11 16:46 | VWC |
| Magnesium | mg/L | 11 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:46 | VWC |
| Manganese | mg/L | 0.12 | EPA 200.7 | 0.010 | 0.0010 | 09/30/11 09:43 | 10/03/11 16:46 | VWC |
| Potassium | mg/L | 11 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:46 | VWC |
| Sodium | mg/L | 38 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:46 | VWC |
| Sample Description | | **DP-D7.5-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-10** | | | | | | |
| Date/Time Collected | | **09/27/11 08:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 08:25 | SDH |
| Water Temperature | °C | 24.2 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 08:25 | SDH |
| Specific conductance | umhos/cm | 531 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 08:25 | SDH |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 08:25 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.019 I | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chloride | mg/L | 42 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 11:37 | MEJ |
| Nitrate (as N) | mg/L | 25 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 11:37 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 23:29 | MEJ |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |
| Sample Description | | **DP-D7.5-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-10RE1** | | | | | | |
| Date/Time Collected | | **09/27/11 08:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 42 | EPA 300.0 | 0.20 | 0.050 | | 10/21/11 13:34 | MEJ |
| Nitrate (as N) | mg/L | 25 | EPA 300.0 | 0.04 | 0.01 | 10/23/11 11:04 | 09/27/11 23:29 | MEJ |

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**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108622**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-D7.5-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108622-11** | | | | | | |
| Date/Time Collected | | **09/27/11 08:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.2 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 08:35 | SDH |
| Water Temperature | °C | 24.2 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 08:35 | SDH |
| Specific conductance | umhos/cm | 289 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 08:35 | SDH |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 08:35 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.88 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chloride | mg/L | 14 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 8.7 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.92 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12718 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12718-BLK1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| **LCS (BI12718-BS1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Orthophosphate as P | 0.907 | 0.040 | 0.010 | mg/L | 0.90 | | 101 | 85-115 | | |
| Fluoride | 0.845 | 0.040 | 0.010 | mg/L | 0.90 | | 94 | 85-115 | | |
| Nitrite (as N) | 1.36 | 0.04 | 0.01 | mg/L | 1.4 | | 97 | 85-115 | | |
| Chloride | 2.98 | 0.20 | 0.050 | mg/L | 3.0 | | 99 | 85-115 | | |
| Sulfate | 8.46 | 0.60 | 0.20 | mg/L | 9.0 | | 94 | 85-115 | | |
| Nitrate (as N) | 1.58 | 0.04 | 0.01 | mg/L | 1.7 | | 93 | 85-115 | | |
| **LCS Dup (BI12718-BSD1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrate (as N) | 1.64 | 0.04 | 0.01 | mg/L | 1.7 | | 96 | 85-115 | 4 | 200 |
| Sulfate | 8.80 | 0.60 | 0.20 | mg/L | 9.0 | | 98 | 85-115 | 4 | 200 |
| Orthophosphate as P | 0.969 | 0.040 | 0.010 | mg/L | 0.90 | | 108 | 85-115 | 7 | 200 |
| Chloride | 3.03 | 0.20 | 0.050 | mg/L | 3.0 | | 101 | 85-115 | 2 | 200 |
| Fluoride | 0.923 | 0.040 | 0.010 | mg/L | 0.90 | | 103 | 85-115 | 9 | 200 |
| Nitrite (as N) | 1.45 | 0.04 | 0.01 | mg/L | 1.4 | | 104 | 85-115 | 6 | 200 |
| **Matrix Spike (BI12718-MS1)** | | **Source: 1108514-01** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Orthophosphate as P | 90.1 | 0.040 | 0.010 | mg/L | 90 | | 100 | 85-115 | | |
| Chloride | 841 | 0.20 | 0.050 | mg/L | 300 | 550 | 97 | 80-120 | | |
| Sulfate | 1,010 | 0.60 | 0.20 | mg/L | 900 | 222 | 88 | 85-115 | | |
| Nitrate (as N) | 180 | 0.04 | 0.01 | mg/L | 170 | 9.58 | 100 | 85-115 | | |
| Nitrite (as N) | 145 | 0.04 | 0.01 | mg/L | 140 | ND | 104 | 85-115 | | |
| Fluoride | 91.3 | 0.040 | 0.010 | mg/L | 90 | | 101 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12718 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BI12718-MS2)** | | **Source: 1108622-10** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chloride | 49.6 +O | 0.20 | 0.050 | mg/L | 3.0 | 42.4 | 240 | 80-120 | | |
| Nitrate (as N) | 26.8 +O | 0.04 | 0.01 | mg/L | 1.7 | 24.9 | 112 | 85-115 | | |
| Orthophosphate as P | 0.978 | 0.040 | 0.010 | mg/L | 0.90 | 0.0881 | 99 | 85-115 | | |
| Nitrite (as N) | 1.45 | 0.04 | 0.01 | mg/L | 1.4 | ND | 104 | 85-115 | | |
| Fluoride | 0.958 | 0.040 | 0.010 | mg/L | 0.90 | 0.0909 | 96 | 85-115 | | |
| Sulfate | 44.7 | 0.60 | 0.20 | mg/L | 9.0 | 35.6 | 101 | 85-115 | | |
| **Batch BI12751 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12751-BLK1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BI12751-BS1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrite (as N) | 1.32 | 0.04 | 0.01 | mg/L | 1.4 | | 94 | 85-115 | | |
| Chloride | 2.73 | 0.20 | 0.050 | mg/L | 3.0 | | 91 | 85-115 | | |
| Nitrate (as N) | 1.56 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | | |
| **LCS Dup (BI12751-BSD1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrate (as N) | 1.57 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 0.6 | 200 |
| Chloride | 2.79 | 0.20 | 0.050 | mg/L | 3.0 | | 93 | 85-115 | 2 | 200 |
| Nitrite (as N) | 1.36 | 0.04 | 0.01 | mg/L | 1.4 | | 97 | 85-115 | 3 | 200 |
| **Matrix Spike (BI12751-MS1)** | | **Source: 1108624-09** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrate (as N) | 7.47 | 0.04 | 0.01 | mg/L | 1.7 | 5.59 | 111 | 85-115 | | |
| Chloride | 17.8 +O | 0.20 | 0.050 | mg/L | 3.0 | 13.9 | 130 | 80-120 | | |
| Nitrite (as N) | 1.42 | 0.04 | 0.01 | mg/L | 1.4 | ND | 101 | 85-115 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12751 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BI12751-MS2)** | | **Source: 1108628-09** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrate (as N) | 23.2 +O | 0.04 | 0.01 | mg/L | 1.7 | 18.5 | 276 | 85-115 | | |
| Chloride | 39.2 +O | 0.20 | 0.050 | mg/L | 3.0 | 31.6 | 253 | 80-120 | | |
| Nitrite (as N) | 1.51 | 0.04 | 0.01 | mg/L | 1.4 | ND | 108 | 85-115 | | |
| **Batch BI12807 - COD prep** | | | | | | | | | | |
| **Blank (BI12807-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BI12807-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chemical Oxygen Demand | 48 | 25 | 10 | mg/L | 50 | | 96 | 90-110 | | |
| **Matrix Spike (BI12807-MS1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chemical Oxygen Demand | 77 | 25 | 10 | mg/L | 50 | 32 | 90 | 85-115 | | |
| **Matrix Spike Dup (BI12807-MSD1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chemical Oxygen Demand | 75 | 25 | 10 | mg/L | 50 | 32 | 86 | 85-115 | 3 | 32 |
| **Batch BI12818 - alkalinity** | | | | | | | | | | |
| **Blank (BI12818-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BI12818-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12818 - alkalinity** | | | | | | | | | | |
| **Matrix Spike (BI12818-MS1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 170 | 8.0 | 2.0 | mg/L | 120 | 31 | 108 | 80-120 | | |
| **Matrix Spike Dup (BI12818-MSD1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 170 | 8.0 | 2.0 | mg/L | 120 | 31 | 108 | 80-120 | 0 | 26 |
| **Batch BI12821 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BI12821-BLK1)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BI12821-BLK2)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BI12821-BLK3)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BI12821-BLK4)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BI12821-BS1)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.467 | 0.040 | 0.010 | mg/L | 0.50 | | 93 | 90-110 | | |
| **LCS (BI12821-BS2)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.468 | 0.040 | 0.010 | mg/L | 0.50 | | 94 | 90-110 | | |
| **LCS (BI12821-BS3)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.478 | 0.040 | 0.010 | mg/L | 0.50 | | 96 | 90-110 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12821 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **LCS (BI12821-BS4)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.488 | 0.040 | 0.010 | mg/L | 0.50 | | 98 | 90-110 | | |
| **Matrix Spike (BI12821-MS1)** | | **Source: 1108510-07** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.513 | 0.040 | 0.010 | mg/L | 0.50 | 0.0732 | 88 | 75-125 | | |
| **Matrix Spike (BI12821-MS2)** | | **Source: 1108525-02** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 1.04 | 0.040 | 0.010 | mg/L | 0.50 | 0.621 | 83 | 75-125 | | |
| **Matrix Spike (BI12821-MS3)** | | **Source: 1108547-02** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 1.13 | 0.040 | 0.010 | mg/L | 0.50 | 0.669 | 93 | 75-125 | | |
| **Matrix Spike (BI12821-MS4)** | | **Source: 1108599-07** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.510 | 0.040 | 0.010 | mg/L | 0.50 | 0.0440 | 93 | 75-125 | | |
| **Matrix Spike Dup (BI12821-MSD1)** | | **Source: 1108510-07** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.541 | 0.040 | 0.010 | mg/L | 0.50 | 0.0732 | 94 | 75-125 | 5 | 25 |
| **Matrix Spike Dup (BI12821-MSD2)** | | **Source: 1108525-02** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 1.07 | 0.040 | 0.010 | mg/L | 0.50 | 0.621 | 91 | 75-125 | 3 | 25 |
| **Matrix Spike Dup (BI12821-MSD3)** | | **Source: 1108547-02** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 1.10 | 0.040 | 0.010 | mg/L | 0.50 | 0.669 | 87 | 75-125 | 3 | 25 |
| **Matrix Spike Dup (BI12821-MSD4)** | | **Source: 1108599-07** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.510 | 0.040 | 0.010 | mg/L | 0.50 | 0.0440 | 93 | 75-125 | 0.02 | 25 |
| **Batch BI12826 - TOC prep** | | | | | | | | | | |
| **Blank (BI12826-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12826 - TOC prep** | | | | | | | | | | |
| **LCS (BI12826-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 10.3 | 1.0 | 0.50 | mg/L | 10 | | 103 | 90-110 | | |
| **Matrix Spike (BI12826-MS1)** | | **Source: 1108622-08** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 12.9 | 1.0 | 0.50 | mg/L | 10 | 2.35 | 105 | 85-115 | | |
| **Matrix Spike Dup (BI12826-MSD1)** | | **Source: 1108622-08** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 12.8 | 1.0 | 0.50 | mg/L | 10 | 2.35 | 104 | 85-115 | 0.9 | 10 |
| **Batch BI12934 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12934-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BI12934-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chloride | 2.83 | 0.20 | 0.050 | mg/L | 3.0 | | 94 | 85-115 | | |
| Nitrite (as N) | 1.34 | 0.04 | 0.01 | mg/L | 1.4 | | 96 | 85-115 | | |
| Nitrate (as N) | 1.57 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | | |
| **LCS Dup (BI12934-BSD1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Nitrite (as N) | 1.32 | 0.04 | 0.01 | mg/L | 1.4 | | 94 | 85-115 | 2 | 200 |
| Chloride | 2.73 | 0.20 | 0.050 | mg/L | 3.0 | | 91 | 85-115 | 4 | 200 |
| Nitrate (as N) | 1.56 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 0.6 | 200 |
| **Matrix Spike (BI12934-MS1)** | | **Source: 1108622-06** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Nitrate (as N) | 31.0 | 0.04 | 0.01 | mg/L | 17 | 15.9 | 89 | 85-115 | | |
| Chloride | 60.3 | 0.20 | 0.050 | mg/L | 30 | 32.9 | 91 | 80-120 | | |
| Nitrite (as N) | 13.9 | 0.04 | 0.01 | mg/L | 14 | ND | 99 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12934 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BI12934-MS2)** | | **Source: 1108906-01** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chloride | 12.2 | 0.20 | 0.050 | mg/L | 3.0 | 9.09 | 104 | 80-120 | | |
| Nitrite (as N) | 1.32 | 0.04 | 0.01 | mg/L | 1.4 | ND | 94 | 85-115 | | |
| Nitrate (as N) | 3.34 | 0.04 | 0.01 | mg/L | 1.7 | 1.68 | 98 | 85-115 | | |
| **Batch BI13021 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI13021-BLK1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BI13021-BS1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 3.02 | 0.20 | 0.050 | mg/L | 3.0 | | 101 | 85-115 | | |
| **LCS Dup (BI13021-BSD1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 2.93 | 0.20 | 0.050 | mg/L | 3.0 | | 98 | 85-115 | 3 | 200 |
| **Matrix Spike (BI13021-MS1)** | | **Source: 1108628-18** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 16.6 | 0.20 | 0.050 | mg/L | 3.0 | 13.4 | 107 | 80-120 | | |
| **Matrix Spike (BI13021-MS2)** | | **Source: 1108897-01** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 82.6 +O | 0.20 | 0.050 | mg/L | 3.0 | 280 | NR | 80-120 | | |
| **Batch BJ10425 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ10425-BLK1)** | | | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10425 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ10425-BLK2)** | | | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ10425-BS1)** | | | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.65 | 0.20 | 0.05 | mg/L | 2.5 | | 106 | 90-110 | | |
| **LCS (BJ10425-BS2)** | | | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.66 | 0.20 | 0.05 | mg/L | 2.5 | | 106 | 90-110 | | |
| **Matrix Spike (BJ10425-MS1)** | | **Source: 1108622-07** | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 4.46 | 0.20 | 0.05 | mg/L | 2.5 | 2.51 | 78 | 80-120 | | |
| **Matrix Spike (BJ10425-MS2)** | | **Source: 1108624-06** | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.58 | 0.20 | 0.05 | mg/L | 2.5 | 1.29 | 92 | 80-120 | | |
| **Matrix Spike Dup (BJ10425-MSD1)** | | **Source: 1108622-07** | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 4.81 | 0.20 | 0.05 | mg/L | 2.5 | 2.51 | 92 | 80-120 | 8 | 20 |
| **Matrix Spike Dup (BJ10425-MSD2)** | | **Source: 1108624-06** | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 4.24 | 0.20 | 0.05 | mg/L | 2.5 | 1.29 | 118 | 80-120 | 17 | 20 |
| **Batch BJ11217 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11217-BLK1)** | | | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BJ11217-BLK2)** | | | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11217 - Ammonia by SEAL** | | | | | | | | | | |
| **LCS (BJ11217-BS1)** | | | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | | 94 | 90-110 | | |
| **LCS (BJ11217-BS2)** | | | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.50 | 0.040 | 0.010 | mg/L | 0.50 | | 100 | 90-110 | | |
| **Matrix Spike (BJ11217-MS1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.51 | 0.040 | 0.010 | mg/L | 0.50 | 0.044 | 94 | 90-110 | | |
| **Matrix Spike (BJ11217-MS2)** | | **Source: 1108624-06** | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.51 | 0.040 | 0.010 | mg/L | 0.50 | 0.013 | 100 | 90-110 | | |
| **Matrix Spike Dup (BJ11217-MSD1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.58 J3 | 0.040 | 0.010 | mg/L | 0.50 | 0.044 | 108 | 90-110 | 13 | 10 |
| **Matrix Spike Dup (BJ11217-MSD2)** | | **Source: 1108624-06** | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | 0.013 | 91 | 90-110 | 9 | 10 |

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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12827 - DOC prep** | | | | | | | | | | |
| **Blank (BI12827-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI12827-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 10.4 | 1.0 | 0.50 | mg/L | 10 | | 104 | 90-110 | | |
| **Matrix Spike (BI12827-MS1)** | | **Source: 1108622-02** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 12.4 | 1.0 | 0.50 | mg/L | 10 | 1.83 | 106 | 85-125 | | |
| **Matrix Spike Dup (BI12827-MSD1)** | | **Source: 1108622-02** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 12.1 | 1.0 | 0.50 | mg/L | 10 | 1.83 | 102 | 85-125 | 3 | 25 |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12710 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BI12710-BLK1)** | | | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Sodium | 0.078 | 0.050 | 0.010 | mg/L | | | | | | |
| Magnesium | 0.053 | 0.050 | 0.010 | mg/L | | | | | | |
| Potassium | 0.066 | 0.050 | 0.010 | mg/L | | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| Iron | 0.034 I | 0.10 | 0.020 | mg/L | | | | | | |
| Calcium | 0.034 I | 0.050 | 0.010 | mg/L | | | | | | |
| **LCS (BI12710-BS1)** | | | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Boron | 0.43 | 0.10 | 0.050 | mg/L | 0.40 | | 107 | 85-115 | | |
| Iron | 7.6 | 0.10 | 0.020 | mg/L | 8.0 | | 95 | 85-115 | | |
| Manganese | 0.38 | 0.010 | 0.0010 | mg/L | 0.40 | | 96 | 85-115 | | |
| Calcium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| Potassium | 19 | 0.050 | 0.010 | mg/L | 20 | | 93 | 85-115 | | |
| Sodium | 20 | 0.050 | 0.010 | mg/L | 20 | | 98 | 85-115 | | |
| Magnesium | 19 | 0.050 | 0.010 | mg/L | 20 | | 96 | 85-115 | | |
| **Matrix Spike (BI12710-MS1)** | | **Source: 1108663-02** | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Iron | 7.9 | 0.10 | 0.020 | mg/L | 8.0 | 0.11 | 97 | 70-130 | | |
| Boron | 0.52 | 0.10 | 0.050 | mg/L | 0.40 | ND | 131 | 70-130 | | |
| Manganese | 0.44 | 0.010 | 0.0010 | mg/L | 0.40 | 0.048 | 99 | 70-130 | | |
| Magnesium | 22 | 0.050 | 0.010 | mg/L | 20 | 2.8 | 97 | 70-130 | | |
| Potassium | 19 | 0.050 | 0.010 | mg/L | 20 | 0.64 | 93 | 70-130 | | |
| Sodium | 22 | 0.050 | 0.010 | mg/L | 20 | 1.7 | 101 | 70-130 | | |
| Calcium | 31 | 0.050 | 0.010 | mg/L | 20 | 12 | 97 | 70-130 | | |
| **Matrix Spike (BI12710-MS2)** | | **Source: 1108780-03** | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0040 | 101 | 70-130 | | |
| Sodium | 30 | 0.050 | 0.010 | mg/L | 20 | 9.7 | 101 | 70-130 | | |
| Boron | 0.57 | 0.10 | 0.050 | mg/L | 0.40 | ND | 141 | 70-130 | | |
| Calcium | 65 | 0.050 | 0.010 | mg/L | 20 | 45 | 101 | 70-130 | | |
| Magnesium | 32 | 0.050 | 0.010 | mg/L | 20 | 12 | 96 | 70-130 | | |
| Iron | 7.9 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 98 | 70-130 | | |
| Potassium | 22 | 0.050 | 0.010 | mg/L | 20 | 2.9 | 94 | 70-130 | | |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108622**
**Revised Report**

**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12710 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Matrix Spike Dup (BI12710-MSD1)** | | **Source: 1108663-02** | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Calcium | 32 | 0.050 | 0.010 | mg/L | 20 | 12 | 102 | 70-130 | 3 | 30 |
| Magnesium | 23 | 0.050 | 0.010 | mg/L | 20 | 2.8 | 101 | 70-130 | 3 | 30 |
| Boron | 0.47 | 0.10 | 0.050 | mg/L | 0.40 | ND | 116 | 70-130 | 12 | 30 |
| Manganese | 0.45 | 0.010 | 0.0010 | mg/L | 0.40 | 0.048 | 100 | 70-130 | 1 | 30 |
| Sodium | 22 | 0.050 | 0.010 | mg/L | 20 | 1.7 | 101 | 70-130 | 0.4 | 30 |
| Iron | 8.1 | 0.10 | 0.020 | mg/L | 8.0 | 0.11 | 100 | 70-130 | 3 | 30 |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | 0.64 | 101 | 70-130 | 8 | 30 |
| **Matrix Spike Dup (BI12710-MSD2)** | | **Source: 1108780-03** | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Sodium | 30 | 0.050 | 0.010 | mg/L | 20 | 9.7 | 102 | 70-130 | 0.8 | 30 |
| Potassium | 22 | 0.050 | 0.010 | mg/L | 20 | 2.9 | 98 | 70-130 | 3 | 30 |
| Manganese | 0.40 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0040 | 99 | 70-130 | 2 | 30 |
| Calcium | 65 | 0.050 | 0.010 | mg/L | 20 | 45 | 101 | 70-130 | 0.005 | 30 |
| Iron | 7.9 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 97 | 70-130 | 0.5 | 30 |
| Magnesium | 32 | 0.050 | 0.010 | mg/L | 20 | 12 | 97 | 70-130 | 0.6 | 30 |
| Boron | 0.50 | 0.10 | 0.050 | mg/L | 0.40 | ND | 126 | 70-130 | 11 | 30 |
| **Batch BI13006 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BI13006-BLK1)** | | | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Calcium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| Magnesium | 0.025 I | 0.050 | 0.010 | mg/L | | | | | | |
| Iron | 0.020 U | 0.10 | 0.020 | mg/L | | | | | | |
| Sodium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Potassium | 0.016 I | 0.050 | 0.010 | mg/L | | | | | | |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108622**
**Revised Report**

**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13006 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **LCS (BI13006-BS1)** | | | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Calcium | 18 | 0.050 | 0.010 | mg/L | 20 | | 92 | 85-115 | | |
| Iron | 7.6 | 0.10 | 0.020 | mg/L | 8.0 | | 94 | 85-115 | | |
| Sodium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| Boron | 0.39 | 0.10 | 0.050 | mg/L | 0.40 | | 97 | 85-115 | | |
| Potassium | 18 | 0.050 | 0.010 | mg/L | 20 | | 89 | 85-115 | | |
| Manganese | 0.38 | 0.010 | 0.0010 | mg/L | 0.40 | | 96 | 85-115 | | |
| Magnesium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| **Matrix Spike (BI13006-MS1)** | | **Source: 1108620-01** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Boron | 0.53 | 0.10 | 0.050 | mg/L | 0.40 | 0.13 | 101 | 70-130 | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 11 | 91 | 70-130 | | |
| Calcium | 56 | 0.050 | 0.010 | mg/L | 20 | 37 | 93 | 70-130 | | |
| Magnesium | 29 | 0.050 | 0.010 | mg/L | 20 | 9.5 | 97 | 70-130 | | |
| Sodium | 63 | 0.050 | 0.010 | mg/L | 20 | 43 | 98 | 70-130 | | |
| Iron | 7.9 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 98 | 70-130 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.015 | 98 | 70-130 | | |
| **Matrix Spike (BI13006-MS2)** | | **Source: 1108644-11** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Manganese | 0.49 | 0.010 | 0.0010 | mg/L | 0.40 | 0.11 | 96 | 70-130 | | |
| Sodium | 31 | 0.050 | 0.010 | mg/L | 20 | 12 | 96 | 70-130 | | |
| Magnesium | 25 | 0.050 | 0.010 | mg/L | 20 | 5.7 | 98 | 70-130 | | |
| Boron | 0.50 | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 98 | 70-130 | | |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | 0.59 | 98 | 70-130 | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 8.9 | 99 | 70-130 | | |
| Calcium | 40 | 0.050 | 0.010 | mg/L | 20 | 21 | 96 | 70-130 | | |
| **Matrix Spike Dup (BI13006-MSD1)** | | **Source: 1108620-01** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Iron | 7.8 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 97 | 70-130 | 1 | 30 |
| Calcium | 56 | 0.050 | 0.010 | mg/L | 20 | 37 | 94 | 70-130 | 0.5 | 30 |
| Sodium | 63 | 0.050 | 0.010 | mg/L | 20 | 43 | 96 | 70-130 | 0.6 | 30 |
| Boron | 0.49 | 0.10 | 0.050 | mg/L | 0.40 | 0.13 | 91 | 70-130 | 8 | 30 |
| Manganese | 0.40 | 0.010 | 0.0010 | mg/L | 0.40 | 0.015 | 96 | 70-130 | 2 | 30 |
| Magnesium | 29 | 0.050 | 0.010 | mg/L | 20 | 9.5 | 95 | 70-130 | 0.9 | 30 |
| Potassium | 30 | 0.050 | 0.010 | mg/L | 20 | 11 | 94 | 70-130 | 1 | 30 |

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**October 26, 2011**
**Work Order: 1108622**
**Revised Report**

**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13006 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Matrix Spike Dup (BI13006-MSD2)** | | **Source: 1108644-11** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 8.9 | 99 | 70-130 | 0.03 | 30 |
| Sodium | 31 | 0.050 | 0.010 | mg/L | 20 | 12 | 99 | 70-130 | 2 | 30 |
| Boron | 0.42 | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 80 | 70-130 | 16 | 30 |
| Magnesium | 25 | 0.050 | 0.010 | mg/L | 20 | 5.7 | 97 | 70-130 | 0.1 | 30 |
| Calcium | 41 | 0.050 | 0.010 | mg/L | 20 | 21 | 100 | 70-130 | 2 | 30 |
| Iron | 8.4 | 0.10 | 0.020 | mg/L | 8.0 | 0.59 | 98 | 70-130 | 0.3 | 30 |
| Manganese | 0.48 | 0.010 | 0.0010 | mg/L | 0.40 | 0.11 | 93 | 70-130 | 3 | 30 |

**Hazen and Sawyer**
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**October 26, 2011**
**Work Order: 1108622**
**Revised Report**

## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

| | |
|---|---|
| J3 | Quality control value for precision was outside control limits. |
| +O | Matrix spike source sample was over the reccommended range for the method. |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1108622

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-D07-5 | 092711 | 0825 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 345.8 | 1.68 | 5.7 | 26.0 | | |
| 02 | DP-D07-9 | | 0840 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 612 | 0.81 | 3.7 | 25.6 | | |
| 03 | DP-D08-9 | | 0800 | GW | | X | | | 1 | | | | | 448.7 | 2.79 | 5.0 | 25.3 | | |
| 04 | DP-D09-15 | | 0755 | GW | | X | | | 1 | | | | | 615 | 1.79 | 4.8 | 24.9 | | |
| 05 | DP-D09-8 | | 0750 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 591 | 0.48 | 4.6 | 25.8 | | |
| 06 | DP-D11-11 | | 0745 | GW | | X | | | 1 | | | | | 442.4 | 2.28 | 5.18 | 26.0 | | |
| 07 | DP-D12-11 | | 0740 | GW | | X | | | 1 | | | | | 486 | 1.19 | 4.6 | 25.7 | | |
| 08 | DP-D7.5-14 | | 0800 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 608 | 0.22 | 4.9 | 24.6 | | |
| 09 | DP-D7.5-14-D | | 0805 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 608 | 0.22 | 4.9 | 24.6 | | |
| 10 | DP-D7.5-20 | | 0825 | GW | | X | | 1 | | 1 | | | | 531 | 0.47 | 5.1 | 24.2 | | |
| 11 | DP-D7.5-26 | | 0835 | GW | | X | | 1 | | 1 | | | | 289.1 | 0.54 | 5.2 | 24.2 | | |
| | | | | | | | | | | | | | | | | | | | |

| Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 0900 09-23-11 | Received: | Date/Time: 0900 092311 |
| Relinquished: | Date/Time: 1400 092711 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks:

1108622

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

Chain of Custody

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108624**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E04-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108624-01** | | | | | | |
| Date/Time Collected | | **09/27/11 08:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.0 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 08:55 | SDH |
| Water Temperature | °C | 26.9 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 08:55 | SDH |
| Specific conductance | umhos/cm | 76 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 08:55 | SDH |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 08:55 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.25 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 22 I | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 3.6 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 0.33 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Phosphorous - Total as P | mg/L | 1.0 | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.58 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E07-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108624-02** | | | | | | |
| Date/Time Collected | | **09/27/11 09:09** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.0 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 09:09 | SDH |
| Water Temperature | °C | 26.5 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 09:09 | SDH |
| Specific conductance | umhos/cm | 264 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 09:09 | SDH |
| Dissolved Oxygen | mg/L | 1.0 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 09:09 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.12 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 11 I | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 12 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 7.2 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Phosphorous - Total as P | mg/L | 0.12 | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Total Alkalinity | mg/L | 5.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |

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

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**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108624**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E08-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108624-03** | | | | | | |
| Date/Time Collected | | **09/27/11 09:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.2 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 09:25 | SDH |
| Water Temperature | °C | 26.8 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 09:25 | SDH |
| Specific conductance | umhos/cm | 304 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 09:25 | SDH |
| Dissolved Oxygen | mg/L | 0.7 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 09:25 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.088 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 13 I | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 22 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 9.1 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Phosphorous - Total as P | mg/L | 0.086 | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.7 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |
| Sample Description | | **DP-E10-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108624-04** | | | | | | |
| Date/Time Collected | | **09/27/11 09:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 3.9 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 09:35 | SDH |
| Water Temperature | °C | 27.1 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 09:35 | SDH |
| Specific conductance | umhos/cm | 352 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 09:35 | SDH |
| Dissolved Oxygen | mg/L | 0.8 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 09:35 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.045 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chloride | mg/L | 31 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 9.1 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108624**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E11-12** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108624-05** | | | | | | |
| Date/Time Collected | | **09/27/11 09:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 09:35 | SDH |
| Water Temperature | °C | 26.4 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 09:35 | SDH |
| Specific conductance | umhos/cm | 506 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 09:35 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 09:35 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.045 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 39 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 14:21 | MEJ |
| Nitrate (as N) | mg/L | 17 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Phosphorous - Total as P | mg/L | 0.031 I | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Total Alkalinity | mg/L | 8.0 | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.7 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E12-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108624-06** | | | | | | |
| Date/Time Collected | | **09/27/11 08:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.3 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 08:50 | SDH |
| Water Temperature | °C | 25.9 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 08:50 | SDH |
| Specific conductance | umhos/cm | 462 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 08:50 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 08:50 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.013 I | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 32 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 14:21 | MEJ |
| Fluoride | mg/L | 0.063 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 16 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 16:57 | MEJ |
| Phosphorous - Total as P | mg/L | 0.034 I | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Sulfate | mg/L | 49 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 16:57 | MEJ |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108624**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E12-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108624-06** | | | | | | |
| Date/Time Collected | | **09/27/11 08:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:26 | 10/11/11 16:54 | SMD |
| Total Organic Carbon | mg/L | 2.4 | SM 5310B | 1.0 | 0.50 | | 09/28/11 11:42 | ARM |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.4 | SM 5310B | 1.0 | 0.50 | | 09/28/11 16:54 | ARM |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.10 | EPA 200.7 | 0.10 | 0.050 | 09/30/11 09:43 | 10/03/11 16:49 | VWC |
| Calcium | mg/L | 33 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:49 | VWC |
| Iron | mg/L | 0.27 | EPA 200.7 | 0.10 | 0.020 | 09/30/11 09:43 | 10/03/11 16:49 | VWC |
| Magnesium | mg/L | 7.8 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:49 | VWC |
| Manganese | mg/L | 0.15 | EPA 200.7 | 0.010 | 0.0010 | 09/30/11 09:43 | 10/03/11 16:49 | VWC |
| Potassium | mg/L | 11 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:49 | VWC |
| Sodium | mg/L | 31 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:49 | VWC |
| Sample Description | | **DP-E12-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108624-07** | | | | | | |
| Date/Time Collected | | **09/27/11 09:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 09:00 | SDH |
| Water Temperature | °C | 25.7 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 09:00 | SDH |
| Specific conductance | umhos/cm | 607 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 09:00 | SDH |
| Dissolved Oxygen | mg/L | 1.0 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 09:00 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.020 I | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 44 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 14:21 | MEJ |
| Fluoride | mg/L | 0.078 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 28 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 16:57 | MEJ |
| Phosphorous - Total as P | mg/L | 0.044 | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Sulfate | mg/L | 54 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 16:57 | MEJ |
| Total Alkalinity | mg/L | 7.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |

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**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108624**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E12-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108624-07** | | | | | | |
| Date/Time Collected | | **09/27/11 09:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |
| Total Organic Carbon | mg/L | 2.2 | SM 5310B | 1.0 | 0.50 | | 09/28/11 11:42 | ARM |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.4 | SM 5310B | 1.0 | 0.50 | | 09/28/11 16:54 | ARM |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.12 | EPA 200.7 | 0.10 | 0.050 | 09/30/11 09:43 | 10/03/11 16:53 | VWC |
| Calcium | mg/L | 40 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:53 | VWC |
| Iron | mg/L | 0.046 I | EPA 200.7 | 0.10 | 0.020 | 09/30/11 09:43 | 10/03/11 16:53 | VWC |
| Magnesium | mg/L | 10 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:53 | VWC |
| Manganese | mg/L | 0.025 | EPA 200.7 | 0.010 | 0.0010 | 09/30/11 09:43 | 10/03/11 16:53 | VWC |
| Potassium | mg/L | 13 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:53 | VWC |
| Sodium | mg/L | 44 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:53 | VWC |
| Sample Description | | **DP-E12-22** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108624-08** | | | | | | |
| Date/Time Collected | | **09/27/11 09:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.2 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 09:10 | SDH |
| Water Temperature | °C | 25.2 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 09:10 | SDH |
| Specific conductance | umhos/cm | 311 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 09:10 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 09:10 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.014 I | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 8.9 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 16:57 | MEJ |
| Fluoride | mg/L | 0.10 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 7.6 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 16:57 | MEJ |
| Phosphorous - Total as P | mg/L | 0.13 | SM 4500P-E | 0.040 | 0.010 | 09/28/11 12:00 | 10/04/11 15:12 | MEJ |
| Sulfate | mg/L | 68 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 16:57 | MEJ |
| Total Alkalinity | mg/L | 5.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |

**Hazen and Sawyer**
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**October 26, 2011**
**Work Order: 1108624**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E12-22** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1108624-08** | | | | | | | |
| Date/Time Collected | | **09/27/11 09:10** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | | |
| Total Organic Carbon | mg/L | 2.3 | | SM 5310B | 1.0 | 0.50 | | 09/28/11 11:42 | ARM |
| **Inorganic, Dissolved** | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.4 | | SM 5310B | 1.0 | 0.50 | | 09/28/11 16:54 | ARM |
| **Metals** | | | | | | | | | |
| Boron | mg/L | 0.054 | I | EPA 200.7 | 0.10 | 0.050 | 09/30/11 09:43 | 10/03/11 16:57 | VWC |
| Calcium | mg/L | 25 | | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:57 | VWC |
| Iron | mg/L | 0.020 | U | EPA 200.7 | 0.10 | 0.020 | 09/30/11 09:43 | 10/03/11 16:57 | VWC |
| Magnesium | mg/L | 8.1 | | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:57 | VWC |
| Manganese | mg/L | 0.19 | | EPA 200.7 | 0.010 | 0.0010 | 09/30/11 09:43 | 10/03/11 16:57 | VWC |
| Potassium | mg/L | 13 | | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:57 | VWC |
| Sodium | mg/L | 6.8 | | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 16:57 | VWC |
| Sample Description | | **DP-E12-28** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1108624-09** | | | | | | | |
| Date/Time Collected | | **09/27/11 09:20** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | | |
| **Field Parameters** | | | | | | | | | |
| pH | SU | 5.1 | | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 09:20 | SDH |
| Water Temperature | °C | 25.1 | | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 09:20 | SDH |
| Specific conductance | umhos/cm | 295 | | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 09:20 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 09:20 | SDH |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 0.039 | I | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chloride | mg/L | 14 | | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 5.6 | | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Nitrite (as N) | mg/L | 0.01 | U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Total Alkalinity | mg/L | 4.0 | I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.90 | | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108624**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-E12-28-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108624-10** | | | | | | |
| Date/Time Collected | | **09/27/11 09:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 09:25 | SDH |
| Water Temperature | °C | 25.1 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 09:25 | SDH |
| Specific conductance | umhos/cm | 295 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 09:25 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 09:25 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.040 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chloride | mg/L | 14 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 5.7 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Total Alkalinity | mg/L | 5.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.84 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12747 - alkalinity** | | | | | | | | | | |
| **Blank (BI12747-BLK1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BI12747-BLK2)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BI12747-BS1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | | 108 | 90-110 | | |
| **LCS (BI12747-BS2)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | | 108 | 90-110 | | |
| **Matrix Spike (BI12747-MS1)** | | **Source: 1108663-01** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | ND | 108 | 80-120 | | |
| **Matrix Spike (BI12747-MS2)** | | **Source: 1108624-06** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 150 | 8.0 | 2.0 | mg/L | 120 | 10 | 109 | 80-120 | | |
| **Matrix Spike Dup (BI12747-MSD1)** | | **Source: 1108663-01** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | ND | 108 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BI12747-MSD2)** | | **Source: 1108624-06** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 150 | 8.0 | 2.0 | mg/L | 120 | 10 | 109 | 80-120 | 0 | 26 |
| **Batch BI12751 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12751-BLK1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12751 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS (BI12751-BS1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Sulfate | 8.22 | 0.60 | 0.20 | mg/L | 9.0 | | 91 | 85-115 | | |
| Nitrite (as N) | 1.32 | 0.04 | 0.01 | mg/L | 1.4 | | 94 | 85-115 | | |
| Orthophosphate as P | 0.853 | 0.040 | 0.010 | mg/L | 0.90 | | 95 | 85-115 | | |
| Nitrate (as N) | 1.56 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | | |
| Fluoride | 0.922 | 0.040 | 0.010 | mg/L | 0.90 | | 102 | 85-115 | | |
| Chloride | 2.73 | 0.20 | 0.050 | mg/L | 3.0 | | 91 | 85-115 | | |
| **LCS Dup (BI12751-BSD1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Orthophosphate as P | 0.940 | 0.040 | 0.010 | mg/L | 0.90 | | 104 | 85-115 | 10 | 200 |
| Fluoride | 0.902 | 0.040 | 0.010 | mg/L | 0.90 | | 100 | 85-115 | 2 | 200 |
| Chloride | 2.79 | 0.20 | 0.050 | mg/L | 3.0 | | 93 | 85-115 | 2 | 200 |
| Sulfate | 8.33 | 0.60 | 0.20 | mg/L | 9.0 | | 93 | 85-115 | 1 | 200 |
| Nitrate (as N) | 1.57 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 0.6 | 200 |
| Nitrite (as N) | 1.36 | 0.04 | 0.01 | mg/L | 1.4 | | 97 | 85-115 | 3 | 200 |
| **Matrix Spike (BI12751-MS1)** | | **Source: 1108624-09** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chloride | 17.8 +O | 0.20 | 0.050 | mg/L | 3.0 | 13.9 | 130 | 80-120 | | |
| Fluoride | 1.07 | 0.040 | 0.010 | mg/L | 0.90 | 0.116 | 106 | 85-115 | | |
| Nitrate (as N) | 7.47 | 0.04 | 0.01 | mg/L | 1.7 | 5.59 | 111 | 85-115 | | |
| Nitrite (as N) | 1.42 | 0.04 | 0.01 | mg/L | 1.4 | ND | 101 | 85-115 | | |
| Orthophosphate as P | 0.920 | 0.040 | 0.010 | mg/L | 0.90 | 0.0491 | 97 | 85-115 | | |
| Sulfate | 70.6 +O | 0.60 | 0.20 | mg/L | 9.0 | 59.7 | 121 | 85-115 | | |
| **Matrix Spike (BI12751-MS2)** | | **Source: 1108628-09** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chloride | 39.2 +O | 0.20 | 0.050 | mg/L | 3.0 | 31.6 | 253 | 80-120 | | |
| Nitrite (as N) | 1.51 | 0.04 | 0.01 | mg/L | 1.4 | ND | 108 | 85-115 | | |
| Fluoride | 0.925 | 0.040 | 0.010 | mg/L | 0.90 | 0.0738 | 95 | 85-115 | | |
| Nitrate (as N) | 23.2 +O | 0.04 | 0.01 | mg/L | 1.7 | 18.5 | 276 | 85-115 | | |
| Sulfate | 64.3 | 0.60 | 0.20 | mg/L | 9.0 | 55.2 | 101 | 85-115 | | |
| Orthophosphate as P | 0.903 | 0.040 | 0.010 | mg/L | 0.90 | 0.0522 | 95 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12807 - COD prep** | | | | | | | | | | |
| **Blank (BI12807-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BI12807-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chemical Oxygen Demand | 48 | 25 | 10 | mg/L | 50 | | 96 | 90-110 | | |
| **Matrix Spike (BI12807-MS1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chemical Oxygen Demand | 77 | 25 | 10 | mg/L | 50 | 32 | 90 | 85-115 | | |
| **Matrix Spike Dup (BI12807-MSD1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chemical Oxygen Demand | 75 | 25 | 10 | mg/L | 50 | 32 | 86 | 85-115 | 3 | 32 |
| **Batch BI12821 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BI12821-BLK1)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BI12821-BLK2)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BI12821-BLK3)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BI12821-BLK4)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BI12821-BS1)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.467 | 0.040 | 0.010 | mg/L | 0.50 | | 93 | 90-110 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12821 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **LCS (BI12821-BS2)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.468 | 0.040 | 0.010 | mg/L | 0.50 | | 94 | 90-110 | | |
| **LCS (BI12821-BS3)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.478 | 0.040 | 0.010 | mg/L | 0.50 | | 96 | 90-110 | | |
| **LCS (BI12821-BS4)** | | | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.488 | 0.040 | 0.010 | mg/L | 0.50 | | 98 | 90-110 | | |
| **Matrix Spike (BI12821-MS1)** | | **Source: 1108510-07** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.513 | 0.040 | 0.010 | mg/L | 0.50 | 0.0732 | 88 | 75-125 | | |
| **Matrix Spike (BI12821-MS2)** | | **Source: 1108525-02** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 1.04 | 0.040 | 0.010 | mg/L | 0.50 | 0.621 | 83 | 75-125 | | |
| **Matrix Spike (BI12821-MS3)** | | **Source: 1108547-02** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 1.13 | 0.040 | 0.010 | mg/L | 0.50 | 0.669 | 93 | 75-125 | | |
| **Matrix Spike (BI12821-MS4)** | | **Source: 1108599-07** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.510 | 0.040 | 0.010 | mg/L | 0.50 | 0.0440 | 93 | 75-125 | | |
| **Matrix Spike Dup (BI12821-MSD1)** | | **Source: 1108510-07** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.541 | 0.040 | 0.010 | mg/L | 0.50 | 0.0732 | 94 | 75-125 | 5 | 25 |
| **Matrix Spike Dup (BI12821-MSD2)** | | **Source: 1108525-02** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 1.07 | 0.040 | 0.010 | mg/L | 0.50 | 0.621 | 91 | 75-125 | 3 | 25 |
| **Matrix Spike Dup (BI12821-MSD3)** | | **Source: 1108547-02** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 1.10 | 0.040 | 0.010 | mg/L | 0.50 | 0.669 | 87 | 75-125 | 3 | 25 |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12821 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Matrix Spike Dup (BI12821-MSD4)** | | **Source: 1108599-07** | | | Prepared: 09/28/11 Analyzed: 10/04/11 | | | | | |
| Phosphorous - Total as P | 0.510 | 0.040 | 0.010 | mg/L | 0.50 | 0.0440 | 93 | 75-125 | 0.02 | 25 |
| **Batch BI12826 - TOC prep** | | | | | | | | | | |
| **Blank (BI12826-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI12826-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 10.3 | 1.0 | 0.50 | mg/L | 10 | | 103 | 90-110 | | |
| **Matrix Spike (BI12826-MS1)** | | **Source: 1108622-08** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 12.9 | 1.0 | 0.50 | mg/L | 10 | 2.35 | 105 | 85-115 | | |
| **Matrix Spike Dup (BI12826-MSD1)** | | **Source: 1108622-08** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 12.8 | 1.0 | 0.50 | mg/L | 10 | 2.35 | 104 | 85-115 | 0.9 | 10 |
| **Batch BI13021 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI13021-BLK1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BI13021-BS1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 3.02 | 0.20 | 0.050 | mg/L | 3.0 | | 101 | 85-115 | | |
| Nitrate (as N) | 1.70 | 0.04 | 0.01 | mg/L | 1.7 | | 100 | 85-115 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13021 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS Dup (BI13021-BSD1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Nitrate (as N) | 1.67 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | 2 | 200 |
| Chloride | 2.93 | 0.20 | 0.050 | mg/L | 3.0 | | 98 | 85-115 | 3 | 200 |
| **Matrix Spike (BI13021-MS1)** | | **Source: 1108628-18** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 16.6 | 0.20 | 0.050 | mg/L | 3.0 | 13.4 | 107 | 80-120 | | |
| Nitrate (as N) | 10.9 | 0.04 | 0.01 | mg/L | 1.7 | 8.99 | 112 | 85-115 | | |
| **Matrix Spike (BI13021-MS2)** | | **Source: 1108897-01** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Nitrate (as N) | 1.83 | 0.04 | 0.01 | mg/L | 1.7 | 0.259 | 92 | 85-115 | | |
| Chloride | 82.6 +O | 0.20 | 0.050 | mg/L | 3.0 | 280 | NR | 80-120 | | |
| **Batch BJ10425 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ10425-BLK1)** | | | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BJ10425-BLK2)** | | | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ10425-BS1)** | | | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.65 | 0.20 | 0.05 | mg/L | 2.5 | | 106 | 90-110 | | |
| **LCS (BJ10425-BS2)** | | | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.66 | 0.20 | 0.05 | mg/L | 2.5 | | 106 | 90-110 | | |
| **Matrix Spike (BJ10425-MS1)** | | **Source: 1108622-07** | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 4.46 | 0.20 | 0.05 | mg/L | 2.5 | 2.51 | 78 | 80-120 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10425 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Matrix Spike (BJ10425-MS2)** | | **Source: 1108624-06** | | | Prepared: 10/04/11 | Analyzed: 10/11/11 | | | | |
| Total Kjeldahl Nitrogen | 3.58 | 0.20 | 0.05 | mg/L | 2.5 | 1.29 | 92 | 80-120 | | |
| **Matrix Spike Dup (BJ10425-MSD1)** | | **Source: 1108622-07** | | | Prepared: 10/04/11 | Analyzed: 10/11/11 | | | | |
| Total Kjeldahl Nitrogen | 4.81 | 0.20 | 0.05 | mg/L | 2.5 | 2.51 | 92 | 80-120 | 8 | 20 |
| **Matrix Spike Dup (BJ10425-MSD2)** | | **Source: 1108624-06** | | | Prepared: 10/04/11 | Analyzed: 10/11/11 | | | | |
| Total Kjeldahl Nitrogen | 4.24 | 0.20 | 0.05 | mg/L | 2.5 | 1.29 | 118 | 80-120 | 17 | 20 |
| **Batch BJ10430 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ10430-BLK1)** | | | | | Prepared: 10/04/11 | Analyzed: 10/06/11 | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ10430-BS1)** | | | | | Prepared: 10/04/11 | Analyzed: 10/06/11 | | | | |
| Total Kjeldahl Nitrogen | 2.38 | 0.20 | 0.05 | mg/L | 2.5 | | 95 | 90-110 | | |
| **Matrix Spike (BJ10430-MS1)** | | **Source: 1108628-16** | | | Prepared: 10/04/11 | Analyzed: 10/06/11 | | | | |
| Total Kjeldahl Nitrogen | 3.46 | 0.20 | 0.05 | mg/L | 2.5 | 1.47 | 80 | 80-120 | | |
| **Matrix Spike Dup (BJ10430-MSD1)** | | **Source: 1108628-16** | | | Prepared: 10/04/11 | Analyzed: 10/06/11 | | | | |
| Total Kjeldahl Nitrogen | 4.07 | 0.20 | 0.05 | mg/L | 2.5 | 1.47 | 104 | 80-120 | 16 | 20 |
| **Batch BJ11217 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11217-BLK1)** | | | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11217 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11217-BLK2)** | | | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11217-BS1)** | | | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | | 94 | 90-110 | | |
| **LCS (BJ11217-BS2)** | | | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.50 | 0.040 | 0.010 | mg/L | 0.50 | | 100 | 90-110 | | |
| **Matrix Spike (BJ11217-MS1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.51 | 0.040 | 0.010 | mg/L | 0.50 | 0.044 | 94 | 90-110 | | |
| **Matrix Spike (BJ11217-MS2)** | | **Source: 1108624-06** | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.51 | 0.040 | 0.010 | mg/L | 0.50 | 0.013 | 100 | 90-110 | | |
| **Matrix Spike Dup (BJ11217-MSD1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.58 J3 | 0.040 | 0.010 | mg/L | 0.50 | 0.044 | 108 | 90-110 | 13 | 10 |
| **Matrix Spike Dup (BJ11217-MSD2)** | | **Source: 1108624-06** | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | 0.013 | 91 | 90-110 | 9 | 10 |

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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12827 - DOC prep** | | | | | | | | | | |
| **Blank (BI12827-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI12827-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 10.4 | 1.0 | 0.50 | mg/L | 10 | | 104 | 90-110 | | |
| **Matrix Spike (BI12827-MS1)** | | **Source: 1108622-02** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 12.4 | 1.0 | 0.50 | mg/L | 10 | 1.83 | 106 | 85-125 | | |
| **Matrix Spike Dup (BI12827-MSD1)** | | **Source: 1108622-02** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 12.1 | 1.0 | 0.50 | mg/L | 10 | 1.83 | 102 | 85-125 | 3 | 25 |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13006 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BI13006-BLK1)** | | | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Calcium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Potassium | 0.016 I | 0.050 | 0.010 | mg/L | | | | | | |
| Iron | 0.020 U | 0.10 | 0.020 | mg/L | | | | | | |
| Magnesium | 0.025 I | 0.050 | 0.010 | mg/L | | | | | | |
| Sodium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| **LCS (BI13006-BS1)** | | | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Manganese | 0.38 | 0.010 | 0.0010 | mg/L | 0.40 | | 96 | 85-115 | | |
| Magnesium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| Calcium | 18 | 0.050 | 0.010 | mg/L | 20 | | 92 | 85-115 | | |
| Boron | 0.39 | 0.10 | 0.050 | mg/L | 0.40 | | 97 | 85-115 | | |
| Potassium | 18 | 0.050 | 0.010 | mg/L | 20 | | 89 | 85-115 | | |
| Sodium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| Iron | 7.6 | 0.10 | 0.020 | mg/L | 8.0 | | 94 | 85-115 | | |
| **Matrix Spike (BI13006-MS1)** | | **Source: 1108620-01** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Magnesium | 29 | 0.050 | 0.010 | mg/L | 20 | 9.5 | 97 | 70-130 | | |
| Calcium | 56 | 0.050 | 0.010 | mg/L | 20 | 37 | 93 | 70-130 | | |
| Iron | 7.9 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 98 | 70-130 | | |
| Sodium | 63 | 0.050 | 0.010 | mg/L | 20 | 43 | 98 | 70-130 | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 11 | 91 | 70-130 | | |
| Boron | 0.53 | 0.10 | 0.050 | mg/L | 0.40 | 0.13 | 101 | 70-130 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.015 | 98 | 70-130 | | |
| **Matrix Spike (BI13006-MS2)** | | **Source: 1108644-11** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Boron | 0.50 | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 98 | 70-130 | | |
| Sodium | 31 | 0.050 | 0.010 | mg/L | 20 | 12 | 96 | 70-130 | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 8.9 | 99 | 70-130 | | |
| Magnesium | 25 | 0.050 | 0.010 | mg/L | 20 | 5.7 | 98 | 70-130 | | |
| Calcium | 40 | 0.050 | 0.010 | mg/L | 20 | 21 | 96 | 70-130 | | |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | 0.59 | 98 | 70-130 | | |
| Manganese | 0.49 | 0.010 | 0.0010 | mg/L | 0.40 | 0.11 | 96 | 70-130 | | |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13006 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Matrix Spike Dup (BI13006-MSD1)** | | **Source: 1108620-01** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Iron | 7.8 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 97 | 70-130 | 1 | 30 |
| Boron | 0.49 | 0.10 | 0.050 | mg/L | 0.40 | 0.13 | 91 | 70-130 | 8 | 30 |
| Calcium | 56 | 0.050 | 0.010 | mg/L | 20 | 37 | 94 | 70-130 | 0.5 | 30 |
| Magnesium | 29 | 0.050 | 0.010 | mg/L | 20 | 9.5 | 95 | 70-130 | 0.9 | 30 |
| Potassium | 30 | 0.050 | 0.010 | mg/L | 20 | 11 | 94 | 70-130 | 1 | 30 |
| Sodium | 63 | 0.050 | 0.010 | mg/L | 20 | 43 | 96 | 70-130 | 0.6 | 30 |
| Manganese | 0.40 | 0.010 | 0.0010 | mg/L | 0.40 | 0.015 | 96 | 70-130 | 2 | 30 |
| **Matrix Spike Dup (BI13006-MSD2)** | | **Source: 1108644-11** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 8.9 | 99 | 70-130 | 0.03 | 30 |
| Magnesium | 25 | 0.050 | 0.010 | mg/L | 20 | 5.7 | 97 | 70-130 | 0.1 | 30 |
| Sodium | 31 | 0.050 | 0.010 | mg/L | 20 | 12 | 99 | 70-130 | 2 | 30 |
| Calcium | 41 | 0.050 | 0.010 | mg/L | 20 | 21 | 100 | 70-130 | 2 | 30 |
| Boron | 0.42 | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 80 | 70-130 | 16 | 30 |
| Manganese | 0.48 | 0.010 | 0.0010 | mg/L | 0.40 | 0.11 | 93 | 70-130 | 3 | 30 |
| Iron | 8.4 | 0.10 | 0.020 | mg/L | 8.0 | 0.59 | 98 | 70-130 | 0.3 | 30 |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108624**
**Revised Report**

## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

| | |
|---|---|
| J3 | Quality control value for precision was outside control limits. |
| +O | Matrix spike source sample was over the reccommended range for the method. |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1108624

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-E04-8 | 092711 | 0855 | GW | | X | | 1 | 1 | | | | | 76.0 | 0.63 | 4.0 | 26.9 | | |
| 02 | DP-E07-10 | | 0909 | GW | | X | | 1 | 1 | | | | | 264.5 | 1.00 | 4.0 | 26.5 | | |
| 03 | DP-E08-8 | | 0925 | GW | | X | | 1 | 1 | | | | | 304.2 | 0.69 | 4.2 | 26.8 | | |
| 04 | DP-E10-6 | | 0935 | GW | | X | | 1 | | 1 | | | | 351.4 | 0.80 | 3.9 | 27.1 | | |
| 05 | DP-E11-12 | | 0935 | GW | | X | | 1 | 1 | | | | | 506 | 0.31 | 5.7 | 26.4 | | |
| 06 | DP-E12-10 | | 0850 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 461.8 | 0.39 | 5.3 | 25.9 | | |
| 07 | DP-E12-15 | | 0900 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 607 | 1.00 | 5.1 | 25.7 | | |
| 08 | DP-E12-22 | | 0910 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 310.9 | 0.22 | 5.2 | 25.2 | | |
| 09 | DP-E1[illegible]-28 | | 0920 | GW | | X | | 1 | | 1 | | | | 295.1 | 0.41 | 5.1 | 25.1 | | |
| 10 | DP-E[illegible]-28-D | | 0925 | GW | | X | | 1 | | 1 | | | | 295.1 | 0.41 | 5.1 | 25.1 | | |
| | | | | GW | | X | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

| | Date/Time | Received | Date/Time |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 0840 09-23-11 | Received: | Date/Time: 0940 092311 |
| Relinquished: | Date/Time: 1400 092711 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks:

1108624

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

Chain of Custody

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108628**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F04-17** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-01** | | | | | | |
| Date/Time Collected | | **09/27/11 11:12** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.8 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 11:12 | SDH |
| Water Temperature | °C | 27.8 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 11:12 | SDH |
| Specific conductance | umhos/cm | 280 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 11:12 | SDH |
| Dissolved Oxygen | mg/L | 0.8 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 11:12 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.026 I | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 11 I | EPA 410.4 | 25 | 10 | | 09/28/11 08:00 | ARM |
| Chloride | mg/L | 5.6 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 2.1 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Nitrite (as N) | mg/L | 0.24 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Phosphorous - Total as P | mg/L | 0.075 | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:23 | 10/05/11 15:03 | SMD |
| Total Alkalinity | mg/L | 52 | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.35 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |
| Sample Description | | **DP-F04-22** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-02** | | | | | | |
| Date/Time Collected | | **09/27/11 11:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.2 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 11:05 | SDH |
| Water Temperature | °C | 25.9 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 11:05 | SDH |
| Specific conductance | umhos/cm | 270 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 11:05 | SDH |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 11:05 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.020 I | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chloride | mg/L | 12 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 7.6 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.05 U | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
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**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108628**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F04-32** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-03** | | | | | | |
| Date/Time Collected | | **09/27/11 11:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.9 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 11:00 | SDH |
| Water Temperature | °C | 26.0 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 11:00 | SDH |
| Specific conductance | umhos/cm | 290 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 11:00 | SDH |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 11:00 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.060 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 19 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 0.48 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Phosphorous - Total as P | mg/L | 0.21 | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:23 | 10/05/11 15:03 | SMD |
| Total Alkalinity | mg/L | 42 | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.18 I | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |
| Sample Description | | **DP-F05-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-04** | | | | | | |
| Date/Time Collected | | **09/27/11 10:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 10:45 | SDH |
| Water Temperature | °C | 28.8 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 10:45 | SDH |
| Specific conductance | umhos/cm | 178 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 10:45 | SDH |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 10:45 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.13 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 4.3 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 0.42 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Nitrite (as N) | mg/L | 0.10 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Phosphorous - Total as P | mg/L | 0.18 | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:23 | 10/05/11 15:03 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.44 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |

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

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108628**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F08-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-05** | | | | | | |
| Date/Time Collected | | **09/27/11 10:20** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 10:20 | SDH |
| Water Temperature | °C | 25.9 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 10:20 | SDH |
| Specific conductance | umhos/cm | 298 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 10:20 | SDH |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 10:20 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.033 I | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 12 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 7.2 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Phosphorous - Total as P | mg/L | 0.33 | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:23 | 10/05/11 15:03 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |
| Sample Description | | **DP-F08-28** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-06** | | | | | | |
| Date/Time Collected | | **09/27/11 10:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 10:25 | SDH |
| Water Temperature | °C | 25.4 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 10:25 | SDH |
| Specific conductance | umhos/cm | 298 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 10:25 | SDH |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 10:25 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.026 I | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chloride | mg/L | 20 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 1.5 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 09:00 | 09/28/11 11:56 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.34 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**October 26, 2011**
**Work Order: 1108628**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F10-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-07** | | | | | | |
| Date/Time Collected | | **09/27/11 10:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.2 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 10:00 | SDH |
| Water Temperature | °C | 27.0 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 10:00 | SDH |
| Specific conductance | umhos/cm | 446 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 10:00 | SDH |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 10:00 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.38 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 32 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 14:21 | MEJ |
| Fluoride | mg/L | 0.18 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 16:57 | MEJ |
| Nitrate (as N) | mg/L | 14 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Orthophosphate as P | mg/L | 0.044 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 16:57 | MEJ |
| Phosphorous - Total as P | mg/L | 0.076 | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:23 | 10/05/11 15:03 | SMD |
| Sulfate | mg/L | 55 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 16:57 | MEJ |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 11:00 | 09/28/11 12:03 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 2.7 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |
| Total Organic Carbon | mg/L | 2.0 | SM 5310B | 1.0 | 0.50 | | 09/28/11 11:42 | ARM |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.5 | SM 5310B | 1.0 | 0.50 | | 09/28/11 16:54 | ARM |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.090 I | EPA 200.7 | 0.10 | 0.050 | 09/30/11 09:43 | 10/03/11 17:00 | VWC |
| Calcium | mg/L | 30 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:00 | VWC |
| Iron | mg/L | 0.054 I | EPA 200.7 | 0.10 | 0.020 | 09/30/11 09:43 | 10/03/11 17:00 | VWC |
| Magnesium | mg/L | 7.9 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:00 | VWC |
| Manganese | mg/L | 0.15 | EPA 200.7 | 0.010 | 0.0010 | 09/30/11 09:43 | 10/03/11 17:00 | VWC |
| Potassium | mg/L | 9.1 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:00 | VWC |
| Sodium | mg/L | 29 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:00 | VWC |

| | |
|---|---|
| Sample Description | **DP-F11-11** |
| Matrix | **Groundwater** |
| SAL Sample Number | **1108628-08** |
| Date/Time Collected | **09/27/11 09:50** |
| Collected by | **Sean Harmon** |
| Date/Time Received | **09/27/11 14:00** |

**Field Parameters**

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

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**October 26, 2011**
**Work Order: 1108628**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F11-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-08** | | | | | | |
| Date/Time Collected | | **09/27/11 09:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 09:50 | SDH |
| Water Temperature | °C | 27.2 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 09:50 | SDH |
| Specific conductance | umhos/cm | 389 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 09:50 | SDH |
| Dissolved Oxygen | mg/L | 1.5 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 09:50 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.11 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 31 | EPA 300.0 | 0.20 | 0.050 | | 10/01/11 16:46 | MEJ |
| Nitrate (as N) | mg/L | 11 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Phosphorous - Total as P | mg/L | 0.10 | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:23 | 10/05/11 15:03 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 11:00 | 09/28/11 12:03 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 1.4 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |
| Sample Description | | **DP-F11-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-09** | | | | | | |
| Date/Time Collected | | **09/27/11 10:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 10:00 | SDH |
| Water Temperature | °C | 26.2 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 10:00 | SDH |
| Specific conductance | umhos/cm | 490 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 10:00 | SDH |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 10:00 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.052 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 32 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 14:21 | MEJ |
| Nitrate (as N) | mg/L | 18 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 16:57 | MEJ |
| Phosphorous - Total as P | mg/L | 0.28 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 11:00 | 09/28/11 12:03 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108628**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F11-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-09RE1** | | | | | | |
| Date/Time Collected | | **09/27/11 10:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Inorganics** | | | | | | | | |
| Chloride | mg/L | 0.050 U | EPA 300.0 | 0.20 | 0.050 | | 10/21/11 12:44 | MEJ |
| Nitrate (as N) | mg/L | 18 | EPA 300.0 | 0.04 | 0.01 | 10/23/11 11:07 | 09/27/11 16:07 | MEJ |
| Sample Description | | **DP-F11-15-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-10** | | | | | | |
| Date/Time Collected | | **09/27/11 10:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 10:05 | SDH |
| Water Temperature | °C | 26.2 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 10:05 | SDH |
| Specific conductance | umhos/cm | 490 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 10:05 | SDH |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 10:05 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.053 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 35 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 14:21 | MEJ |
| Nitrate (as N) | mg/L | 19 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.31 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 11:00 | 09/28/11 12:03 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |
| Sample Description | | **DP-F11-18** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-11** | | | | | | |
| Date/Time Collected | | **09/27/11 10:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.3 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 10:10 | SDH |
| Water Temperature | °C | 25.8 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 10:10 | SDH |
| Specific conductance | umhos/cm | 271 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 10:10 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 10:10 | SDH |

**Hazen and Sawyer**
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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F11-18** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-11** | | | | | | |
| Date/Time Collected | | **09/27/11 10:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.036 I | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 11 I | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 8.9 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 7.0 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.087 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 11:00 | 09/28/11 12:03 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.18 I | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |
| Sample Description | | **DP-F11-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-12** | | | | | | |
| Date/Time Collected | | **09/27/11 10:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.2 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 10:15 | SDH |
| Water Temperature | °C | 25.6 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 10:15 | SDH |
| Specific conductance | umhos/cm | 298 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 10:15 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 10:15 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.047 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 34 | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 10 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 7.5 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.81 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 11:00 | 09/28/11 12:03 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.92 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F11-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-13** | | | | | | |
| Date/Time Collected | | **09/27/11 10:20** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 10:20 | SDH |
| Water Temperature | °C | 25.4 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 10:20 | SDH |
| Specific conductance | umhos/cm | 296 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 10:20 | SDH |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 10:20 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.032 I | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 16 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 10 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.35 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 11:00 | 09/28/11 12:03 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |
| Sample Description | | **DP-F11-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-14** | | | | | | |
| Date/Time Collected | | **09/27/11 10:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.2 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 10:25 | SDH |
| Water Temperature | °C | 25.3 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 10:25 | SDH |
| Specific conductance | umhos/cm | 306 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 10:25 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 10:25 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.044 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 16 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 4.7 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.55 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 11:00 | 09/28/11 12:03 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.40 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108628**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F12-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-15** | | | | | | |
| Date/Time Collected | | **09/27/11 09:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 3.8 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 09:45 | SDH |
| Water Temperature | °C | 26.7 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 09:45 | SDH |
| Specific conductance | umhos/cm | 423 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 09:45 | SDH |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 09:45 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.074 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 34 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 14:21 | MEJ |
| Nitrate (as N) | mg/L | 12 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.097 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 09/28/11 11:00 | 09/28/11 12:03 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.28 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |
| Sample Description | | **DP-F15-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-16** | | | | | | |
| Date/Time Collected | | **09/28/11 10:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 10:35 | SDH |
| Water Temperature | °C | 26.1 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 10:35 | SDH |
| Specific conductance | umhos/cm | 457 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 10:35 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 10:35 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.068 | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 31 | EPA 300.0 | 0.20 | 0.050 | | 10/04/11 18:43 | MEJ |
| Fluoride | mg/L | 0.10 | EPA 300.0 | 0.040 | 0.010 | | 09/28/11 14:21 | MEJ |
| Nitrate (as N) | mg/L | 17 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 09/28/11 14:21 | MEJ |
| Phosphorous - Total as P | mg/L | 0.072 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Sulfate | mg/L | 61 | EPA 300.0 | 0.60 | 0.20 | | 09/28/11 14:21 | MEJ |

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## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F15-14** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1108628-16** | | | | | | | |
| Date/Time Collected | | **09/28/11 10:35** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | | |
| Total Alkalinity | mg/L | 9.0 | | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:56 | 10/06/11 13:41 | SMD |
| Total Organic Carbon | mg/L | 1.9 | | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Inorganic, Dissolved** | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.0 | | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Metals** | | | | | | | | | |
| Boron | mg/L | 0.11 | | EPA 200.7 | 0.10 | 0.050 | 10/04/11 09:37 | 10/04/11 16:04 | VWC |
| Calcium | mg/L | 33 | | EPA 200.7 | 0.50 | 0.042 | 10/04/11 09:37 | 10/04/11 16:04 | VWC |
| Iron | mg/L | 0.048 | I | EPA 200.7 | 0.10 | 0.020 | 10/04/11 09:37 | 10/04/11 16:04 | VWC |
| Magnesium | mg/L | 9.2 | | EPA 200.7 | 0.50 | 0.020 | 10/04/11 09:37 | 10/04/11 16:04 | VWC |
| Manganese | mg/L | 0.17 | | EPA 200.7 | 0.010 | 0.0010 | 10/04/11 09:37 | 10/04/11 16:04 | VWC |
| Potassium | mg/L | 14 | | EPA 200.7 | 0.050 | 0.010 | 10/04/11 09:37 | 10/04/11 16:04 | VWC |
| Sodium | mg/L | 34 | | EPA 200.7 | 0.50 | 0.13 | 10/04/11 09:37 | 10/04/11 16:04 | VWC |
| Sample Description | | **DP-F15-20** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1108628-17** | | | | | | | |
| Date/Time Collected | | **09/28/11 10:45** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | | |
| **Field Parameters** | | | | | | | | | |
| pH | SU | 5.0 | | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 10:45 | SDH |
| Water Temperature | °C | 25.3 | | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 10:45 | SDH |
| Specific conductance | umhos/cm | 290 | | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 10:45 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 10:45 | SDH |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 0.16 | | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 | U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 10 | | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 14:21 | MEJ |
| Nitrate (as N) | mg/L | 7.9 | | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Nitrite (as N) | mg/L | 0.01 | U | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Phosphorous - Total as P | mg/L | 0.50 | | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Total Alkalinity | mg/L | 5.0 | I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.34 | | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108628**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-F15-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-18** | | | | | | |
| Date/Time Collected | | **09/28/11 10:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 10:50 | SDH |
| Water Temperature | °C | 25.2 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 10:50 | SDH |
| Specific conductance | umhos/cm | 280 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 10:50 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 10:50 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.031 I | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 13 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 14:21 | MEJ |
| Nitrate (as N) | mg/L | 9.0 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Phosphorous - Total as P | mg/L | 0.12 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |
| Sample Description | | **DP-F15-26-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108628-19** | | | | | | |
| Date/Time Collected | | **09/28/11 10:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 10:55 | SDH |
| Water Temperature | °C | 25.2 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 10:55 | SDH |
| Specific conductance | umhos/cm | 280 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 10:55 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 10:55 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.034 I | EPA 350.1 | 0.040 | 0.010 | | 10/12/11 16:24 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 13 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 14:21 | MEJ |
| Nitrate (as N) | mg/L | 9.0 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Phosphorous - Total as P | mg/L | 0.11 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12751 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12751-BLK1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BI12751-BS1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrite (as N) | 1.32 | 0.04 | 0.01 | mg/L | 1.4 | | 94 | 85-115 | | |
| Orthophosphate as P | 0.853 | 0.040 | 0.010 | mg/L | 0.90 | | 95 | 85-115 | | |
| Chloride | 2.73 | 0.20 | 0.050 | mg/L | 3.0 | | 91 | 85-115 | | |
| Sulfate | 8.22 | 0.60 | 0.20 | mg/L | 9.0 | | 91 | 85-115 | | |
| Nitrate (as N) | 1.56 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | | |
| Fluoride | 0.922 | 0.040 | 0.010 | mg/L | 0.90 | | 102 | 85-115 | | |
| **LCS Dup (BI12751-BSD1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chloride | 2.79 | 0.20 | 0.050 | mg/L | 3.0 | | 93 | 85-115 | 2 | 200 |
| Fluoride | 0.902 | 0.040 | 0.010 | mg/L | 0.90 | | 100 | 85-115 | 2 | 200 |
| Sulfate | 8.33 | 0.60 | 0.20 | mg/L | 9.0 | | 93 | 85-115 | 1 | 200 |
| Nitrite (as N) | 1.36 | 0.04 | 0.01 | mg/L | 1.4 | | 97 | 85-115 | 3 | 200 |
| Orthophosphate as P | 0.940 | 0.040 | 0.010 | mg/L | 0.90 | | 104 | 85-115 | 10 | 200 |
| Nitrate (as N) | 1.57 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 0.6 | 200 |
| **Matrix Spike (BI12751-MS1)** | | **Source: 1108624-09** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Fluoride | 1.07 | 0.040 | 0.010 | mg/L | 0.90 | 0.116 | 106 | 85-115 | | |
| Nitrite (as N) | 1.42 | 0.04 | 0.01 | mg/L | 1.4 | ND | 101 | 85-115 | | |
| Orthophosphate as P | 0.920 | 0.040 | 0.010 | mg/L | 0.90 | 0.0491 | 97 | 85-115 | | |
| Nitrate (as N) | 7.47 | 0.04 | 0.01 | mg/L | 1.7 | 5.59 | 111 | 85-115 | | |
| Sulfate | 70.6 +O | 0.60 | 0.20 | mg/L | 9.0 | 59.7 | 121 | 85-115 | | |
| Chloride | 17.8 +O | 0.20 | 0.050 | mg/L | 3.0 | 13.9 | 130 | 80-120 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12751 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BI12751-MS2)** | | **Source: 1108628-09** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Fluoride | 0.925 | 0.040 | 0.010 | mg/L | 0.90 | 0.0738 | 95 | 85-115 | | |
| Sulfate | 64.3 | 0.60 | 0.20 | mg/L | 9.0 | 55.2 | 101 | 85-115 | | |
| Nitrate (as N) | 23.2 +O | 0.04 | 0.01 | mg/L | 1.7 | 18.5 | 276 | 85-115 | | |
| Orthophosphate as P | 0.903 | 0.040 | 0.010 | mg/L | 0.90 | 0.0522 | 95 | 85-115 | | |
| Nitrite (as N) | 1.51 | 0.04 | 0.01 | mg/L | 1.4 | ND | 108 | 85-115 | | |
| Chloride | 39.2 +O | 0.20 | 0.050 | mg/L | 3.0 | ND | NR | 80-120 | | |
| **Batch BI12752 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12752-BLK1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BI12752-BS1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrite (as N) | 1.45 | 0.04 | 0.01 | mg/L | 1.4 | | 104 | 85-115 | | |
| Nitrate (as N) | 1.62 | 0.04 | 0.01 | mg/L | 1.7 | | 95 | 85-115 | | |
| Chloride | 3.12 | 0.20 | 0.050 | mg/L | 3.0 | | 104 | 85-115 | | |
| **LCS Dup (BI12752-BSD1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrite (as N) | 1.45 | 0.04 | 0.01 | mg/L | 1.4 | | 104 | 85-115 | 0 | 200 |
| Nitrate (as N) | 1.64 | 0.04 | 0.01 | mg/L | 1.7 | | 96 | 85-115 | 1 | 200 |
| Chloride | 3.06 | 0.20 | 0.050 | mg/L | 3.0 | | 102 | 85-115 | 2 | 200 |
| **Matrix Spike (BI12752-MS1)** | | **Source: 1108644-04** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrate (as N) | 11.4 | 0.04 | 0.01 | mg/L | 1.7 | 9.50 | 112 | 85-115 | | |
| Chloride | 18.5 | 0.20 | 0.050 | mg/L | 3.0 | 15.8 | 90 | 80-120 | | |
| Nitrite (as N) | 1.39 | 0.04 | 0.01 | mg/L | 1.4 | ND | 99 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12752 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BI12752-MS2)** | | **Source: 1108644-14** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrite (as N) | 1.42 | 0.04 | 0.01 | mg/L | 1.4 | ND | 101 | 85-115 | | |
| Chloride | 17.9 | 0.20 | 0.050 | mg/L | 3.0 | 14.8 | 103 | 80-120 | | |
| Nitrate (as N) | 10.6 +O | 0.04 | 0.01 | mg/L | 1.7 | 8.26 | 138 | 85-115 | | |
| **Batch BI12807 - COD prep** | | | | | | | | | | |
| **Blank (BI12807-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BI12807-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chemical Oxygen Demand | 48 | 25 | 10 | mg/L | 50 | | 96 | 90-110 | | |
| **Matrix Spike (BI12807-MS1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chemical Oxygen Demand | 77 | 25 | 10 | mg/L | 50 | 32 | 90 | 85-115 | | |
| **Matrix Spike Dup (BI12807-MSD1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chemical Oxygen Demand | 75 | 25 | 10 | mg/L | 50 | 32 | 86 | 85-115 | 3 | 32 |
| **Batch BI12818 - alkalinity** | | | | | | | | | | |
| **Blank (BI12818-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BI12818-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12818 - alkalinity** | | | | | | | | | | |
| **Matrix Spike (BI12818-MS1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 170 | 8.0 | 2.0 | mg/L | 120 | 31 | 108 | 80-120 | | |
| **Matrix Spike Dup (BI12818-MSD1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 170 | 8.0 | 2.0 | mg/L | 120 | 31 | 108 | 80-120 | 0 | 26 |
| **Batch BI12819 - alkalinity** | | | | | | | | | | |
| **Blank (BI12819-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BI12819-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **Matrix Spike (BI12819-MS1)** | | **Source: 1108628-07** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 10 | 100 | 80-120 | | |
| **Matrix Spike Dup (BI12819-MSD1)** | | **Source: 1108628-07** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 10 | 100 | 80-120 | 0 | 26 |
| **Batch BI12826 - TOC prep** | | | | | | | | | | |
| **Blank (BI12826-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI12826-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 10.3 | 1.0 | 0.50 | mg/L | 10 | | 103 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12826 - TOC prep** | | | | | | | | | | |
| **Matrix Spike (BI12826-MS1)** | | **Source: 1108622-08** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 12.9 | 1.0 | 0.50 | mg/L | 10 | 2.35 | 105 | 85-115 | | |
| **Matrix Spike Dup (BI12826-MSD1)** | | **Source: 1108622-08** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 12.8 | 1.0 | 0.50 | mg/L | 10 | 2.35 | 104 | 85-115 | 0.9 | 10 |
| **Batch BI12929 - COD prep** | | | | | | | | | | |
| **Blank (BI12929-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BI12929-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | | 110 | 90-110 | | |
| **Matrix Spike (BI12929-MS1)** | | **Source: 1108628-03** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | | |
| **Matrix Spike Dup (BI12929-MSD1)** | | **Source: 1108628-03** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | 0 | 32 |
| **Batch BI13009 - TOC prep** | | | | | | | | | | |
| **Blank (BI13009-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI13009-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 10.1 | 1.0 | 0.50 | mg/L | 10 | | 101 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13009 - TOC prep** | | | | | | | | | | |
| **Matrix Spike (BI13009-MS1)** | | **Source: 1108655-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 12.1 | 1.0 | 0.50 | mg/L | 10 | 2.05 | 101 | 85-115 | | |
| **Matrix Spike Dup (BI13009-MSD1)** | | **Source: 1108655-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 12.5 | 1.0 | 0.50 | mg/L | 10 | 2.05 | 104 | 85-115 | 3 | 10 |
| **Batch BI13021 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI13021-BLK1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BI13021-BS1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Nitrate (as N) | 1.70 | 0.04 | 0.01 | mg/L | 1.7 | | 100 | 85-115 | | |
| Nitrite (as N) | 1.49 | 0.04 | 0.01 | mg/L | 1.4 | | 106 | 85-115 | | |
| Fluoride | 0.901 | 0.040 | 0.010 | mg/L | 0.90 | | 100 | 85-115 | | |
| Chloride | 3.02 | 0.20 | 0.050 | mg/L | 3.0 | | 101 | 85-115 | | |
| Sulfate | 8.77 | 0.60 | 0.20 | mg/L | 9.0 | | 97 | 85-115 | | |
| Orthophosphate as P | 0.942 | 0.040 | 0.010 | mg/L | 0.90 | | 105 | 85-115 | | |
| **LCS Dup (BI13021-BSD1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Nitrate (as N) | 1.67 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | 2 | 200 |
| Nitrite (as N) | 1.41 | 0.04 | 0.01 | mg/L | 1.4 | | 101 | 85-115 | 6 | 200 |
| Orthophosphate as P | 0.855 | 0.040 | 0.010 | mg/L | 0.90 | | 95 | 85-115 | 10 | 200 |
| Fluoride | 0.887 | 0.040 | 0.010 | mg/L | 0.90 | | 99 | 85-115 | 2 | 200 |
| Chloride | 2.93 | 0.20 | 0.050 | mg/L | 3.0 | | 98 | 85-115 | 3 | 200 |
| Sulfate | 8.86 | 0.60 | 0.20 | mg/L | 9.0 | | 98 | 85-115 | 1 | 200 |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13021 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BI13021-MS1)** | | **Source: 1108628-18** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Fluoride | 1.44 | 0.040 | 0.010 | mg/L | 0.90 | 0.611 | 92 | 85-115 | | |
| Chloride | 16.6 | 0.20 | 0.050 | mg/L | 3.0 | 13.4 | 107 | 80-120 | | |
| Sulfate | 61.0 | 0.60 | 0.20 | mg/L | 9.0 | 51.2 | 109 | 85-115 | | |
| Nitrate (as N) | 10.9 | 0.04 | 0.01 | mg/L | 1.7 | 8.99 | 112 | 85-115 | | |
| Nitrite (as N) | 1.38 | 0.04 | 0.01 | mg/L | 1.4 | ND | 99 | 85-115 | | |
| Orthophosphate as P | 0.894 | 0.040 | 0.010 | mg/L | 0.90 | 0.0488 | 94 | 85-115 | | |
| **Matrix Spike (BI13021-MS2)** | | **Source: 1108897-01** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Sulfate | 125 +O | 0.60 | 0.20 | mg/L | 9.0 | 132 | NR | 85-115 | | |
| Nitrite (as N) | 1.47 | 0.04 | 0.01 | mg/L | 1.4 | ND | 105 | 85-115 | | |
| Orthophosphate as P | 0.894 | 0.040 | 0.010 | mg/L | 0.90 | 0.0423 | 95 | 85-115 | | |
| Chloride | 82.6 +O | 0.20 | 0.050 | mg/L | 3.0 | 280 | NR | 80-120 | | |
| Fluoride | 1.31 | 0.040 | 0.010 | mg/L | 0.90 | 0.493 | 91 | 85-115 | | |
| Nitrate (as N) | 1.83 | 0.04 | 0.01 | mg/L | 1.7 | 0.259 | 92 | 85-115 | | |
| **Batch BI13022 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI13022-BLK1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BI13022-BS1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 2.91 | 0.20 | 0.050 | mg/L | 3.0 | | 97 | 85-115 | | |
| **LCS (BI13022-BS2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 2.95 | 0.20 | 0.050 | mg/L | 3.0 | | 98 | 85-115 | | |
| **LCS (BI13022-BS3)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 2.99 | 0.20 | 0.050 | mg/L | 3.0 | | 100 | 85-115 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13022 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS (BI13022-BS4)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 3.02 | 0.20 | 0.050 | mg/L | 3.0 | | 101 | 85-115 | | |
| **LCS (BI13022-BS5)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 2.88 | 0.20 | 0.050 | mg/L | 3.0 | | 96 | 85-115 | | |
| **LCS Dup (BI13022-BSD1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 2.95 | 0.20 | 0.050 | mg/L | 3.0 | | 98 | 85-115 | 1 | 200 |
| **Matrix Spike (BI13022-MS1)** | | **Source: 1108850-01** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 988 | 0.20 | 0.050 | mg/L | 300 | 676 | 104 | 80-120 | | |
| **Matrix Spike (BI13022-MS2)** | | **Source: 1108699-02** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 73.6 +O | 0.20 | 0.050 | mg/L | 3.0 | 84.2 | NR | 80-120 | | |
| **Batch BJ10103 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10103-BLK1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BJ10103-BLK2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BJ10103-BS1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **LCS (BJ10103-BS2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10103 - alkalinity** | | | | | | | | | | |
| **Matrix Spike (BJ10103-MS1)** | | **Source: 1108663-07** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 98 | 80-120 | | |
| **Matrix Spike (BJ10103-MS2)** | | **Source: 1108647-03** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | | |
| **Matrix Spike Dup (BJ10103-MSD1)** | | **Source: 1108663-07** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | 8 | 26 |
| **Matrix Spike Dup (BJ10103-MSD2)** | | **Source: 1108647-03** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | 0 | 26 |
| **Batch BJ10305 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BJ10305-BLK1)** | | | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BJ10305-BLK2)** | | | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ10305-BS1)** | | | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Phosphorous - Total as P | 0.501 | 0.040 | 0.010 | mg/L | 0.50 | | 100 | 90-110 | | |
| **LCS (BJ10305-BS2)** | | | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Phosphorous - Total as P | 0.508 | 0.040 | 0.010 | mg/L | 0.50 | | 102 | 90-110 | | |
| **Matrix Spike (BJ10305-MS1)** | | **Source: 1108772-08** | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Phosphorous - Total as P | 0.669 | 0.040 | 0.010 | mg/L | 0.50 | 0.193 | 95 | 75-125 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10305 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Matrix Spike (BJ10305-MS2)** | | **Source: 1108711-07** | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Phosphorous - Total as P | 0.542 | 0.040 | 0.010 | mg/L | 0.50 | 0.0601 | 96 | 75-125 | | |
| **Matrix Spike Dup (BJ10305-MSD1)** | | **Source: 1108772-08** | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Phosphorous - Total as P | 0.617 | 0.040 | 0.010 | mg/L | 0.50 | 0.193 | 85 | 75-125 | 8 | 25 |
| **Matrix Spike Dup (BJ10305-MSD2)** | | **Source: 1108711-07** | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Phosphorous - Total as P | 0.540 | 0.040 | 0.010 | mg/L | 0.50 | 0.0601 | 96 | 75-125 | 0.3 | 25 |
| **Batch BJ10314 - COD prep** | | | | | | | | | | |
| **Blank (BJ10314-BLK1)** | | | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BJ10314-BS1)** | | | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | | 110 | 90-110 | | |
| **Matrix Spike (BJ10314-MS1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | | |
| **Matrix Spike Dup (BJ10314-MSD1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | 0 | 32 |
| **Batch BJ10421 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BJ10421-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10421 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS (BJ10421-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chloride | 2.78 | 0.20 | 0.050 | mg/L | 3.0 | | 93 | 85-115 | | |
| Nitrate (as N) | 1.60 | 0.04 | 0.01 | mg/L | 1.7 | | 94 | 85-115 | | |
| **LCS Dup (BJ10421-BSD1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chloride | 2.72 | 0.20 | 0.050 | mg/L | 3.0 | | 91 | 85-115 | 2 | 200 |
| Nitrate (as N) | 1.57 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 2 | 200 |
| **Matrix Spike (BJ10421-MS1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Nitrate (as N) | 16.9 | 0.04 | 0.01 | mg/L | 17 | 0.238 | 98 | 85-115 | | |
| Chloride | 68.5 +O | 0.20 | 0.050 | mg/L | 30 | 68.5 | 0 | 80-120 | | |
| **Matrix Spike (BJ10421-MS2)** | | **Source: 1108761-04** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chloride | 3.25 | 0.20 | 0.050 | mg/L | 3.0 | ND | 108 | 80-120 | | |
| Nitrate (as N) | 1.68 | 0.04 | 0.01 | mg/L | 1.7 | ND | 99 | 85-115 | | |
| **Batch BJ10426 - COD prep** | | | | | | | | | | |
| **Blank (BJ10426-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BJ10426-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 48 | 25 | 10 | mg/L | 50 | | 96 | 90-110 | | |
| **Matrix Spike (BJ10426-MS1)** | | **Source: 1108655-03** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 44 | 25 | 10 | mg/L | 50 | ND | 88 | 85-115 | | |
| **Matrix Spike Dup (BJ10426-MSD1)** | | **Source: 1108655-03** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 44 | 25 | 10 | mg/L | 50 | ND | 88 | 85-115 | 0 | 32 |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10430 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ10430-BLK1)** | | | | | Prepared: 10/04/11 | Analyzed: 10/06/11 | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ10430-BS1)** | | | | | Prepared: 10/04/11 | Analyzed: 10/06/11 | | | | |
| Total Kjeldahl Nitrogen | 2.38 | 0.20 | 0.05 | mg/L | 2.5 | | 95 | 90-110 | | |
| **Matrix Spike (BJ10430-MS1)** | | **Source: 1108628-16** | | | Prepared: 10/04/11 | Analyzed: 10/06/11 | | | | |
| Total Kjeldahl Nitrogen | 3.46 | 0.20 | 0.05 | mg/L | 2.5 | 1.47 | 80 | 80-120 | | |
| **Matrix Spike Dup (BJ10430-MSD1)** | | **Source: 1108628-16** | | | Prepared: 10/04/11 | Analyzed: 10/06/11 | | | | |
| Total Kjeldahl Nitrogen | 4.07 | 0.20 | 0.05 | mg/L | 2.5 | 1.47 | 104 | 80-120 | 16 | 20 |
| **Batch BJ10508 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BJ10508-BLK1)** | | | | | Prepared: 10/05/11 | Analyzed: 10/06/11 | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ10508-BS1)** | | | | | Prepared: 10/05/11 | Analyzed: 10/06/11 | | | | |
| Phosphorous - Total as P | 0.533 | 0.040 | 0.010 | mg/L | 0.50 | | 107 | 90-110 | | |
| **Matrix Spike (BJ10508-MS1)** | | **Source: 1108644-13** | | | Prepared: 10/05/11 | Analyzed: 10/06/11 | | | | |
| Phosphorous - Total as P | 1.07 | 0.040 | 0.010 | mg/L | 0.50 | 0.706 | 73 | 75-125 | | |
| **Matrix Spike Dup (BJ10508-MSD1)** | | **Source: 1108644-13** | | | Prepared: 10/05/11 | Analyzed: 10/06/11 | | | | |
| Phosphorous - Total as P | 1.08 | 0.040 | 0.010 | mg/L | 0.50 | 0.706 | 75 | 75-125 | 1 | 25 |
| **Batch BJ11017 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ11017-BLK1)** | | | | | Prepared: 10/10/11 | Analyzed: 10/14/11 | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11017 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **LCS (BJ11017-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.32 | 0.20 | 0.05 | mg/L | 2.5 | | 93 | 90-110 | | |
| **Matrix Spike (BJ11017-MS1)** | | **Source: 1108781-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 4.63 | 0.20 | 0.05 | mg/L | 2.5 | 2.01 | 105 | 80-120 | | |
| **Matrix Spike Dup (BJ11017-MSD1)** | | **Source: 1108781-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 4.58 | 0.20 | 0.05 | mg/L | 2.5 | 2.01 | 103 | 80-120 | 1 | 20 |
| **Batch BJ11217 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11217-BLK1)** | | | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BJ11217-BLK2)** | | | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11217-BS1)** | | | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | | 94 | 90-110 | | |
| **LCS (BJ11217-BS2)** | | | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.50 | 0.040 | 0.010 | mg/L | 0.50 | | 100 | 90-110 | | |
| **Matrix Spike (BJ11217-MS1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.51 | 0.040 | 0.010 | mg/L | 0.50 | 0.044 | 94 | 90-110 | | |
| **Matrix Spike (BJ11217-MS2)** | | **Source: 1108624-06** | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.51 | 0.040 | 0.010 | mg/L | 0.50 | 0.013 | 100 | 90-110 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11217 - Ammonia by SEAL** | | | | | | | | | | |
| **Matrix Spike Dup (BJ11217-MSD1)** | | **Source: 1108622-01** | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.58 J3 | 0.040 | 0.010 | mg/L | 0.50 | 0.044 | 108 | 90-110 | 13 | 10 |
| **Matrix Spike Dup (BJ11217-MSD2)** | | **Source: 1108624-06** | | | Prepared & Analyzed: 10/12/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | 0.013 | 91 | 90-110 | 9 | 10 |

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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12827 - DOC prep** | | | | | | | | | | |
| **Blank (BI12827-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI12827-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 10.4 | 1.0 | 0.50 | mg/L | 10 | | 104 | 90-110 | | |
| **Matrix Spike (BI12827-MS1)** | | **Source: 1108622-02** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 12.4 | 1.0 | 0.50 | mg/L | 10 | 1.83 | 106 | 85-125 | | |
| **Matrix Spike Dup (BI12827-MSD1)** | | **Source: 1108622-02** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 12.1 | 1.0 | 0.50 | mg/L | 10 | 1.83 | 102 | 85-125 | 3 | 25 |
| **Batch BI13008 - DOC prep** | | | | | | | | | | |
| **Blank (BI13008-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI13008-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 10.2 | 1.0 | 0.50 | mg/L | 10 | | 102 | 90-110 | | |
| **Matrix Spike (BI13008-MS1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 12.8 | 1.0 | 0.50 | mg/L | 10 | 2.08 | 107 | 85-125 | | |
| **Matrix Spike Dup (BI13008-MSD1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 12.9 | 1.0 | 0.50 | mg/L | 10 | 2.08 | 108 | 85-125 | 0.7 | 25 |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13006 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BI13006-BLK1)** | | | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Calcium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Magnesium | 0.025 I | 0.050 | 0.010 | mg/L | | | | | | |
| Potassium | 0.016 I | 0.050 | 0.010 | mg/L | | | | | | |
| Iron | 0.020 U | 0.10 | 0.020 | mg/L | | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Sodium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| **LCS (BI13006-BS1)** | | | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Iron | 7.6 | 0.10 | 0.020 | mg/L | 8.0 | | 94 | 85-115 | | |
| Calcium | 18 | 0.050 | 0.010 | mg/L | 20 | | 92 | 85-115 | | |
| Sodium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| Manganese | 0.38 | 0.010 | 0.0010 | mg/L | 0.40 | | 96 | 85-115 | | |
| Potassium | 18 | 0.050 | 0.010 | mg/L | 20 | | 89 | 85-115 | | |
| Magnesium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| Boron | 0.39 | 0.10 | 0.050 | mg/L | 0.40 | | 97 | 85-115 | | |
| **Matrix Spike (BI13006-MS1)** | | **Source: 1108620-01** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Boron | 0.53 | 0.10 | 0.050 | mg/L | 0.40 | 0.13 | 101 | 70-130 | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 11 | 91 | 70-130 | | |
| Magnesium | 29 | 0.050 | 0.010 | mg/L | 20 | 9.5 | 97 | 70-130 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.015 | 98 | 70-130 | | |
| Calcium | 56 | 0.050 | 0.010 | mg/L | 20 | 37 | 93 | 70-130 | | |
| Iron | 7.9 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 98 | 70-130 | | |
| Sodium | 63 | 0.050 | 0.010 | mg/L | 20 | 43 | 98 | 70-130 | | |
| **Matrix Spike (BI13006-MS2)** | | **Source: 1108644-11** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Calcium | 40 | 0.050 | 0.010 | mg/L | 20 | 21 | 96 | 70-130 | | |
| Boron | 0.50 | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 98 | 70-130 | | |
| Manganese | 0.49 | 0.010 | 0.0010 | mg/L | 0.40 | 0.11 | 96 | 70-130 | | |
| Sodium | 31 | 0.050 | 0.010 | mg/L | 20 | 12 | 96 | 70-130 | | |
| Magnesium | 25 | 0.050 | 0.010 | mg/L | 20 | 5.7 | 98 | 70-130 | | |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | 0.59 | 98 | 70-130 | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 8.9 | 99 | 70-130 | | |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108628**
**Revised Report**

**Metals - Quality Control**

| Analyte | Result | | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13006 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | | |
| **Matrix Spike Dup (BI13006-MSD1)** | | | **Source: 1108620-01** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Calcium | 56 | | 0.050 | 0.010 | mg/L | 20 | 37 | 94 | 70-130 | 0.5 | 30 |
| Boron | 0.49 | | 0.10 | 0.050 | mg/L | 0.40 | 0.13 | 91 | 70-130 | 8 | 30 |
| Potassium | 30 | | 0.050 | 0.010 | mg/L | 20 | 11 | 94 | 70-130 | 1 | 30 |
| Iron | 7.8 | | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 97 | 70-130 | 1 | 30 |
| Sodium | 63 | | 0.050 | 0.010 | mg/L | 20 | 43 | 96 | 70-130 | 0.6 | 30 |
| Manganese | 0.40 | | 0.010 | 0.0010 | mg/L | 0.40 | 0.015 | 96 | 70-130 | 2 | 30 |
| Magnesium | 29 | | 0.050 | 0.010 | mg/L | 20 | 9.5 | 95 | 70-130 | 0.9 | 30 |
| **Matrix Spike Dup (BI13006-MSD2)** | | | **Source: 1108644-11** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Manganese | 0.48 | | 0.010 | 0.0010 | mg/L | 0.40 | 0.11 | 93 | 70-130 | 3 | 30 |
| Boron | 0.42 | | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 80 | 70-130 | 16 | 30 |
| Potassium | 29 | | 0.050 | 0.010 | mg/L | 20 | 8.9 | 99 | 70-130 | 0.03 | 30 |
| Magnesium | 25 | | 0.050 | 0.010 | mg/L | 20 | 5.7 | 97 | 70-130 | 0.1 | 30 |
| Sodium | 31 | | 0.050 | 0.010 | mg/L | 20 | 12 | 99 | 70-130 | 2 | 30 |
| Calcium | 41 | | 0.050 | 0.010 | mg/L | 20 | 21 | 100 | 70-130 | 2 | 30 |
| Iron | 8.4 | | 0.10 | 0.020 | mg/L | 8.0 | 0.59 | 98 | 70-130 | 0.3 | 30 |
| **Batch BJ10404 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | | |
| **Blank (BJ10404-BLK1)** | | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Manganese | 0.0010 | U | 0.010 | 0.0010 | mg/L | | | | | | |
| Magnesium | 0.051 | I | 0.50 | 0.020 | mg/L | | | | | | |
| Sodium | 0.13 | U | 0.50 | 0.13 | mg/L | | | | | | |
| Calcium | 0.042 | U | 0.50 | 0.042 | mg/L | | | | | | |
| Iron | 0.037 | I | 0.10 | 0.020 | mg/L | | | | | | |
| Boron | 0.050 | U | 0.10 | 0.050 | mg/L | | | | | | |
| Potassium | 0.11 | | 0.050 | 0.010 | mg/L | | | | | | |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108628**
**Revised Report**

**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10404 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **LCS (BJ10404-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Magnesium | 21 | 0.50 | 0.020 | mg/L | 20 | | 107 | 85-115 | | |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | | 107 | 85-115 | | |
| Boron | 0.39 | 0.10 | 0.050 | mg/L | 0.40 | | 97 | 85-115 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | | 102 | 85-115 | | |
| Sodium | 21 | 0.50 | 0.13 | mg/L | 20 | | 106 | 85-115 | | |
| Iron | 8.6 | 0.10 | 0.020 | mg/L | 8.0 | | 107 | 85-115 | | |
| Calcium | 21 | 0.50 | 0.042 | mg/L | 20 | | 104 | 85-115 | | |
| **Matrix Spike (BJ10404-MS1)** | | **Source: 1107616-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0067 | 102 | 70-130 | | |
| Magnesium | 51 | 0.50 | 0.020 | mg/L | 20 | 29 | 113 | 70-130 | | |
| Sodium | 280 +O | 0.50 | 0.13 | mg/L | 20 | 250 | 140 | 70-130 | | |
| Boron | 0.63 | 0.10 | 0.050 | mg/L | 0.40 | 0.23 | 100 | 70-130 | | |
| Potassium | 39 | 0.050 | 0.010 | mg/L | 20 | 16 | 114 | 70-130 | | |
| Iron | 8.6 | 0.10 | 0.020 | mg/L | 8.0 | 0.11 | 106 | 70-130 | | |
| Calcium | 85 | 0.50 | 0.042 | mg/L | 20 | 61 | 122 | 70-130 | | |
| **Matrix Spike (BJ10404-MS2)** | | **Source: 1108761-04** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Sodium | 22 | 0.50 | 0.13 | mg/L | 20 | 0.15 | 107 | 70-130 | | |
| Iron | 8.7 | 0.10 | 0.020 | mg/L | 8.0 | 0.034 | 109 | 70-130 | | |
| Calcium | 21 | 0.50 | 0.042 | mg/L | 20 | ND | 106 | 70-130 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | ND | 102 | 70-130 | | |
| Boron | 0.39 | 0.10 | 0.050 | mg/L | 0.40 | ND | 97 | 70-130 | | |
| Potassium | 22 | 0.050 | 0.010 | mg/L | 20 | 0.089 | 108 | 70-130 | | |
| Magnesium | 22 | 0.50 | 0.020 | mg/L | 20 | ND | 109 | 70-130 | | |
| **Matrix Spike Dup (BJ10404-MSD1)** | | **Source: 1107616-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Manganese | 0.42 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0067 | 103 | 70-130 | 0.8 | 30 |
| Sodium | 280 +O | 0.50 | 0.13 | mg/L | 20 | 250 | 132 | 70-130 | 0.5 | 30 |
| Iron | 8.6 | 0.10 | 0.020 | mg/L | 8.0 | 0.11 | 106 | 70-130 | 0.3 | 30 |
| Calcium | 85 | 0.50 | 0.042 | mg/L | 20 | 61 | 121 | 70-130 | 0.2 | 30 |
| Magnesium | 52 | 0.50 | 0.020 | mg/L | 20 | 29 | 114 | 70-130 | 0.2 | 30 |
| Potassium | 37 | 0.050 | 0.010 | mg/L | 20 | 16 | 107 | 70-130 | 4 | 30 |
| Boron | 0.64 | 0.10 | 0.050 | mg/L | 0.40 | 0.23 | 100 | 70-130 | 0.4 | 30 |

**Hazen and Sawyer**
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**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108628**
**Revised Report**

**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10404 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Matrix Spike Dup (BJ10404-MSD2)** | | **Source: 1108761-04** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Sodium | 21 | 0.50 | 0.13 | mg/L | 20 | 0.15 | 104 | 70-130 | 3 | 30 |
| Boron | 0.38 | 0.10 | 0.050 | mg/L | 0.40 | ND | 96 | 70-130 | 0.6 | 30 |
| Manganese | 0.40 | 0.010 | 0.0010 | mg/L | 0.40 | ND | 101 | 70-130 | 1 | 30 |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | 0.089 | 103 | 70-130 | 4 | 30 |
| Magnesium | 21 | 0.50 | 0.020 | mg/L | 20 | ND | 107 | 70-130 | 2 | 30 |
| Iron | 8.6 | 0.10 | 0.020 | mg/L | 8.0 | 0.034 | 107 | 70-130 | 2 | 30 |
| Calcium | 21 | 0.50 | 0.042 | mg/L | 20 | ND | 105 | 70-130 | 1 | 30 |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108628**
**Revised Report**

## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

| | |
|---|---|
| J3 | Quality control value for precision was outside control limits. |
| +O | Matrix spike source sample was over the reccommended range for the method. |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1108628

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-F04-17 | 092711 | 1112 | GW | | X | | 1 | 1 | | | | | 280.5 | 0.81 | 5.8 | 27.8 | | |
| 02 | DP-F04-22 | | 1105 | GW | | X | | 1 | | 1 | | | | 270.7 | 0.58 | 5.2 | 25.9 | | |
| 03 | DP-F04-32 | | 1100 | GW | | X | | 1 | 1 | | | | | 290.5 | 0.53 | 5.9 | 26.0 | | |
| 04 | DP-F05-5 | | 1045 | GW | | X | | 1 | 1 | | | | | 177.8 | 0.64 | 4.8 | 28.8 | | |
| 05 | DP-F08-20 | | 1020 | GW | | X | | 1 | 1 | | | | | 297.8 | 0.56 | 5.0 | 25.9 | | |
| 06 | DP-F08-28 | | 1025 | GW | | X | | 1 | | 1 | | | | 297.8 | 0.54 | 5.1 | 25.4 | | |
| 07 | DP-F10-11 | | 1000 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 445.6 | 0.54 | 4.2 | 27.0 | | |
| 08 | DP-F11-11 | | 0950 | GW | | X | | 1 | 1 | | | | | 389.0 | 1.49 | 5.0 | 27.2 | | |
| 09 | DP-F11-15 | | 1000 | GW | | X | | 1 | 1 | | | | | 490 | 0.51 | 5.1 | 26.2 | | |
| 10 | DP-F11-15-D | | 1005 | GW | | X | | 1 | 1 | | | | | 490 | 0.51 | 5.1 | 26.2 | | |
| 11 | DP-F11-18 | | 1010 | GW | | X | | 1 | 1 | | | | | 270.6 | 0.26 | 5.3 | 25.8 | | |
| 12 | DP-F11-21 | 092711 | 1015 | | | | | 1 | 1 | | | | | 297.9 | 0.40 | 5.2 | 25.6 | | |

| Containers Prepared/ Relinquished: | Date/Time: 1000 09-03-11 | Received: | Date/Time: 1000 092311 |
|---|---|---|---|
| Relinquished: | Date/Time: 1400 092711 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A
Samples intact upon arrival? Y N N/A
Received on ice? Temp_____ Y N N/A
Proper preservatives indicated? Y N N/A
Rec'd within holding time? Y N N/A
Volatiles rec'd w/out headspace Y N N/A
Proper containers used? Y N N/A

Instructions / Remarks:

1108628

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1108628

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GOREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | DP-F11-24 | 092711 | 1020 | GW | | X | | 1 | 1 | | | | | 296.2 | 0.56 | 5.1 | 25.4 | | |
| 14 | DP-F11-27 | 092711 | 1025 | GW | | X | | 1 | 1 | | | | | 306.1 | 0.37 | 5.2 | 25.3 | | |
| 15 | DP-F12-10 | 092711 | 0945 | GW | | X | | 1 | 1 | | | | | 422.7 | 0.64 | 3.8 | 26.7 | | |
| 16 | DP-F15-14 | 092811 | 1035 | GW | | X | | 1 | 1 | | 1 | 2 | 1 | 459.3 | 0.43 | 5.0 | 26.1 | | |
| 17 | DP-F15-20 | | 1045 | GW | | X | | 1 | 1 | | | | | 280.4 | 0.39 | 5.0 | 25.3 | | |
| 18 | DP-F15-26 | | 1050 | GW | | X | | 1 | 1 | | | | | 280.5 | 0.28 | 4.9 | 25.2 | | |
| 19 | DP-F15-26-D | | 1055 | GW | | X | | 1 | 1 | | | | | 280.5 | 0.28 | 4.9 | 25.2 | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

| Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 1000 09-23-11 | Received: | Date/Time: 1000 092311 |
| Relinquished: | Date/Time: 1415 092811 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A
Samples intact upon arrival? Y N N/A
Received on ice? Temp_____ Y N N/A
Proper preservatives indicated? Y N N/A
Rec'd within holding time? Y N N/A
Volatiles rec'd w/out headspace Y N N/A
Proper containers used? Y N N/A

Instructions / Remarks:

1108628

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

Chain of Custody

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108644**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-13** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-01** | | | | | | |
| Date/Time Collected | | **09/27/11 11:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.2 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 11:35 | SDH |
| Water Temperature | °C | 29.8 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 11:35 | SDH |
| Specific conductance | umhos/cm | 224 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 11:35 | SDH |
| Dissolved Oxygen | mg/L | 0.8 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 11:35 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:40 | SMD |
| Chloride | mg/L | 5.7 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 0.88 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Total Alkalinity | mg/L | 7.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-02** | | | | | | |
| Date/Time Collected | | **09/27/11 11:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 11:50 | SDH |
| Water Temperature | °C | 28.7 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 11:50 | SDH |
| Specific conductance | umhos/cm | 254 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 11:50 | SDH |
| Dissolved Oxygen | mg/L | 0.7 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 11:50 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:40 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 5.0 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 1.8 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 1.4 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Total Alkalinity | mg/L | 6.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.88 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108644**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-17** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-03** | | | | | | |
| Date/Time Collected | | **09/27/11 12:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 12:00 | SDH |
| Water Temperature | °C | 26.0 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 12:00 | SDH |
| Specific conductance | umhos/cm | 300 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 12:00 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 12:00 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:40 | SMD |
| Chloride | mg/L | 7.3 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 4.6 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Total Alkalinity | mg/L | 5.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.7 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-04** | | | | | | |
| Date/Time Collected | | **09/27/11 12:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.6 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 12:05 | SDH |
| Water Temperature | °C | 25.3 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 12:05 | SDH |
| Specific conductance | umhos/cm | 274 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 12:05 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 12:05 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:40 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 16 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Fluoride | mg/L | 0.12 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 9.5 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.57 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Sulfate | mg/L | 43 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 17:00 | MEJ |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.9 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108644**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-04** | | | | | | |
| Date/Time Collected | | **09/27/11 12:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| Total Organic Carbon | mg/L | 1.1 | SM 5310B | 1.0 | 0.50 | | 09/28/11 11:42 | ARM |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.68 I | SM 5310B | 1.0 | 0.50 | | 09/28/11 16:54 | ARM |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 09/30/11 09:43 | 10/03/11 17:04 | VWC |
| Calcium | mg/L | 19 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:04 | VWC |
| Iron | mg/L | 0.084 I | EPA 200.7 | 0.10 | 0.020 | 09/30/11 09:43 | 10/03/11 17:04 | VWC |
| Magnesium | mg/L | 8.5 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:04 | VWC |
| Manganese | mg/L | 0.20 | EPA 200.7 | 0.010 | 0.0010 | 09/30/11 09:43 | 10/03/11 17:04 | VWC |
| Potassium | mg/L | 9.7 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:04 | VWC |
| Sodium | mg/L | 7.5 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:04 | VWC |
| Sample Description | | **DP-G07-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-05** | | | | | | |
| Date/Time Collected | | **09/27/11 12:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 12:15 | SDH |
| Water Temperature | °C | 25.6 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 12:15 | SDH |
| Specific conductance | umhos/cm | 300 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 12:15 | SDH |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 12:15 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:40 | SMD |
| Chloride | mg/L | 11 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 8.0 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.14 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Total Alkalinity | mg/L | 5.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.8 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108644**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G07-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-06** | | | | | | |
| Date/Time Collected | | **09/27/11 12:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.7 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 12:25 | SDH |
| Water Temperature | °C | 25.7 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 12:25 | SDH |
| Specific conductance | umhos/cm | 300 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 12:25 | SDH |
| Dissolved Oxygen | mg/L | 1.2 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 12:25 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:40 | SMD |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 7.7 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Total Alkalinity | mg/L | 5.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.6 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G08-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-07** | | | | | | |
| Date/Time Collected | | **09/27/11 11:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.7 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 11:55 | SDH |
| Water Temperature | °C | 28.1 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 11:55 | SDH |
| Specific conductance | umhos/cm | 174 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 11:55 | SDH |
| Dissolved Oxygen | mg/L | 1.0 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 11:55 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.082 | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:40 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 3.8 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Fluoride | mg/L | 0.50 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 0.55 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Orthophosphate as P | mg/L | 0.045 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.14 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Sulfate | mg/L | 46 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 17:00 | MEJ |
| Total Alkalinity | mg/L | 11 | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.93 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**October 26, 2011**
**Work Order: 1108644**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G08-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-07** | | | | | | |
| Date/Time Collected | | **09/27/11 11:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| Total Organic Carbon | mg/L | 3.9 | SM 5310B | 1.0 | 0.50 | | 09/28/11 11:42 | ARM |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 3.4 | SM 5310B | 1.0 | 0.50 | | 09/28/11 16:54 | ARM |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 09/30/11 09:43 | 10/03/11 17:07 | VWC |
| Calcium | mg/L | 13 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:07 | VWC |
| Iron | mg/L | 3.6 | EPA 200.7 | 0.10 | 0.020 | 09/30/11 09:43 | 10/03/11 17:07 | VWC |
| Magnesium | mg/L | 3.7 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:07 | VWC |
| Manganese | mg/L | 0.26 | EPA 200.7 | 0.010 | 0.0010 | 09/30/11 09:43 | 10/03/11 17:07 | VWC |
| Potassium | mg/L | 4.3 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:07 | VWC |
| Sodium | mg/L | 3.3 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:07 | VWC |
| Sample Description | | **DP-G09-11** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-08** | | | | | | |
| Date/Time Collected | | **09/27/11 11:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.6 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 11:45 | SDH |
| Water Temperature | °C | 28.3 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 11:45 | SDH |
| Specific conductance | umhos/cm | 299 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 11:45 | SDH |
| Dissolved Oxygen | mg/L | 1.4 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 11:45 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:40 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 9.0 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 4.0 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.33 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Total Alkalinity | mg/L | 11 | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.22 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108644**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G11-8** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-09** | | | | | | |
| Date/Time Collected | | **09/27/11 11:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.6 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 11:35 | SDH |
| Water Temperature | °C | 27.2 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 11:35 | SDH |
| Specific conductance | umhos/cm | 319 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 11:35 | SDH |
| Dissolved Oxygen | mg/L | 0.7 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 11:35 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:40 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 23 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 8.8 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.062 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 2.3 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |
| Sample Description | | **DP-G12-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-10** | | | | | | |
| Date/Time Collected | | **09/27/11 10:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 10:50 | SDH |
| Water Temperature | °C | 26.2 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 10:50 | SDH |
| Specific conductance | umhos/cm | 415 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 10:50 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 10:50 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.39 | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:40 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 28 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 14:21 | MEJ |
| Fluoride | mg/L | 0.058 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 15 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 14:21 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Orthophosphate as P | mg/L | 0.042 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 1.1 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Sulfate | mg/L | 54 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 17:00 | MEJ |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

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**October 26, 2011**
**Work Order: 1108644**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-10** | | | | | | |
| Date/Time Collected | | **09/27/11 10:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| Total Alkalinity | mg/L | 6.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |
| Total Organic Carbon | mg/L | 2.2 | SM 5310B | 1.0 | 0.50 | | 09/28/11 11:42 | ARM |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.4 | SM 5310B | 1.0 | 0.50 | | 09/28/11 16:54 | ARM |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.087 I | EPA 200.7 | 0.10 | 0.050 | 09/30/11 09:43 | 10/03/11 17:20 | VWC |
| Calcium | mg/L | 27 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:20 | VWC |
| Iron | mg/L | 0.50 | EPA 200.7 | 0.10 | 0.020 | 09/30/11 09:43 | 10/03/11 17:20 | VWC |
| Magnesium | mg/L | 6.9 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:20 | VWC |
| Manganese | mg/L | 0.18 | EPA 200.7 | 0.010 | 0.0010 | 09/30/11 09:43 | 10/03/11 17:20 | VWC |
| Potassium | mg/L | 9.4 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:20 | VWC |
| Sodium | mg/L | 24 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:20 | VWC |
| Sample Description | | **DP-G12-18** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-11** | | | | | | |
| Date/Time Collected | | **09/27/11 11:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.3 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 11:05 | SDH |
| Water Temperature | °C | 25.8 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 11:05 | SDH |
| Specific conductance | umhos/cm | 264 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 11:05 | SDH |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 11:05 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:40 | SMD |
| Chemical Oxygen Demand | mg/L | 26 | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 7.7 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Fluoride | mg/L | 0.060 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 4.4 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Orthophosphate as P | mg/L | 0.056 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 1.1 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Sulfate | mg/L | 67 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 17:00 | MEJ |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 11:00 | 09/28/11 12:03 | JAG |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108644**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-18** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1108644-11** | | | | | | | |
| Date/Time Collected | | **09/27/11 11:05** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | | |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |
| Total Organic Carbon | mg/L | 3.3 | | SM 5310B | 1.0 | 0.50 | | 09/28/11 11:42 | ARM |
| **Inorganic, Dissolved** | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.1 | | SM 5310B | 1.0 | 0.50 | | 09/28/11 16:54 | ARM |
| **Metals** | | | | | | | | | |
| Boron | mg/L | 0.10 | | EPA 200.7 | 0.10 | 0.050 | 09/30/11 09:43 | 10/03/11 17:23 | VWC |
| Calcium | mg/L | 21 | | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:23 | VWC |
| Iron | mg/L | 0.59 | | EPA 200.7 | 0.10 | 0.020 | 09/30/11 09:43 | 10/03/11 17:23 | VWC |
| Magnesium | mg/L | 5.7 | | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:23 | VWC |
| Manganese | mg/L | 0.11 | | EPA 200.7 | 0.010 | 0.0010 | 09/30/11 09:43 | 10/03/11 17:23 | VWC |
| Potassium | mg/L | 8.9 | | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:23 | VWC |
| Sodium | mg/L | 12 | | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:23 | VWC |
| Sample Description | | **DP-G12-21** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1108644-12** | | | | | | | |
| Date/Time Collected | | **09/27/11 11:15** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | | |
| **Field Parameters** | | | | | | | | | |
| pH | SU | 5.3 | | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 11:15 | SDH |
| Water Temperature | °C | 25.5 | | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 11:15 | SDH |
| Specific conductance | umhos/cm | 271 | | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 11:15 | SDH |
| Dissolved Oxygen | mg/L | 0.5 | | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 11:15 | SDH |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 0.010 | I | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:40 | SMD |
| Chemical Oxygen Demand | mg/L | 10 | U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 9.8 | | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 7.2 | | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 | U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.37 | | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Total Alkalinity | mg/L | 10 | | SM 2320B | 8.0 | 2.0 | 09/28/11 11:00 | 09/28/11 12:03 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |

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**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108644**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-13** | | | | | | |
| Date/Time Collected | | **09/27/11 11:20** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.2 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 11:20 | SDH |
| Water Temperature | °C | 25.4 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 11:20 | SDH |
| Specific conductance | umhos/cm | 302 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 11:20 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 11:20 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:40 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 9.2 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.71 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:39 | 10/06/11 13:16 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 11:00 | 09/28/11 12:03 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |
| Sample Description | | **DP-G12-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-14** | | | | | | |
| Date/Time Collected | | **09/27/11 11:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 11:25 | SDH |
| Water Temperature | °C | 25.3 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 11:25 | SDH |
| Specific conductance | umhos/cm | 289 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 11:25 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 11:25 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 17:00 | MEJ |
| Nitrate (as N) | mg/L | 8.3 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 17:00 | MEJ |
| Phosphorous - Total as P | mg/L | 0.14 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:46 | 10/06/11 13:23 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 09/28/11 11:00 | 09/28/11 12:03 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |

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**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108644**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-G12-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108644-15** | | | | | | |
| Date/Time Collected | | **09/22/11 00:00-09/27/11 10:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/27/11 14:00** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 09/27/11 10:45 | SDH |
| Water Temperature | °C | 24.8 | DEP FT1400 | 0.1 | 0.1 | | 09/27/11 10:45 | SDH |
| Specific conductance | umhos/cm | 363 | DEP FT1200 | 0.1 | 0.1 | | 09/27/11 10:45 | SDH |
| Dissolved Oxygen | mg/L | 3.4 | DEP FT1500 | 0.1 | 0.1 | | 09/27/11 10:45 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/03/11 08:40 | 10/03/11 13:33 | ARP |
| Chloride | mg/L | 27 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 9.9 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 07:55 | MMF |
| Nitrite (as N) | mg/L | 0.20 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 07:55 | MMF |
| Phosphorous - Total as P | mg/L | 0.19 | SM 4500P-E | 0.040 | 0.010 | 10/05/11 10:46 | 10/06/11 13:23 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 09/28/11 11:00 | 09/28/11 12:03 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 2.3 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:24 | 10/14/11 11:32 | SMD |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12747 - alkalinity** | | | | | | | | | | |
| **Blank (BI12747-BLK1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BI12747-BLK2)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BI12747-BS1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | | 108 | 90-110 | | |
| **LCS (BI12747-BS2)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | | 108 | 90-110 | | |
| **Matrix Spike (BI12747-MS1)** | | **Source: 1108663-01** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | ND | 108 | 80-120 | | |
| **Matrix Spike (BI12747-MS2)** | | **Source: 1108624-06** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 150 | 8.0 | 2.0 | mg/L | 120 | 10 | 109 | 80-120 | | |
| **Matrix Spike Dup (BI12747-MSD1)** | | **Source: 1108663-01** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | ND | 108 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BI12747-MSD2)** | | **Source: 1108624-06** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 150 | 8.0 | 2.0 | mg/L | 120 | 10 | 109 | 80-120 | 0 | 26 |
| **Batch BI12752 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12752-BLK1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12752 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS (BI12752-BS1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Fluoride | 0.955 | 0.040 | 0.010 | mg/L | 0.90 | | 106 | 85-115 | | |
| Nitrate (as N) | 1.62 | 0.04 | 0.01 | mg/L | 1.7 | | 95 | 85-115 | | |
| Orthophosphate as P | 0.948 | 0.040 | 0.010 | mg/L | 0.90 | | 105 | 85-115 | | |
| Nitrite (as N) | 1.45 | 0.04 | 0.01 | mg/L | 1.4 | | 104 | 85-115 | | |
| Sulfate | 8.53 | 0.60 | 0.20 | mg/L | 9.0 | | 95 | 85-115 | | |
| Chloride | 3.12 | 0.20 | 0.050 | mg/L | 3.0 | | 104 | 85-115 | | |
| **LCS Dup (BI12752-BSD1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Orthophosphate as P | 0.909 | 0.040 | 0.010 | mg/L | 0.90 | | 101 | 85-115 | 4 | 200 |
| Nitrate (as N) | 1.64 | 0.04 | 0.01 | mg/L | 1.7 | | 96 | 85-115 | 1 | 200 |
| Fluoride | 0.930 | 0.040 | 0.010 | mg/L | 0.90 | | 103 | 85-115 | 3 | 200 |
| Sulfate | 8.49 | 0.60 | 0.20 | mg/L | 9.0 | | 94 | 85-115 | 0.5 | 200 |
| Chloride | 3.06 | 0.20 | 0.050 | mg/L | 3.0 | | 102 | 85-115 | 2 | 200 |
| Nitrite (as N) | 1.45 | 0.04 | 0.01 | mg/L | 1.4 | | 104 | 85-115 | 0 | 200 |
| **Matrix Spike (BI12752-MS1)** | | **Source: 1108644-04** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrate (as N) | 11.4 | 0.04 | 0.01 | mg/L | 1.7 | 9.50 | 112 | 85-115 | | |
| Nitrite (as N) | 1.39 | 0.04 | 0.01 | mg/L | 1.4 | ND | 99 | 85-115 | | |
| Fluoride | 0.996 | 0.040 | 0.010 | mg/L | 0.90 | 0.115 | 98 | 85-115 | | |
| Sulfate | 52.1 | 0.60 | 0.20 | mg/L | 9.0 | 43.4 | 97 | 85-115 | | |
| Orthophosphate as P | 0.888 | 0.040 | 0.010 | mg/L | 0.90 | ND | 99 | 85-115 | | |
| Chloride | 18.5 | 0.20 | 0.050 | mg/L | 3.0 | 15.8 | 90 | 80-120 | | |
| **Matrix Spike (BI12752-MS2)** | | **Source: 1108644-14** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chloride | 17.9 | 0.20 | 0.050 | mg/L | 3.0 | 14.8 | 103 | 80-120 | | |
| Fluoride | 1.06 | 0.040 | 0.010 | mg/L | 0.90 | 0.191 | 97 | 85-115 | | |
| Nitrate (as N) | 10.6 +O | 0.04 | 0.01 | mg/L | 1.7 | 8.26 | 138 | 85-115 | | |
| Nitrite (as N) | 1.42 | 0.04 | 0.01 | mg/L | 1.4 | ND | 101 | 85-115 | | |
| Orthophosphate as P | 0.885 | 0.040 | 0.010 | mg/L | 0.90 | ND | 98 | 85-115 | | |
| Sulfate | 63.8 +O | 0.60 | 0.20 | mg/L | 9.0 | 51.7 | 134 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12819 - alkalinity** | | | | | | | | | | |
| **Blank (BI12819-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BI12819-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **Matrix Spike (BI12819-MS1)** | | **Source: 1108628-07** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 10 | 100 | 80-120 | | |
| **Matrix Spike Dup (BI12819-MSD1)** | | **Source: 1108628-07** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 10 | 100 | 80-120 | 0 | 26 |
| **Batch BI12826 - TOC prep** | | | | | | | | | | |
| **Blank (BI12826-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI12826-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 10.3 | 1.0 | 0.50 | mg/L | 10 | | 103 | 90-110 | | |
| **Matrix Spike (BI12826-MS1)** | | **Source: 1108622-08** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 12.9 | 1.0 | 0.50 | mg/L | 10 | 2.35 | 105 | 85-115 | | |
| **Matrix Spike Dup (BI12826-MSD1)** | | **Source: 1108622-08** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Total Organic Carbon | 12.8 | 1.0 | 0.50 | mg/L | 10 | 2.35 | 104 | 85-115 | 0.9 | 10 |
| **Batch BI12836 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12836-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12836 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS (BI12836-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 1.56 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | | |
| Chloride | 2.77 | 0.20 | 0.050 | mg/L | 3.0 | | 92 | 85-115 | | |
| Nitrite (as N) | 1.30 | 0.04 | 0.01 | mg/L | 1.4 | | 93 | 85-115 | | |
| **LCS Dup (BI12836-BSD1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 1.57 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 0.6 | 200 |
| Chloride | 2.76 | 0.20 | 0.050 | mg/L | 3.0 | | 92 | 85-115 | 0.4 | 200 |
| Nitrite (as N) | 1.33 | 0.04 | 0.01 | mg/L | 1.4 | | 95 | 85-115 | 2 | 200 |
| **Matrix Spike (BI12836-MS1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 16.7 | 0.04 | 0.01 | mg/L | 1.7 | 14.8 | 112 | 85-115 | | |
| Chloride | 21.9 | 0.20 | 0.050 | mg/L | 3.0 | 18.9 | 100 | 80-120 | | |
| Nitrite (as N) | 1.35 | 0.04 | 0.01 | mg/L | 1.4 | ND | 96 | 85-115 | | |
| **Matrix Spike (BI12836-MS2)** | | **Source: 1108647-05** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 10.8 +O | 0.04 | 0.01 | mg/L | 1.7 | 8.64 | 127 | 85-115 | | |
| Nitrite (as N) | 1.37 | 0.04 | 0.01 | mg/L | 1.4 | ND | 98 | 85-115 | | |
| Chloride | 14.5 +O | 0.20 | 0.050 | mg/L | 3.0 | 10.5 | 133 | 80-120 | | |
| **Batch BI12929 - COD prep** | | | | | | | | | | |
| **Blank (BI12929-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BI12929-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | | 110 | 90-110 | | |

**Hazen and Sawyer**
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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12929 - COD prep** | | | | | | | | | | |
| **Matrix Spike (BI12929-MS1)** | | **Source: 1108628-03** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | | |
| **Matrix Spike Dup (BI12929-MSD1)** | | **Source: 1108628-03** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | 0 | 32 |
| **Batch BI13021 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI13021-BLK1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BI13021-BS1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 3.02 | 0.20 | 0.050 | mg/L | 3.0 | | 101 | 85-115 | | |
| Nitrate (as N) | 1.70 | 0.04 | 0.01 | mg/L | 1.7 | | 100 | 85-115 | | |
| **LCS Dup (BI13021-BSD1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Nitrate (as N) | 1.67 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | 2 | 200 |
| Chloride | 2.93 | 0.20 | 0.050 | mg/L | 3.0 | | 98 | 85-115 | 3 | 200 |
| **Matrix Spike (BI13021-MS1)** | | **Source: 1108628-18** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Nitrate (as N) | 10.9 | 0.04 | 0.01 | mg/L | 1.7 | 8.99 | 112 | 85-115 | | |
| Chloride | 16.6 | 0.20 | 0.050 | mg/L | 3.0 | 13.4 | 107 | 80-120 | | |
| **Matrix Spike (BI13021-MS2)** | | **Source: 1108897-01** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 82.6 +O | 0.20 | 0.050 | mg/L | 3.0 | 280 | NR | 80-120 | | |
| Nitrate (as N) | 1.83 | 0.04 | 0.01 | mg/L | 1.7 | 0.259 | 92 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10314 - COD prep** | | | | | | | | | | |
| **Blank (BJ10314-BLK1)** | | | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BJ10314-BS1)** | | | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | | 110 | 90-110 | | |
| **Matrix Spike (BJ10314-MS1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | | |
| **Matrix Spike Dup (BJ10314-MSD1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | 0 | 32 |
| **Batch BJ10508 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BJ10508-BLK1)** | | | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ10508-BS1)** | | | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 0.533 | 0.040 | 0.010 | mg/L | 0.50 | | 107 | 90-110 | | |
| **Matrix Spike (BJ10508-MS1)** | | **Source: 1108644-13** | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 1.07 | 0.040 | 0.010 | mg/L | 0.50 | 0.706 | 73 | 75-125 | | |
| **Matrix Spike Dup (BJ10508-MSD1)** | | **Source: 1108644-13** | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 1.08 | 0.040 | 0.010 | mg/L | 0.50 | 0.706 | 75 | 75-125 | 1 | 25 |
| **Batch BJ10510 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BJ10510-BLK1)** | | | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10510 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **LCS (BJ10510-BS1)** | | | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 0.546 | 0.040 | 0.010 | mg/L | 0.50 | | 109 | 90-110 | | |
| **Matrix Spike (BJ10510-MS1)** | | **Source: 1108620-04** | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 0.653 | 0.040 | 0.010 | mg/L | 0.50 | 0.260 | 79 | 75-125 | | |
| **Matrix Spike Dup (BJ10510-MSD1)** | | **Source: 1108620-04** | | | Prepared: 10/05/11 Analyzed: 10/06/11 | | | | | |
| Phosphorous - Total as P | 0.746 | 0.040 | 0.010 | mg/L | 0.50 | 0.260 | 97 | 75-125 | 13 | 25 |
| **Batch BJ11017 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ11017-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ11017-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.32 | 0.20 | 0.05 | mg/L | 2.5 | | 93 | 90-110 | | |
| **Matrix Spike (BJ11017-MS1)** | | **Source: 1108781-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 4.63 | 0.20 | 0.05 | mg/L | 2.5 | 2.01 | 105 | 80-120 | | |
| **Matrix Spike Dup (BJ11017-MSD1)** | | **Source: 1108781-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 4.58 | 0.20 | 0.05 | mg/L | 2.5 | 2.01 | 103 | 80-120 | 1 | 20 |
| **Batch BJ11408 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11408-BLK1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11408 - Ammonia by SEAL** | | | | | | | | | | |
| **LCS (BJ11408-BS1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.48 | 0.040 | 0.010 | mg/L | 0.50 | | 95 | 90-110 | | |
| **Matrix Spike (BJ11408-MS1)** | | **Source: 1108798-07** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | 0.015 | 91 | 90-110 | | |
| **Matrix Spike Dup (BJ11408-MSD1)** | | **Source: 1108798-07** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | 0.015 | 91 | 90-110 | 0.5 | 10 |
| **Batch BJ11409 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11409-BLK1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11409-BS1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.48 | 0.040 | 0.010 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BJ11409-MS1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.52 | 0.040 | 0.010 | mg/L | 0.50 | ND | 104 | 90-110 | | |
| **Matrix Spike Dup (BJ11409-MSD1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.48 | 0.040 | 0.010 | mg/L | 0.50 | ND | 97 | 90-110 | 7 | 10 |

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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12827 - DOC prep** | | | | | | | | | | |
| **Blank (BI12827-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI12827-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 10.4 | 1.0 | 0.50 | mg/L | 10 | | 104 | 90-110 | | |
| **Matrix Spike (BI12827-MS1)** | | **Source: 1108622-02** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 12.4 | 1.0 | 0.50 | mg/L | 10 | 1.83 | 106 | 85-125 | | |
| **Matrix Spike Dup (BI12827-MSD1)** | | **Source: 1108622-02** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Dissolved Organic Carbon | 12.1 | 1.0 | 0.50 | mg/L | 10 | 1.83 | 102 | 85-125 | 3 | 25 |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13006 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BI13006-BLK1)** | | | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Sodium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Potassium | 0.016 I | 0.050 | 0.010 | mg/L | | | | | | |
| Calcium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Magnesium | 0.025 I | 0.050 | 0.010 | mg/L | | | | | | |
| Iron | 0.020 U | 0.10 | 0.020 | mg/L | | | | | | |
| **LCS (BI13006-BS1)** | | | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Iron | 7.6 | 0.10 | 0.020 | mg/L | 8.0 | | 94 | 85-115 | | |
| Boron | 0.39 | 0.10 | 0.050 | mg/L | 0.40 | | 97 | 85-115 | | |
| Calcium | 18 | 0.050 | 0.010 | mg/L | 20 | | 92 | 85-115 | | |
| Sodium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| Manganese | 0.38 | 0.010 | 0.0010 | mg/L | 0.40 | | 96 | 85-115 | | |
| Magnesium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| Potassium | 18 | 0.050 | 0.010 | mg/L | 20 | | 89 | 85-115 | | |
| **Matrix Spike (BI13006-MS1)** | | **Source: 1108620-01** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Sodium | 63 | 0.050 | 0.010 | mg/L | 20 | 43 | 98 | 70-130 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.015 | 98 | 70-130 | | |
| Iron | 7.9 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 98 | 70-130 | | |
| Magnesium | 29 | 0.050 | 0.010 | mg/L | 20 | 9.5 | 97 | 70-130 | | |
| Boron | 0.53 | 0.10 | 0.050 | mg/L | 0.40 | 0.13 | 101 | 70-130 | | |
| Calcium | 56 | 0.050 | 0.010 | mg/L | 20 | 37 | 93 | 70-130 | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 11 | 91 | 70-130 | | |
| **Matrix Spike (BI13006-MS2)** | | **Source: 1108644-11** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | 0.59 | 98 | 70-130 | | |
| Sodium | 31 | 0.050 | 0.010 | mg/L | 20 | 12 | 96 | 70-130 | | |
| Manganese | 0.49 | 0.010 | 0.0010 | mg/L | 0.40 | 0.11 | 96 | 70-130 | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 8.9 | 99 | 70-130 | | |
| Calcium | 40 | 0.050 | 0.010 | mg/L | 20 | 21 | 96 | 70-130 | | |
| Boron | 0.50 | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 98 | 70-130 | | |
| Magnesium | 25 | 0.050 | 0.010 | mg/L | 20 | 5.7 | 98 | 70-130 | | |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13006 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Matrix Spike Dup (BI13006-MSD1)** | | **Source: 1108620-01** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Manganese | 0.40 | 0.010 | 0.0010 | mg/L | 0.40 | 0.015 | 96 | 70-130 | 2 | 30 |
| Sodium | 63 | 0.050 | 0.010 | mg/L | 20 | 43 | 96 | 70-130 | 0.6 | 30 |
| Magnesium | 29 | 0.050 | 0.010 | mg/L | 20 | 9.5 | 95 | 70-130 | 0.9 | 30 |
| Iron | 7.8 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 97 | 70-130 | 1 | 30 |
| Boron | 0.49 | 0.10 | 0.050 | mg/L | 0.40 | 0.13 | 91 | 70-130 | 8 | 30 |
| Potassium | 30 | 0.050 | 0.010 | mg/L | 20 | 11 | 94 | 70-130 | 1 | 30 |
| Calcium | 56 | 0.050 | 0.010 | mg/L | 20 | 37 | 94 | 70-130 | 0.5 | 30 |
| **Matrix Spike Dup (BI13006-MSD2)** | | **Source: 1108644-11** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Manganese | 0.48 | 0.010 | 0.0010 | mg/L | 0.40 | 0.11 | 93 | 70-130 | 3 | 30 |
| Magnesium | 25 | 0.050 | 0.010 | mg/L | 20 | 5.7 | 97 | 70-130 | 0.1 | 30 |
| Iron | 8.4 | 0.10 | 0.020 | mg/L | 8.0 | 0.59 | 98 | 70-130 | 0.3 | 30 |
| Boron | 0.42 | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 80 | 70-130 | 16 | 30 |
| Calcium | 41 | 0.050 | 0.010 | mg/L | 20 | 21 | 100 | 70-130 | 2 | 30 |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 8.9 | 99 | 70-130 | 0.03 | 30 |
| Sodium | 31 | 0.050 | 0.010 | mg/L | 20 | 12 | 99 | 70-130 | 2 | 30 |

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## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

+O Matrix spike source sample was over the reccommended range for the method.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1108644

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-G07-13 | 092711 | 1135 | GW | | X | | 1 | | 1 | | | | 223.9 | 0.79 | 5.2 | 29.8 | | |
| 02 | DP-G07-15 | | 1150 | GW | | X | | 1 | 1 | | | | | 253.7 | 0.68 | 4.7 | 28.7 | | |
| 03 | DP-G07-17 | | 1200 | GW | | X | | 1 | | 1 | | | | 299.6 | 0.38 | 4.8 | 26.0 | | |
| 04 | DP-G07-21 | | 1205 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 274.5 | 0.37 | 4.6 | 25.3 | | |
| 05 | DP-G07-24 | | 1215 | GW | | X | | 1 | | 1 | | | | 299.6 | 0.64 | 4.7 | 25.6 | | |
| 06 | DP-G07-27 | | 1225 | GW | | X | | 1 | | 1 | | | | 300.3 | 1.17 | 4.7 | 25.7 | | |
| 07 | DP-G08-5 | | 1155 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 173.8 | 1.03 | 5.7 | 28.1 | | |
| 08 | DP-G09-11 | | 1145 | GW | | X | | 1 | 1 | | | | | 229.2 | 1.39 | 5.6 | 28.3 | | |
| 09 | DP-G11-8 | | 1135 | GW | | X | | 1 | 1 | | | | | 318.8 | 0.68 | 4.6 | 27.2 | | |
| 10 | DP-G12-15 | | 1050 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 415.0 | 0.37 | 5.1 | 26.2 | | |
| 11 | DP-G12-18 | | 1105 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 264.4 | 0.56 | 5.3 | 25.8 | | |
| 12 | DP-G12-21 | 092711 | 1115 | GW | | X | | 1 | 1 | | | | | 270.9 | 0.46 | 5.3 | 25.5 | | |

| Containers Prepared/ Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|
| 9R | 1200 9/23/11 | | 1200 092311 |
| Relinquished: | Date/Time: 1400 092711 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A
Samples intact upon arrival? Y N N/A
Received on ice? Temp____ Y N N/A
Proper preservatives indicated? Y N N/A
Rec'd within holding time? Y N N/A
Volatiles rec'd w/out headspace Y N N/A
Proper containers used? Y N N/A

Instructions / Remarks:

1108644

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1108644

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Use Only | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | DP-G12-24 | 092711 | 1120 | GW | | X | | 1 | 1 | | | | | 301.8 | 0.38 | 5.2 | 25.4 | | |
| 14 | DP-G12-27 | | 1125 | GW | | X | | 1 | 1 | | | | | 289.3 | 3.33 | 5.1 | 25.3 | | |
| 15 | DP-G12-9 | | 1045 | GW | | X | | 1 | 1 | | | | | 363.0 | 3.42 | 5.0 | 24.8 | | |

| Containers Prepared/ Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|
| YR | 1200 9/23/11 | | 1200 092311 |
| Relinquished: | Date/Time: 1400 092711 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A
Samples intact upon arrival? Y N N/A
Received on ice? Temp____ Y N N/A
Proper preservatives indicated? Y N N/A
Rec'd within holding time? Y N N/A
Volatiles rec'd w/out headspace Y N N/A
Proper containers used? Y N N/A

Instructions / Remarks:

1108644

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

Chain of Custody

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**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108645**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-H06-7** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108645-01** | | | | | | |
| Date/Time Collected | | **09/28/11 07:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.8 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 07:35 | SDH |
| Water Temperature | °C | 25.5 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 07:35 | SDH |
| Specific conductance | umhos/cm | 140 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 07:35 | SDH |
| Dissolved Oxygen | mg/L | 4.2 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 07:35 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.44 | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 4.5 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 0.48 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.78 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Total Alkalinity | mg/L | 31 | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:26 | 10/14/11 15:43 | SMD |
| Sample Description | | **DP-H09-12** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108645-02** | | | | | | |
| Date/Time Collected | | **09/28/11 07:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 07:45 | SDH |
| Water Temperature | °C | 25.9 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 07:45 | SDH |
| Specific conductance | umhos/cm | 248 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 07:45 | SDH |
| Dissolved Oxygen | mg/L | 0.7 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 07:45 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chemical Oxygen Demand | mg/L | 50 | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 5.7 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 2.6 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.084 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Total Alkalinity | mg/L | 6.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.84 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:26 | 10/14/11 15:43 | SMD |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12836 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12836-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BI12836-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chloride | 2.77 | 0.20 | 0.050 | mg/L | 3.0 | | 92 | 85-115 | | |
| Nitrate (as N) | 1.56 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | | |
| Nitrite (as N) | 1.30 | 0.04 | 0.01 | mg/L | 1.4 | | 93 | 85-115 | | |
| **LCS Dup (BI12836-BSD1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chloride | 2.76 | 0.20 | 0.050 | mg/L | 3.0 | | 92 | 85-115 | 0.4 | 200 |
| Nitrite (as N) | 1.33 | 0.04 | 0.01 | mg/L | 1.4 | | 95 | 85-115 | 2 | 200 |
| Nitrate (as N) | 1.57 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 0.6 | 200 |
| **Matrix Spike (BI12836-MS1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 1.35 | 0.04 | 0.01 | mg/L | 1.4 | ND | 96 | 85-115 | | |
| Nitrate (as N) | 16.7 | 0.04 | 0.01 | mg/L | 1.7 | 14.8 | 112 | 85-115 | | |
| Chloride | 21.9 | 0.20 | 0.050 | mg/L | 3.0 | 18.9 | 100 | 80-120 | | |
| **Matrix Spike (BI12836-MS2)** | | **Source: 1108647-05** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chloride | 14.5 +O | 0.20 | 0.050 | mg/L | 3.0 | 10.5 | 133 | 80-120 | | |
| Nitrite (as N) | 1.37 | 0.04 | 0.01 | mg/L | 1.4 | ND | 98 | 85-115 | | |
| Nitrate (as N) | 10.8 +O | 0.04 | 0.01 | mg/L | 1.7 | 8.64 | 127 | 85-115 | | |
| **Batch BJ10103 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10103-BLK1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10103 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10103-BLK2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BJ10103-BS1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **LCS (BJ10103-BS2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **Matrix Spike (BJ10103-MS1)** | | **Source: 1108663-07** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 98 | 80-120 | | |
| **Matrix Spike (BJ10103-MS2)** | | **Source: 1108647-03** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | | |
| **Matrix Spike Dup (BJ10103-MSD1)** | | **Source: 1108663-07** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | 8 | 26 |
| **Matrix Spike Dup (BJ10103-MSD2)** | | **Source: 1108647-03** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | 0 | 26 |
| **Batch BJ10426 - COD prep** | | | | | | | | | | |
| **Blank (BJ10426-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BJ10426-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 48 | 25 | 10 | mg/L | 50 | | 96 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10426 - COD prep** | | | | | | | | | | |
| **Matrix Spike (BJ10426-MS1)** | | **Source: 1108655-03** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 44 | 25 | 10 | mg/L | 50 | ND | 88 | 85-115 | | |
| **Matrix Spike Dup (BJ10426-MSD1)** | | **Source: 1108655-03** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 44 | 25 | 10 | mg/L | 50 | ND | 88 | 85-115 | 0 | 32 |
| **Batch BJ11012 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BJ11012-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11012-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.475 | 0.040 | 0.010 | mg/L | 0.50 | | 95 | 90-110 | | |
| **Matrix Spike (BJ11012-MS1)** | | **Source: 1108658-02** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.505 | 0.040 | 0.010 | mg/L | 0.50 | 0.0735 | 86 | 75-125 | | |
| **Matrix Spike Dup (BJ11012-MSD1)** | | **Source: 1108658-02** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.534 | 0.040 | 0.010 | mg/L | 0.50 | 0.0735 | 92 | 75-125 | 6 | 25 |
| **Batch BJ11018 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ11018-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ11018-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.62 | 0.20 | 0.05 | mg/L | 2.5 | | 105 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11018 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Matrix Spike (BJ11018-MS1)** | | **Source: 1108798-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.28 | 0.20 | 0.05 | mg/L | 2.5 | 1.01 | 91 | 80-120 | | |
| **Matrix Spike Dup (BJ11018-MSD1)** | | **Source: 1108798-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.24 | 0.20 | 0.05 | mg/L | 2.5 | 1.01 | 89 | 80-120 | 1 | 20 |
| **Batch BJ11409 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11409-BLK1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11409-BS1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.48 | 0.040 | 0.010 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BJ11409-MS1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.52 | 0.040 | 0.010 | mg/L | 0.50 | ND | 104 | 90-110 | | |
| **Matrix Spike Dup (BJ11409-MSD1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.48 | 0.040 | 0.010 | mg/L | 0.50 | ND | 97 | 90-110 | 7 | 10 |

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## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

+O Matrix spike source sample was over the reccommended range for the method.

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SAL Project No. 1108645

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-H06-7 | 092811 | 0735 | GW | | X | | 1 | 1 | | | | | 140.3 | 4.24 | 5.8 | 25.5 | | |
| 02 | DP-H09-12 | ↓ | 0745 | GW | | X | | 1 | 1 | | | | | 247.9 | 0.94 | 5.1 | 25.9 | | |

| | | | |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 1318 09-23-11 | Received: | Date/Time: 1318 092311 |
| Relinquished: | Date/Time: 1415 092811 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A
Samples intact upon arrival? Y N N/A
Received on ice? Temp_____ Y N N/A
Proper preservatives indicated? Y N N/A
Rec'd within holding time? Y N N/A
Volatiles rec'd w/out headspace Y N N/A
Proper containers used? Y N N/A

Instructions / Remarks:

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Rev.Date 11/19/01

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**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I06-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108646-01** | | | | | | |
| Date/Time Collected | | **09/28/11 07:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 07:50 | SDH |
| Water Temperature | °C | 25.4 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 07:50 | SDH |
| Specific conductance | umhos/cm | 220 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 07:50 | SDH |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 07:50 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 5.4 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Fluoride | mg/L | 0.064 | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 2.6 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Orthophosphate as P | mg/L | 0.15 | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.61 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Sulfate | mg/L | 61 | EPA 300.0 | 0.60 | 0.20 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 7.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.71 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:26 | 10/14/11 15:43 | SMD |
| Total Organic Carbon | mg/L | 3.2 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.5 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 09/30/11 09:43 | 10/03/11 17:34 | VWC |
| Calcium | mg/L | 21 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:34 | VWC |
| Iron | mg/L | 0.14 | EPA 200.7 | 0.10 | 0.020 | 09/30/11 09:43 | 10/03/11 17:34 | VWC |
| Magnesium | mg/L | 4.8 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:34 | VWC |
| Manganese | mg/L | 0.17 | EPA 200.7 | 0.010 | 0.0010 | 09/30/11 09:43 | 10/03/11 17:34 | VWC |
| Potassium | mg/L | 9.4 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:34 | VWC |
| Sodium | mg/L | 3.1 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:34 | VWC |

| | |
|---|---|
| Sample Description | **DP-I06-20** |
| Matrix | **Groundwater** |
| SAL Sample Number | **1108646-02** |
| Date/Time Collected | **09/28/11 08:05** |
| Collected by | **Sean Harmon** |
| Date/Time Received | **09/28/11 14:15** |

**Field Parameters**

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108646**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I06-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108646-02** | | | | | | |
| Date/Time Collected | | **09/28/11 08:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 08:05 | SDH |
| Water Temperature | °C | 24.8 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 08:05 | SDH |
| Specific conductance | umhos/cm | 330 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 08:05 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 08:05 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 12 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Fluoride | mg/L | 0.096 | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 9.1 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Orthophosphate as P | mg/L | 0.052 | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.17 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Sulfate | mg/L | 73 | EPA 300.0 | 0.60 | 0.20 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 2.0 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:26 | 10/14/11 15:43 | SMD |
| Total Organic Carbon | mg/L | 1.7 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.8 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 09/30/11 09:43 | 10/03/11 17:37 | VWC |
| Calcium | mg/L | 28 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:37 | VWC |
| Iron | mg/L | 0.048 I | EPA 200.7 | 0.10 | 0.020 | 09/30/11 09:43 | 10/03/11 17:37 | VWC |
| Magnesium | mg/L | 6.7 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:37 | VWC |
| Manganese | mg/L | 0.060 | EPA 200.7 | 0.010 | 0.0010 | 09/30/11 09:43 | 10/03/11 17:37 | VWC |
| Potassium | mg/L | 16 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:37 | VWC |
| Sodium | mg/L | 6.9 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:37 | VWC |
| Sample Description | | **DP-I06-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108646-03** | | | | | | |
| Date/Time Collected | | **09/28/11 08:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 08:10 | SDH |

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**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108646**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-I06-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108646-03** | | | | | | |
| Date/Time Collected | | **09/28/11 08:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| Water Temperature | °C | 24.6 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 08:10 | SDH |
| Specific conductance | umhos/cm | 295 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 08:10 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 08:10 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chloride | mg/L | 14 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 9.0 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 2.1 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:26 | 10/14/11 15:43 | SMD |
| Sample Description | | **DP-I12-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108646-04** | | | | | | |
| Date/Time Collected | | **09/28/11 07:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 07:40 | SDH |
| Water Temperature | °C | 26.2 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 07:40 | SDH |
| Specific conductance | umhos/cm | 95 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 07:40 | SDH |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 07:40 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 3.1 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 0.34 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.30 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Total Alkalinity | mg/L | 6.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.99 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12836 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12836-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BI12836-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Sulfate | 8.19 | 0.60 | 0.20 | mg/L | 9.0 | | 91 | 85-115 | | |
| Nitrite (as N) | 1.30 | 0.04 | 0.01 | mg/L | 1.4 | | 93 | 85-115 | | |
| Nitrate (as N) | 1.56 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | | |
| Orthophosphate as P | 0.875 | 0.040 | 0.010 | mg/L | 0.90 | | 97 | 85-115 | | |
| Fluoride | 0.834 | 0.040 | 0.010 | mg/L | 0.90 | | 93 | 85-115 | | |
| Chloride | 2.77 | 0.20 | 0.050 | mg/L | 3.0 | | 92 | 85-115 | | |
| **LCS Dup (BI12836-BSD1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 1.33 | 0.04 | 0.01 | mg/L | 1.4 | | 95 | 85-115 | 2 | 200 |
| Chloride | 2.76 | 0.20 | 0.050 | mg/L | 3.0 | | 92 | 85-115 | 0.4 | 200 |
| Orthophosphate as P | 0.871 | 0.040 | 0.010 | mg/L | 0.90 | | 97 | 85-115 | 0.5 | 200 |
| Nitrate (as N) | 1.57 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 0.6 | 200 |
| Sulfate | 8.17 | 0.60 | 0.20 | mg/L | 9.0 | | 91 | 85-115 | 0.2 | 200 |
| Fluoride | 0.859 | 0.040 | 0.010 | mg/L | 0.90 | | 95 | 85-115 | 3 | 200 |
| **Matrix Spike (BI12836-MS1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Fluoride | 0.937 | 0.040 | 0.010 | mg/L | 0.90 | 0.0599 | 97 | 85-115 | | |
| Orthophosphate as P | 0.952 | 0.040 | 0.010 | mg/L | 0.90 | ND | 106 | 85-115 | | |
| Sulfate | 71.7 +O | 0.60 | 0.20 | mg/L | 9.0 | ND | 797 | 85-115 | | |
| Chloride | 21.9 | 0.20 | 0.050 | mg/L | 3.0 | 18.9 | 100 | 80-120 | | |
| Nitrate (as N) | 16.7 | 0.04 | 0.01 | mg/L | 1.7 | 14.8 | 112 | 85-115 | | |
| Nitrite (as N) | 1.35 | 0.04 | 0.01 | mg/L | 1.4 | ND | 96 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12836 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BI12836-MS2)** | | **Source: 1108647-05** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Fluoride | 0.963 | 0.040 | 0.010 | mg/L | 0.90 | 0.0689 | 99 | 85-115 | | |
| Nitrite (as N) | 1.37 | 0.04 | 0.01 | mg/L | 1.4 | ND | 98 | 85-115 | | |
| Nitrate (as N) | 10.8 +O | 0.04 | 0.01 | mg/L | 1.7 | 8.64 | 127 | 85-115 | | |
| Orthophosphate as P | 0.856 | 0.040 | 0.010 | mg/L | 0.90 | 0.0440 | 90 | 85-115 | | |
| Chloride | 14.5 +O | 0.20 | 0.050 | mg/L | 3.0 | 10.5 | 133 | 80-120 | | |
| Sulfate | 85.8 +O | 0.60 | 0.20 | mg/L | 9.0 | 74.1 | 130 | 85-115 | | |
| **Batch BI13009 - TOC prep** | | | | | | | | | | |
| **Blank (BI13009-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI13009-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 10.1 | 1.0 | 0.50 | mg/L | 10 | | 101 | 90-110 | | |
| **Matrix Spike (BI13009-MS1)** | | **Source: 1108655-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 12.1 | 1.0 | 0.50 | mg/L | 10 | 2.05 | 101 | 85-115 | | |
| **Matrix Spike Dup (BI13009-MSD1)** | | **Source: 1108655-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 12.5 | 1.0 | 0.50 | mg/L | 10 | 2.05 | 104 | 85-115 | 3 | 10 |
| **Batch BJ10103 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10103-BLK1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10103 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10103-BLK2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BJ10103-BS1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **LCS (BJ10103-BS2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **Matrix Spike (BJ10103-MS1)** | | **Source: 1108663-07** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 98 | 80-120 | | |
| **Matrix Spike (BJ10103-MS2)** | | **Source: 1108647-03** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | | |
| **Matrix Spike Dup (BJ10103-MSD1)** | | **Source: 1108663-07** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | 8 | 26 |
| **Matrix Spike Dup (BJ10103-MSD2)** | | **Source: 1108647-03** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | 0 | 26 |
| **Batch BJ10426 - COD prep** | | | | | | | | | | |
| **Blank (BJ10426-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BJ10426-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 48 | 25 | 10 | mg/L | 50 | | 96 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10426 - COD prep** | | | | | | | | | | |
| **Matrix Spike (BJ10426-MS1)** | | **Source: 1108655-03** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 44 | 25 | 10 | mg/L | 50 | ND | 88 | 85-115 | | |
| **Matrix Spike Dup (BJ10426-MSD1)** | | **Source: 1108655-03** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 44 | 25 | 10 | mg/L | 50 | ND | 88 | 85-115 | 0 | 32 |
| **Batch BJ11012 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BJ11012-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11012-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.475 | 0.040 | 0.010 | mg/L | 0.50 | | 95 | 90-110 | | |
| **Matrix Spike (BJ11012-MS1)** | | **Source: 1108658-02** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.505 | 0.040 | 0.010 | mg/L | 0.50 | 0.0735 | 86 | 75-125 | | |
| **Matrix Spike Dup (BJ11012-MSD1)** | | **Source: 1108658-02** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.534 | 0.040 | 0.010 | mg/L | 0.50 | 0.0735 | 92 | 75-125 | 6 | 25 |
| **Batch BJ11018 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ11018-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ11018-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.62 | 0.20 | 0.05 | mg/L | 2.5 | | 105 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11018 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Matrix Spike (BJ11018-MS1)** | | **Source: 1108798-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.28 | 0.20 | 0.05 | mg/L | 2.5 | 1.01 | 91 | 80-120 | | |
| **Matrix Spike Dup (BJ11018-MSD1)** | | **Source: 1108798-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.24 | 0.20 | 0.05 | mg/L | 2.5 | 1.01 | 89 | 80-120 | 1 | 20 |
| **Batch BJ11019 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ11019-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ11019-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.50 | 0.20 | 0.05 | mg/L | 2.5 | | 100 | 90-110 | | |
| **Matrix Spike (BJ11019-MS1)** | | **Source: 1108658-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.63 | 0.20 | 0.05 | mg/L | 2.5 | 0.334 | 92 | 80-120 | | |
| **Matrix Spike Dup (BJ11019-MSD1)** | | **Source: 1108658-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.10 | 0.20 | 0.05 | mg/L | 2.5 | 0.334 | 71 | 80-120 | 22 | 20 |
| **Batch BJ11409 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11409-BLK1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11409-BS1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.48 | 0.040 | 0.010 | mg/L | 0.50 | | 97 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11409 - Ammonia by SEAL** | | | | | | | | | | |
| **Matrix Spike (BJ11409-MS1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.52 | 0.040 | 0.010 | mg/L | 0.50 | ND | 104 | 90-110 | | |
| **Matrix Spike Dup (BJ11409-MSD1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.48 | 0.040 | 0.010 | mg/L | 0.50 | ND | 97 | 90-110 | 7 | 10 |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13008 - DOC prep** | | | | | | | | | | |
| **Blank (BI13008-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI13008-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 10.2 | 1.0 | 0.50 | mg/L | 10 | | 102 | 90-110 | | |
| **Matrix Spike (BI13008-MS1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 12.8 | 1.0 | 0.50 | mg/L | 10 | 2.08 | 107 | 85-125 | | |
| **Matrix Spike Dup (BI13008-MSD1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 12.9 | 1.0 | 0.50 | mg/L | 10 | 2.08 | 108 | 85-125 | 0.7 | 25 |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13006 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BI13006-BLK1)** | | | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| Iron | 0.020 U | 0.10 | 0.020 | mg/L | | | | | | |
| Potassium | 0.016 I | 0.050 | 0.010 | mg/L | | | | | | |
| Sodium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Calcium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Magnesium | 0.025 I | 0.050 | 0.010 | mg/L | | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| **LCS (BI13006-BS1)** | | | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Boron | 0.39 | 0.10 | 0.050 | mg/L | 0.40 | | 97 | 85-115 | | |
| Potassium | 18 | 0.050 | 0.010 | mg/L | 20 | | 89 | 85-115 | | |
| Sodium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| Calcium | 18 | 0.050 | 0.010 | mg/L | 20 | | 92 | 85-115 | | |
| Iron | 7.6 | 0.10 | 0.020 | mg/L | 8.0 | | 94 | 85-115 | | |
| Magnesium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| Manganese | 0.38 | 0.010 | 0.0010 | mg/L | 0.40 | | 96 | 85-115 | | |
| **Matrix Spike (BI13006-MS1)** | | **Source: 1108620-01** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Iron | 7.9 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 98 | 70-130 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.015 | 98 | 70-130 | | |
| Calcium | 56 | 0.050 | 0.010 | mg/L | 20 | 37 | 93 | 70-130 | | |
| Boron | 0.53 | 0.10 | 0.050 | mg/L | 0.40 | 0.13 | 101 | 70-130 | | |
| Magnesium | 29 | 0.050 | 0.010 | mg/L | 20 | 9.5 | 97 | 70-130 | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 11 | 91 | 70-130 | | |
| Sodium | 63 | 0.050 | 0.010 | mg/L | 20 | 43 | 98 | 70-130 | | |
| **Matrix Spike (BI13006-MS2)** | | **Source: 1108644-11** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Calcium | 40 | 0.050 | 0.010 | mg/L | 20 | 21 | 96 | 70-130 | | |
| Sodium | 31 | 0.050 | 0.010 | mg/L | 20 | 12 | 96 | 70-130 | | |
| Manganese | 0.49 | 0.010 | 0.0010 | mg/L | 0.40 | 0.11 | 96 | 70-130 | | |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | 0.59 | 98 | 70-130 | | |
| Boron | 0.50 | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 98 | 70-130 | | |
| Magnesium | 25 | 0.050 | 0.010 | mg/L | 20 | 5.7 | 98 | 70-130 | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 8.9 | 99 | 70-130 | | |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13006 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Matrix Spike Dup (BI13006-MSD1)** | | **Source: 1108620-01** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Magnesium | 29 | 0.050 | 0.010 | mg/L | 20 | 9.5 | 95 | 70-130 | 0.9 | 30 |
| Calcium | 56 | 0.050 | 0.010 | mg/L | 20 | 37 | 94 | 70-130 | 0.5 | 30 |
| Iron | 7.8 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 97 | 70-130 | 1 | 30 |
| Potassium | 30 | 0.050 | 0.010 | mg/L | 20 | 11 | 94 | 70-130 | 1 | 30 |
| Boron | 0.49 | 0.10 | 0.050 | mg/L | 0.40 | 0.13 | 91 | 70-130 | 8 | 30 |
| Sodium | 63 | 0.050 | 0.010 | mg/L | 20 | 43 | 96 | 70-130 | 0.6 | 30 |
| Manganese | 0.40 | 0.010 | 0.0010 | mg/L | 0.40 | 0.015 | 96 | 70-130 | 2 | 30 |
| **Matrix Spike Dup (BI13006-MSD2)** | | **Source: 1108644-11** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Magnesium | 25 | 0.050 | 0.010 | mg/L | 20 | 5.7 | 97 | 70-130 | 0.1 | 30 |
| Calcium | 41 | 0.050 | 0.010 | mg/L | 20 | 21 | 100 | 70-130 | 2 | 30 |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 8.9 | 99 | 70-130 | 0.03 | 30 |
| Boron | 0.42 | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 80 | 70-130 | 16 | 30 |
| Sodium | 31 | 0.050 | 0.010 | mg/L | 20 | 12 | 99 | 70-130 | 2 | 30 |
| Manganese | 0.48 | 0.010 | 0.0010 | mg/L | 0.40 | 0.11 | 93 | 70-130 | 3 | 30 |
| Iron | 8.4 | 0.10 | 0.020 | mg/L | 8.0 | 0.59 | 98 | 70-130 | 0.3 | 30 |

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## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below.
Questions regarding this report should be directed to Client Services at 813-855-1844.

+O Matrix spike source sample was over the reccommended range for the method.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1108646

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-I06-14 | 092811 | 0750 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 219.5 | 0.53 | 5.1 | 25.4 | | |
| 02 | DP-I06-20 | | 0805 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 330.3 | 0.38 | 5.1 | 24.8 | | |
| 03 | DP-I06-26 | | 0810 | GW | | X | | 1 | | 1 | | | | 294.9 | 0.34 | 5.0 | 24.6 | | |
| 04 | DP-I12-6 | | 0740 | GW | | X | | 1 | 1 | | | | | 95.1 | 0.56 | 5.1 | 26.2 | | |

| Containers Prepared/ Relinquished: | Date/Time: 1300 9/23/11 | Received: | Date/Time: 9/23/11 1300 |
|---|---|---|---|
| Relinquished: | Date/Time: 1415 092811 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N (N/A)
Samples intact upon arrival? (Y) N N/A
Received on ice? Temp_____ (Y) N N/A
Proper preservatives indicated? (Y) N N/A
Rec'd within holding time? (Y) N N/A
Volatiles rec'd w/out headspace? (Y) N (N/A)
Proper containers used? (Y) N N/A

Instructions / Remarks:

1108646

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

Chain of Custody

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
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**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108647**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J09-12** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108647-03** | | | | | | |
| Date/Time Collected | | **09/28/11 07:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 07:55 | SDH |
| Water Temperature | °C | 26.2 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 07:55 | SDH |
| Specific conductance | umhos/cm | 171 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 07:55 | SDH |
| Dissolved Oxygen | mg/L | 0.9 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 07:55 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chloride | mg/L | 4.6 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 0.86 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.57 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J09-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108647-04** | | | | | | |
| Date/Time Collected | | **09/28/11 08:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 08:00 | SDH |
| Water Temperature | °C | 26.1 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 08:00 | SDH |
| Specific conductance | umhos/cm | 210 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 08:00 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 08:00 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 5.6 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 2.3 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.40 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.68 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |

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**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108647**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J09-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108647-05** | | | | | | |
| Date/Time Collected | | **09/28/11 08:05** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 08:05 | SDH |
| Water Temperature | °C | 25.5 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 08:05 | SDH |
| Specific conductance | umhos/cm | 320 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 08:05 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 08:05 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 10 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 8.6 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.73 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Total Alkalinity | mg/L | 5.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.66 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |
| Sample Description | | **DP-J09-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108647-06** | | | | | | |
| Date/Time Collected | | **09/28/11 08:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 08:10 | SDH |
| Water Temperature | °C | 25.4 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 08:10 | SDH |
| Specific conductance | umhos/cm | 292 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 08:10 | SDH |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 08:10 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 15:41 | SMD |
| Chloride | mg/L | 14 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 9.9 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.1 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

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**October 26, 2011**
**Work Order: 1108647**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J12-13** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108647-07** | | | | | | |
| Date/Time Collected | | **09/28/11 08:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 08:35 | SDH |
| Water Temperature | °C | 26.1 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 08:35 | SDH |
| Specific conductance | umhos/cm | 206 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 08:35 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 08:35 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chloride | mg/L | 5.3 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 2.1 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 5.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.48 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J12-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108647-08** | | | | | | |
| Date/Time Collected | | **09/28/11 08:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 08:40 | SDH |
| Water Temperature | °C | 26.8 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 08:40 | SDH |
| Specific conductance | umhos/cm | 265 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 08:40 | SDH |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 08:40 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 6.2 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 3.6 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.77 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.97 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108647**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-J12-20** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108647-09** | | | | | | |
| Date/Time Collected | | **09/28/11 08:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 08:45 | SDH |
| Water Temperature | °C | 25.7 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 08:45 | SDH |
| Specific conductance | umhos/cm | 327 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 08:45 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 08:45 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 10 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 7.8 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.88 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Total Alkalinity | mg/L | 6.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.28 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |
| Sample Description | | **DP-J12-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108647-10** | | | | | | |
| Date/Time Collected | | **09/28/11 08:50** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 08:50 | SDH |
| Water Temperature | °C | 24.9 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 08:50 | SDH |
| Specific conductance | umhos/cm | 282 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 08:50 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 08:50 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 12 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.29 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12836 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12836-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BI12836-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 1.30 | 0.04 | 0.01 | mg/L | 1.4 | | 93 | 85-115 | | |
| Nitrate (as N) | 1.56 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | | |
| Chloride | 2.77 | 0.20 | 0.050 | mg/L | 3.0 | | 92 | 85-115 | | |
| **LCS Dup (BI12836-BSD1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 1.33 | 0.04 | 0.01 | mg/L | 1.4 | | 95 | 85-115 | 2 | 200 |
| Chloride | 2.76 | 0.20 | 0.050 | mg/L | 3.0 | | 92 | 85-115 | 0.4 | 200 |
| Nitrate (as N) | 1.57 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 0.6 | 200 |
| **Matrix Spike (BI12836-MS1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 16.7 | 0.04 | 0.01 | mg/L | 1.7 | 14.8 | 112 | 85-115 | | |
| Nitrite (as N) | 1.35 | 0.04 | 0.01 | mg/L | 1.4 | ND | 96 | 85-115 | | |
| Chloride | 21.9 | 0.20 | 0.050 | mg/L | 3.0 | 18.9 | 100 | 80-120 | | |
| **Matrix Spike (BI12836-MS2)** | | **Source: 1108647-05** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chloride | 14.5 +O | 0.20 | 0.050 | mg/L | 3.0 | 10.5 | 133 | 80-120 | | |
| Nitrate (as N) | 10.8 +O | 0.04 | 0.01 | mg/L | 1.7 | 8.64 | 127 | 85-115 | | |
| Nitrite (as N) | 1.37 | 0.04 | 0.01 | mg/L | 1.4 | ND | 98 | 85-115 | | |
| **Batch BI12837 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12837-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12837 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS (BI12837-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 1.46 | 0.04 | 0.01 | mg/L | 1.4 | | 104 | 85-115 | | |
| Chloride | 3.03 | 0.20 | 0.050 | mg/L | 3.0 | | 101 | 85-115 | | |
| Nitrate (as N) | 1.65 | 0.04 | 0.01 | mg/L | 1.7 | | 97 | 85-115 | | |
| **LCS Dup (BI12837-BSD1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chloride | 3.08 | 0.20 | 0.050 | mg/L | 3.0 | | 103 | 85-115 | 2 | 200 |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | 0.6 | 200 |
| Nitrite (as N) | 1.43 | 0.04 | 0.01 | mg/L | 1.4 | | 102 | 85-115 | 2 | 200 |
| **Matrix Spike (BI12837-MS1)** | | **Source: 1108650-04** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 1.84 | 0.04 | 0.01 | mg/L | 1.7 | 0.372 | 86 | 85-115 | | |
| Nitrite (as N) | 1.47 | 0.04 | 0.01 | mg/L | 1.4 | 0.151 | 94 | 85-115 | | |
| Chloride | 7.07 | 0.20 | 0.050 | mg/L | 3.0 | 4.44 | 88 | 80-120 | | |
| **Matrix Spike (BI12837-MS2)** | | **Source: 1108661-02** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 11.1 +O | 0.04 | 0.01 | mg/L | 1.7 | 9.10 | 118 | 85-115 | | |
| Chloride | 18.0 | 0.20 | 0.050 | mg/L | 3.0 | 14.8 | 107 | 80-120 | | |
| Nitrite (as N) | 1.49 | 0.04 | 0.01 | mg/L | 1.4 | ND | 106 | 85-115 | | |
| **Batch BJ10103 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10103-BLK1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BJ10103-BLK2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10103 - alkalinity** | | | | | | | | | | |
| **LCS (BJ10103-BS1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **LCS (BJ10103-BS2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **Matrix Spike (BJ10103-MS1)** | | **Source: 1108663-07** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 98 | 80-120 | | |
| **Matrix Spike (BJ10103-MS2)** | | **Source: 1108647-03** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | | |
| **Matrix Spike Dup (BJ10103-MSD1)** | | **Source: 1108663-07** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | 8 | 26 |
| **Matrix Spike Dup (BJ10103-MSD2)** | | **Source: 1108647-03** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | 0 | 26 |
| **Batch BJ10426 - COD prep** | | | | | | | | | | |
| **Blank (BJ10426-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BJ10426-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 48 | 25 | 10 | mg/L | 50 | | 96 | 90-110 | | |
| **Matrix Spike (BJ10426-MS1)** | | **Source: 1108655-03** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 44 | 25 | 10 | mg/L | 50 | ND | 88 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10426 - COD prep** | | | | | | | | | | |
| **Matrix Spike Dup (BJ10426-MSD1)** | | **Source: 1108655-03** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 44 | 25 | 10 | mg/L | 50 | ND | 88 | 85-115 | 0 | 32 |
| **Batch BJ11012 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BJ11012-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11012-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.475 | 0.040 | 0.010 | mg/L | 0.50 | | 95 | 90-110 | | |
| **Matrix Spike (BJ11012-MS1)** | | **Source: 1108658-02** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.505 | 0.040 | 0.010 | mg/L | 0.50 | 0.0735 | 86 | 75-125 | | |
| **Matrix Spike Dup (BJ11012-MSD1)** | | **Source: 1108658-02** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.534 | 0.040 | 0.010 | mg/L | 0.50 | 0.0735 | 92 | 75-125 | 6 | 25 |
| **Batch BJ11019 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ11019-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ11019-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.50 | 0.20 | 0.05 | mg/L | 2.5 | | 100 | 90-110 | | |
| **Matrix Spike (BJ11019-MS1)** | | **Source: 1108658-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.63 | 0.20 | 0.05 | mg/L | 2.5 | 0.334 | 92 | 80-120 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11019 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Matrix Spike Dup (BJ11019-MSD1)** | | **Source: 1108658-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.10 | 0.20 | 0.05 | mg/L | 2.5 | 0.334 | 71 | 80-120 | 22 | 20 |
| **Batch BJ11409 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11409-BLK1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11409-BS1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.48 | 0.040 | 0.010 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BJ11409-MS1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.52 | 0.040 | 0.010 | mg/L | 0.50 | ND | 104 | 90-110 | | |
| **Matrix Spike Dup (BJ11409-MSD1)** | | **Source: 1108620-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.48 | 0.040 | 0.010 | mg/L | 0.50 | ND | 97 | 90-110 | 7 | 10 |
| **Batch BJ11735 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11735-BLK1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11735-BS1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.49 | 0.040 | 0.010 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BJ11735-MS1)** | | **Source: 1108661-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | ND | 94 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11735 - Ammonia by SEAL** | | | | | | | | | | |
| **Matrix Spike Dup (BJ11735-MSD1)** | | **Source: 1108661-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.46 | 0.040 | 0.010 | mg/L | 0.50 | ND | 91 | 90-110 | 3 | 10 |

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## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

+O Matrix spike source sample was over the reccommended range for the method.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1108647

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-J08-6 | DRY | DRY | GW | | X | | 1 | 1 | | | | | | | | | | |
| 02 | DP-J08-6-D | DRY | DRY | GW | | X | | 1 | 1 | | | | | | | | | | |
| 03 | DP-J09-12 | 092811 | ~~0800~~ 0755 SH | GW | | X | | 1 | | 1 | | | | 170.9 | 0.86 | 5.0 | 26.2 | | |
| 04 | DP-J09-14 | 092811 | 0800 | GW | | X | | 1 | 1 | | | | | 210.5 | 0.41 | 4.8 | 26.1 | | |
| 05 | DP-J09-20 | 092811 | 0805 | GW | | X | | 1 | 1 | | | | | 319.9 | 0.38 | 5.0 | 25.5 | | |
| 06 | DP-J09-~~1~~-26 (mislabled) | 092811 ~~092811~~ | 0810 ~~0800~~ SH | GW | | X | | 1 | | 1 | | | | ~~170.9~~ | ~~0.86~~ | ~~5.0~~ | ~~26.3~~ | SH | |
| 07 | DP-J12-13 | 092811 | 0835 | GW | | X | | 1 | | 1 | | | | 206.1 | 0.29 | 4.9 | 26.1 | | |
| 08 | DP-J12-15 | 092811 | 0840 | GW | | X | | 1 | 1 | | | | | 265.2 | 0.52 | 4.9 | 26.8 | | |
| 09 | DP-J12-20 | 092811 | 0845 | GW | | X | | 1 | 1 | | | | | 326.9 | 0.41 | 5.1 | 25.7 | | |
| 10 | DP-J12-27 | 092811 | 0850 | GW | | X | | 1 | | 1 | | | | 281.7 | 0.39 | 4.9 | 24.9 | | |

| Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|
| Containers Prepared/ Relinquished: JR | Date/Time: 1330 9/23/11 | Received: | Date/Time: 1330 092311 |
| Relinquished: | Date/Time: 1415 092811 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

| | |
|---|---|
| Seal intact? | Y N (N/A) |
| Samples intact upon arrival? | (Y) N N/A |
| Received on ice? Temp____ | (Y) N N/A |
| Proper preservatives indicated? | (Y) N N/A |
| Rec'd within holding time? | (Y) N N/A |
| Volatiles rec'd w/out headspace | Y N (N/A) |
| Proper containers used? | (Y) N N/A |

Instructions / Remarks:

~~06~~ SH ~~Ph 4.8~~ SH

~~04 = CON - 210.5~~

~~D.O - 0.41~~

~~Temp 26.1~~

1108647

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

Chain of Custody

| Date | Time | | Ph | CON | do | Temp |
|---|---|---|---|---|---|---|
| 092811 | 0810 | DP-J09-26 | 4.8 | 291.6 | 0.52 | 25.4 |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
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**Work Order: 1108648**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-K12-5** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108648-02** | | | | | | |
| Date/Time Collected | | **09/28/11 09:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 09:00 | SDH |
| Water Temperature | °C | 27.5 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 09:00 | SDH |
| Specific conductance | umhos/cm | 70 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 09:00 | SDH |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 09:00 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 4.4 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 0.29 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.47 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 10/04/11 10:00 | 10/04/11 12:09 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.31 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108648**
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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12837 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12837-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BI12837-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chloride | 3.03 | 0.20 | 0.050 | mg/L | 3.0 | | 101 | 85-115 | | |
| Nitrate (as N) | 1.65 | 0.04 | 0.01 | mg/L | 1.7 | | 97 | 85-115 | | |
| Nitrite (as N) | 1.46 | 0.04 | 0.01 | mg/L | 1.4 | | 104 | 85-115 | | |
| **LCS Dup (BI12837-BSD1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | 0.6 | 200 |
| Chloride | 3.08 | 0.20 | 0.050 | mg/L | 3.0 | | 103 | 85-115 | 2 | 200 |
| Nitrite (as N) | 1.43 | 0.04 | 0.01 | mg/L | 1.4 | | 102 | 85-115 | 2 | 200 |
| **Matrix Spike (BI12837-MS1)** | | **Source: 1108650-04** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 1.47 | 0.04 | 0.01 | mg/L | 1.4 | 0.151 | 94 | 85-115 | | |
| Nitrate (as N) | 1.84 | 0.04 | 0.01 | mg/L | 1.7 | 0.372 | 86 | 85-115 | | |
| Chloride | 7.07 | 0.20 | 0.050 | mg/L | 3.0 | 4.44 | 88 | 80-120 | | |
| **Matrix Spike (BI12837-MS2)** | | **Source: 1108661-02** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chloride | 18.0 | 0.20 | 0.050 | mg/L | 3.0 | 14.8 | 107 | 80-120 | | |
| Nitrite (as N) | 1.49 | 0.04 | 0.01 | mg/L | 1.4 | ND | 106 | 85-115 | | |
| Nitrate (as N) | 11.1 +O | 0.04 | 0.01 | mg/L | 1.7 | 9.10 | 118 | 85-115 | | |
| **Batch BJ10414 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10414-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

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**October 26, 2011**
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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10414 - alkalinity** | | | | | | | | | | |
| **LCS (BJ10414-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **Matrix Spike (BJ10414-MS1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 360 | 8.0 | 2.0 | mg/L | 120 | 250 | 92 | 80-120 | | |
| **Matrix Spike Dup (BJ10414-MSD1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 360 | 8.0 | 2.0 | mg/L | 120 | 250 | 92 | 80-120 | 0 | 26 |
| **Batch BJ10426 - COD prep** | | | | | | | | | | |
| **Blank (BJ10426-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BJ10426-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 48 | 25 | 10 | mg/L | 50 | | 96 | 90-110 | | |
| **Matrix Spike (BJ10426-MS1)** | | **Source: 1108655-03** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 44 | 25 | 10 | mg/L | 50 | ND | 88 | 85-115 | | |
| **Matrix Spike Dup (BJ10426-MSD1)** | | **Source: 1108655-03** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 44 | 25 | 10 | mg/L | 50 | ND | 88 | 85-115 | 0 | 32 |
| **Batch BJ11012 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BJ11012-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11012 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **LCS (BJ11012-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.475 | 0.040 | 0.010 | mg/L | 0.50 | | 95 | 90-110 | | |
| **Matrix Spike (BJ11012-MS1)** | | **Source: 1108658-02** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.505 | 0.040 | 0.010 | mg/L | 0.50 | 0.0735 | 86 | 75-125 | | |
| **Matrix Spike Dup (BJ11012-MSD1)** | | **Source: 1108658-02** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.534 | 0.040 | 0.010 | mg/L | 0.50 | 0.0735 | 92 | 75-125 | 6 | 25 |
| **Batch BJ11019 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ11019-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ11019-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.50 | 0.20 | 0.05 | mg/L | 2.5 | | 100 | 90-110 | | |
| **Matrix Spike (BJ11019-MS1)** | | **Source: 1108658-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.63 | 0.20 | 0.05 | mg/L | 2.5 | 0.334 | 92 | 80-120 | | |
| **Matrix Spike Dup (BJ11019-MSD1)** | | **Source: 1108658-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.10 | 0.20 | 0.05 | mg/L | 2.5 | 0.334 | 71 | 80-120 | 22 | 20 |
| **Batch BJ11735 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11735-BLK1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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**October 26, 2011**
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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11735 - Ammonia by SEAL** | | | | | | | | | | |
| **LCS (BJ11735-BS1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.49 | 0.040 | 0.010 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BJ11735-MS1)** | | **Source: 1108661-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | ND | 94 | 90-110 | | |
| **Matrix Spike Dup (BJ11735-MSD1)** | | **Source: 1108661-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.46 | 0.040 | 0.010 | mg/L | 0.50 | ND | 91 | 90-110 | 3 | 10 |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

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**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108648**
**Revised Report**

## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

+O Matrix spike source sample was over the reccommended range for the method.

**SOUTHERN ANALYTICAL LABORATORIES, INC.**

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

SAL Project No. 1108648

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-K10-7 | 092811 | DRY | GW | | X | | 1 | 1 | | | | | | | | | | |
| 02 | DP-~~K10-5~~ K12-5 | 092811 | 0900 | GW | | X | | 1 | 1 | | | | | 70.0 | 0.64 | 5.0 | 27.5 | | |
| | DP-K10-7 Dupe - | 092811 | DRY | | | | | | | | | | | | | | | | |
| | (was told to Move | | | | | | | | | | | | | | | | | | |
| | dupe from W08-6 to | | | | | | | | | | | | | | | | | | |
| | K10-7 Because W08-6 | | | | | | | | | | | | | | | | | | |
| | was dry - K10-7 | | | | | | | | | | | | | | | | | | |
| | was also Dry - SH | | | | | | | | | | | | | | | | | | |

| | | | |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 1300 09-23-11 | Received: | Date/Time: 1300 092811 |
| Relinquished: | Date/Time: 1415 092811 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks:

1108648

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

Chain of Custody

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108650**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-M07-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108650-01** | | | | | | |
| Date/Time Collected | | **09/28/11 08:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.2 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 08:45 | SDH |
| Water Temperature | °C | 25.9 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 08:45 | SDH |
| Specific conductance | umhos/cm | 274 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 08:45 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 08:45 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chloride | mg/L | 9.1 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 5.1 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.24 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 10/04/11 10:00 | 10/04/11 12:09 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.21 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |
| Sample Description | | **DP-M07-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108650-02** | | | | | | |
| Date/Time Collected | | **09/28/11 08:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.2 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 08:55 | SDH |
| Water Temperature | °C | 25.3 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 08:55 | SDH |
| Specific conductance | umhos/cm | 351 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 08:55 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 08:55 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 13 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 12 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 1.1 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 10/04/11 10:00 | 10/04/11 12:09 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.17 I | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

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**October 26, 2011**
**Work Order: 1108650**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-M07-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108650-03** | | | | | | |
| Date/Time Collected | | **09/28/11 09:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 09:00 | SDH |
| Water Temperature | °C | 25.1 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 09:00 | SDH |
| Specific conductance | umhos/cm | 290 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 09:00 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 09:00 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 12 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 8.1 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.093 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 10/04/11 10:00 | 10/04/11 12:09 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.22 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |
| Sample Description | | **DP-M12-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108650-04** | | | | | | |
| Date/Time Collected | | **09/28/11 08:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.6 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 08:30 | SDH |
| Water Temperature | °C | 26.2 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 08:30 | SDH |
| Specific conductance | umhos/cm | 162 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 08:30 | SDH |
| Dissolved Oxygen | mg/L | 1.8 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 08:30 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.046 | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 4.4 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 0.37 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.15 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.13 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 10/04/11 10:00 | 10/04/11 12:09 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.79 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108650**
**Revised Report**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12837 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12837-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BI12837-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 1.46 | 0.04 | 0.01 | mg/L | 1.4 | | 104 | 85-115 | | |
| Nitrate (as N) | 1.65 | 0.04 | 0.01 | mg/L | 1.7 | | 97 | 85-115 | | |
| Chloride | 3.03 | 0.20 | 0.050 | mg/L | 3.0 | | 101 | 85-115 | | |
| **LCS Dup (BI12837-BSD1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chloride | 3.08 | 0.20 | 0.050 | mg/L | 3.0 | | 103 | 85-115 | 2 | 200 |
| Nitrite (as N) | 1.43 | 0.04 | 0.01 | mg/L | 1.4 | | 102 | 85-115 | 2 | 200 |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | 0.6 | 200 |
| **Matrix Spike (BI12837-MS1)** | | **Source: 1108650-04** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chloride | 7.07 | 0.20 | 0.050 | mg/L | 3.0 | 4.44 | 88 | 80-120 | | |
| Nitrite (as N) | 1.47 | 0.04 | 0.01 | mg/L | 1.4 | 0.151 | 94 | 85-115 | | |
| Nitrate (as N) | 1.84 | 0.04 | 0.01 | mg/L | 1.7 | 0.372 | 86 | 85-115 | | |
| **Matrix Spike (BI12837-MS2)** | | **Source: 1108661-02** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chloride | 18.0 | 0.20 | 0.050 | mg/L | 3.0 | 14.8 | 107 | 80-120 | | |
| Nitrate (as N) | 11.1 +O | 0.04 | 0.01 | mg/L | 1.7 | 9.10 | 118 | 85-115 | | |
| Nitrite (as N) | 1.49 | 0.04 | 0.01 | mg/L | 1.4 | ND | 106 | 85-115 | | |
| **Batch BJ10414 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10414-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**October 26, 2011**
**Work Order: 1108650**
**Revised Report**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10414 - alkalinity** | | | | | | | | | | |
| **LCS (BJ10414-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **Matrix Spike (BJ10414-MS1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 360 | 8.0 | 2.0 | mg/L | 120 | 250 | 92 | 80-120 | | |
| **Matrix Spike Dup (BJ10414-MSD1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 360 | 8.0 | 2.0 | mg/L | 120 | 250 | 92 | 80-120 | 0 | 26 |
| **Batch BJ10426 - COD prep** | | | | | | | | | | |
| **Blank (BJ10426-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BJ10426-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 48 | 25 | 10 | mg/L | 50 | | 96 | 90-110 | | |
| **Matrix Spike (BJ10426-MS1)** | | **Source: 1108655-03** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 44 | 25 | 10 | mg/L | 50 | ND | 88 | 85-115 | | |
| **Matrix Spike Dup (BJ10426-MSD1)** | | **Source: 1108655-03** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 44 | 25 | 10 | mg/L | 50 | ND | 88 | 85-115 | 0 | 32 |
| **Batch BJ11012 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BJ11012-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11012 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **LCS (BJ11012-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.475 | 0.040 | 0.010 | mg/L | 0.50 | | 95 | 90-110 | | |
| **Matrix Spike (BJ11012-MS1)** | | **Source: 1108658-02** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.505 | 0.040 | 0.010 | mg/L | 0.50 | 0.0735 | 86 | 75-125 | | |
| **Matrix Spike Dup (BJ11012-MSD1)** | | **Source: 1108658-02** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.534 | 0.040 | 0.010 | mg/L | 0.50 | 0.0735 | 92 | 75-125 | 6 | 25 |
| **Batch BJ11019 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ11019-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ11019-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.50 | 0.20 | 0.05 | mg/L | 2.5 | | 100 | 90-110 | | |
| **Matrix Spike (BJ11019-MS1)** | | **Source: 1108658-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.63 | 0.20 | 0.05 | mg/L | 2.5 | 0.334 | 92 | 80-120 | | |
| **Matrix Spike Dup (BJ11019-MSD1)** | | **Source: 1108658-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.10 | 0.20 | 0.05 | mg/L | 2.5 | 0.334 | 71 | 80-120 | 22 | 20 |
| **Batch BJ11735 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11735-BLK1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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**October 26, 2011**
**Work Order: 1108650**
**Revised Report**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11735 - Ammonia by SEAL** | | | | | | | | | | |
| **LCS (BJ11735-BS1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.49 | 0.040 | 0.010 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BJ11735-MS1)** | | **Source: 1108661-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | ND | 94 | 90-110 | | |
| **Matrix Spike Dup (BJ11735-MSD1)** | | **Source: 1108661-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.46 | 0.040 | 0.010 | mg/L | 0.50 | ND | 91 | 90-110 | 3 | 10 |

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**October 26, 2011**
**Work Order: 1108650**
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## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

+O Matrix spike source sample was over the reccommended range for the method.

HH 9-28-11

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. H86 1108650

| | |
|---|---|
| Client Name: Hazen and Sawyer | Contact / Phone: |
| Project Name / Location: GCREC Mound Groundwater Analyses | |
| Samplers: (Signature) | |

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| SAL Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-M07-15 | 09 28 11 | 0845 | GW | | X | | 1 | | 1 | | | | 274.0 | 0.27 | 5.2 | 25.9 | | |
| 02 | DP-M07-21 | | 0855 | GW | | X | | 1 | 1 | | | | | 351.2 | 0.26 | 5.2 | 25.3 | | |
| 03 | DP-M07-27 | | 0900 | GW | | X | | 1 | 1 | | | | | 298.5 | 0.25 | 5.1 | 25.1 | | |
| 04 | DP-M12-10 | | 0830 | GW | | X | | 1 | 1 | | | | | 161.8 | 1.78 | 5.6 | 26.2 | | |

| Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|
| Containers Prepared/ Relinquished: | 1300 09-23-11 | | 1300 09 23 11 |
| Relinquished: | 1415 09 28 11 | | |
| Relinquished: | | | |
| Relinquished: | | | |
| Relinquished: | | | |

| | |
|---|---|
| Seal intact? | Y N N/A |
| Samples intact upon arrival? | Y N N/A |
| Received on ice? Temp_____ | Y N N/A |
| Proper preservatives indicated? | Y N N/A |
| Rec'd within holding time? | Y N N/A |
| Volatiles rec'd w/out headspace | Y N N/A |
| Proper containers used? | Y N N/A |

Instructions / Remarks:

1108650

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

Chain of Custody

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108655**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-N12-14** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108655-01** | | | | | | |
| Date/Time Collected | | **09/28/11 09:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 09:15 | SDH |
| Water Temperature | °C | 26.5 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 09:15 | SDH |
| Specific conductance | umhos/cm | 181 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 09:15 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 09:15 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 4.6 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Fluoride | mg/L | 0.074 | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 1.3 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.35 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Sulfate | mg/L | 53 | EPA 300.0 | 0.60 | 0.20 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.15 I | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |
| Total Organic Carbon | mg/L | 2.0 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.9 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 09/30/11 09:43 | 10/03/11 17:41 | VWC |
| Calcium | mg/L | 17 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:41 | VWC |
| Iron | mg/L | 0.10 | EPA 200.7 | 0.10 | 0.020 | 09/30/11 09:43 | 10/03/11 17:41 | VWC |
| Magnesium | mg/L | 3.4 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:41 | VWC |
| Manganese | mg/L | 0.17 | EPA 200.7 | 0.010 | 0.0010 | 09/30/11 09:43 | 10/03/11 17:41 | VWC |
| Potassium | mg/L | 6.0 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:41 | VWC |
| Sodium | mg/L | 2.7 | EPA 200.7 | 0.050 | 0.010 | 09/30/11 09:43 | 10/03/11 17:41 | VWC |

| | |
|---|---|
| Sample Description | **DP-N12-18** |
| Matrix | **Groundwater** |
| SAL Sample Number | **1108655-02** |
| Date/Time Collected | **09/28/11 09:25** |
| Collected by | **Sean Harmon** |
| Date/Time Received | **09/28/11 14:15** |

**Field Parameters**

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
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**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108655**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-N12-18** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108655-02** | | | | | | |
| Date/Time Collected | | **09/28/11 09:25** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 09:25 | SDH |
| Water Temperature | °C | 26.7 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 09:25 | SDH |
| Specific conductance | umhos/cm | 234 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 09:25 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 09:25 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 7.7 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 3.9 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 1.1 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Total Alkalinity | mg/L | 6.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.57 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |
| Sample Description | | **DP-N12-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108655-03** | | | | | | |
| Date/Time Collected | | **09/28/11 09:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.3 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 09:35 | SDH |
| Water Temperature | °C | 26.0 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 09:35 | SDH |
| Specific conductance | umhos/cm | 316 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 09:35 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 09:35 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/04/11 08:30 | 10/04/11 13:30 | ARP |
| Chloride | mg/L | 9.8 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Fluoride | mg/L | 0.062 | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 6.7 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.093 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Sulfate | mg/L | 85 | EPA 300.0 | 0.60 | 0.20 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 6.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

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**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108655**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-N12-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108655-03** | | | | | | |
| Date/Time Collected | | **09/28/11 09:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| Total Kjeldahl Nitrogen | mg/L | 0.13 I | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |
| Total Organic Carbon | mg/L | 2.8 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.2 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 10/04/11 09:37 | 10/04/11 16:08 | VWC |
| Calcium | mg/L | 31 | EPA 200.7 | 0.50 | 0.042 | 10/04/11 09:37 | 10/04/11 16:08 | VWC |
| Iron | mg/L | 0.020 U | EPA 200.7 | 0.10 | 0.020 | 10/04/11 09:37 | 10/04/11 16:08 | VWC |
| Magnesium | mg/L | 9.0 | EPA 200.7 | 0.50 | 0.020 | 10/04/11 09:37 | 10/04/11 16:08 | VWC |
| Manganese | mg/L | 0.088 | EPA 200.7 | 0.010 | 0.0010 | 10/04/11 09:37 | 10/04/11 16:08 | VWC |
| Potassium | mg/L | 17 | EPA 200.7 | 0.050 | 0.010 | 10/04/11 09:37 | 10/04/11 16:08 | VWC |
| Sodium | mg/L | 4.7 | EPA 200.7 | 0.50 | 0.13 | 10/04/11 09:37 | 10/04/11 16:08 | VWC |
| Sample Description | | **DP-N12-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108655-04** | | | | | | |
| Date/Time Collected | | **09/28/11 09:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.2 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 09:45 | SDH |
| Water Temperature | °C | 25.9 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 09:45 | SDH |
| Specific conductance | umhos/cm | 359 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 09:45 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 09:45 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chemical Oxygen Demand | mg/L | 67 | EPA 410.4 | 25 | 10 | 10/05/11 09:00 | 10/05/11 13:37 | ARP |
| Chloride | mg/L | 14 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Fluoride | mg/L | 0.089 | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 12 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Orthophosphate as P | mg/L | 0.051 | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.13 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Sulfate | mg/L | 83 | EPA 300.0 | 0.60 | 0.20 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 6.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.05 U | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108655**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-N12-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108655-04** | | | | | | |
| Date/Time Collected | | **09/28/11 09:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| Total Organic Carbon | mg/L | 2.3 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.2 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 10/04/11 09:37 | 10/04/11 16:11 | VWC |
| Calcium | mg/L | 31 | EPA 200.7 | 0.50 | 0.042 | 10/04/11 09:37 | 10/04/11 16:11 | VWC |
| Iron | mg/L | 0.098 I | EPA 200.7 | 0.10 | 0.020 | 10/04/11 09:37 | 10/04/11 16:11 | VWC |
| Magnesium | mg/L | 11 | EPA 200.7 | 0.50 | 0.020 | 10/04/11 09:37 | 10/04/11 16:11 | VWC |
| Manganese | mg/L | 0.042 | EPA 200.7 | 0.010 | 0.0010 | 10/04/11 09:37 | 10/04/11 16:11 | VWC |
| Potassium | mg/L | 23 | EPA 200.7 | 0.050 | 0.010 | 10/04/11 09:37 | 10/04/11 16:11 | VWC |
| Sodium | mg/L | 6.7 | EPA 200.7 | 0.50 | 0.13 | 10/04/11 09:37 | 10/04/11 16:11 | VWC |
| Sample Description | | **DP-N12-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108655-05** | | | | | | |
| Date/Time Collected | | **09/28/11 09:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 09:55 | SDH |
| Water Temperature | °C | 25.8 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 09:55 | SDH |
| Specific conductance | umhos/cm | 323 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 09:55 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 09:55 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/05/11 09:00 | 10/05/11 13:37 | ARP |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Fluoride | mg/L | 0.061 | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 12 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Orthophosphate as P | mg/L | 0.010 U | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.31 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Sulfate | mg/L | 59 | EPA 300.0 | 0.60 | 0.20 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 2.6 | EPA 351.2 | 0.20 | 0.05 | 10/11/11 11:42 | 10/17/11 11:43 | SMD |
| Total Organic Carbon | mg/L | 1.6 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |

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**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108655**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-N12-27** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108655-05** | | | | | | |
| Date/Time Collected | | **09/28/11 09:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.3 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 10/04/11 09:37 | 10/04/11 16:15 | VWC |
| Calcium | mg/L | 27 | EPA 200.7 | 0.50 | 0.042 | 10/04/11 09:37 | 10/04/11 16:15 | VWC |
| Iron | mg/L | 0.020 U | EPA 200.7 | 0.10 | 0.020 | 10/04/11 09:37 | 10/04/11 16:15 | VWC |
| Magnesium | mg/L | 8.3 | EPA 200.7 | 0.50 | 0.020 | 10/04/11 09:37 | 10/04/11 16:15 | VWC |
| Manganese | mg/L | 0.085 | EPA 200.7 | 0.010 | 0.0010 | 10/04/11 09:37 | 10/04/11 16:15 | VWC |
| Potassium | mg/L | 19 | EPA 200.7 | 0.050 | 0.010 | 10/04/11 09:37 | 10/04/11 16:15 | VWC |
| Sodium | mg/L | 7.6 | EPA 200.7 | 0.50 | 0.13 | 10/04/11 09:37 | 10/04/11 16:15 | VWC |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12837 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12837-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BI12837-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Sulfate | 8.71 | 0.60 | 0.20 | mg/L | 9.0 | | 97 | 85-115 | | |
| Orthophosphate as P | 0.914 | 0.040 | 0.010 | mg/L | 0.90 | | 102 | 85-115 | | |
| Nitrite (as N) | 1.46 | 0.04 | 0.01 | mg/L | 1.4 | | 104 | 85-115 | | |
| Nitrate (as N) | 1.65 | 0.04 | 0.01 | mg/L | 1.7 | | 97 | 85-115 | | |
| Fluoride | 0.904 | 0.040 | 0.010 | mg/L | 0.90 | | 100 | 85-115 | | |
| Chloride | 3.03 | 0.20 | 0.050 | mg/L | 3.0 | | 101 | 85-115 | | |
| **LCS Dup (BI12837-BSD1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Orthophosphate as P | 0.897 | 0.040 | 0.010 | mg/L | 0.90 | | 100 | 85-115 | 2 | 200 |
| Sulfate | 8.79 | 0.60 | 0.20 | mg/L | 9.0 | | 98 | 85-115 | 0.9 | 200 |
| Chloride | 3.08 | 0.20 | 0.050 | mg/L | 3.0 | | 103 | 85-115 | 2 | 200 |
| Nitrite (as N) | 1.43 | 0.04 | 0.01 | mg/L | 1.4 | | 102 | 85-115 | 2 | 200 |
| Fluoride | 0.894 | 0.040 | 0.010 | mg/L | 0.90 | | 99 | 85-115 | 1 | 200 |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | 0.6 | 200 |
| **Matrix Spike (BI12837-MS1)** | | **Source: 1108650-04** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Sulfate | 53.1 +O | 0.60 | 0.20 | mg/L | 9.0 | 46.7 | 71 | 85-115 | | |
| Orthophosphate as P | 0.923 | 0.040 | 0.010 | mg/L | 0.90 | 0.0435 | 98 | 85-115 | | |
| Nitrite (as N) | 1.47 | 0.04 | 0.01 | mg/L | 1.4 | 0.151 | 94 | 85-115 | | |
| Nitrate (as N) | 1.84 | 0.04 | 0.01 | mg/L | 1.7 | 0.372 | 86 | 85-115 | | |
| Chloride | 7.07 | 0.20 | 0.050 | mg/L | 3.0 | 4.44 | 88 | 80-120 | | |
| Fluoride | 0.972 | 0.040 | 0.010 | mg/L | 0.90 | 0.126 | 94 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12837 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BI12837-MS2)** | | **Source: 1108661-02** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Fluoride | 0.958 | 0.040 | 0.010 | mg/L | 0.90 | 0.0843 | 97 | 85-115 | | |
| Sulfate | 86.6 | 0.60 | 0.20 | mg/L | 9.0 | 77.7 | 99 | 85-115 | | |
| Orthophosphate as P | 0.875 | 0.040 | 0.010 | mg/L | 0.90 | 0.0602 | 91 | 85-115 | | |
| Chloride | 18.0 | 0.20 | 0.050 | mg/L | 3.0 | 14.8 | 107 | 80-120 | | |
| Nitrite (as N) | 1.49 | 0.04 | 0.01 | mg/L | 1.4 | ND | 106 | 85-115 | | |
| Nitrate (as N) | 11.1 +O | 0.04 | 0.01 | mg/L | 1.7 | 9.10 | 118 | 85-115 | | |
| **Batch BI13009 - TOC prep** | | | | | | | | | | |
| **Blank (BI13009-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI13009-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 10.1 | 1.0 | 0.50 | mg/L | 10 | | 101 | 90-110 | | |
| **Matrix Spike (BI13009-MS1)** | | **Source: 1108655-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 12.1 | 1.0 | 0.50 | mg/L | 10 | 2.05 | 101 | 85-115 | | |
| **Matrix Spike Dup (BI13009-MSD1)** | | **Source: 1108655-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 12.5 | 1.0 | 0.50 | mg/L | 10 | 2.05 | 104 | 85-115 | 3 | 10 |
| **Batch BJ10103 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10103-BLK1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10103 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10103-BLK2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BJ10103-BS1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **LCS (BJ10103-BS2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **Matrix Spike (BJ10103-MS1)** | | **Source: 1108663-07** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 98 | 80-120 | | |
| **Matrix Spike (BJ10103-MS2)** | | **Source: 1108647-03** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | | |
| **Matrix Spike Dup (BJ10103-MSD1)** | | **Source: 1108663-07** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | 8 | 26 |
| **Matrix Spike Dup (BJ10103-MSD2)** | | **Source: 1108647-03** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | 0 | 26 |
| **Batch BJ10426 - COD prep** | | | | | | | | | | |
| **Blank (BJ10426-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BJ10426-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 48 | 25 | 10 | mg/L | 50 | | 96 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10426 - COD prep** | | | | | | | | | | |
| **Matrix Spike (BJ10426-MS1)** | | **Source: 1108655-03** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 44 | 25 | 10 | mg/L | 50 | ND | 88 | 85-115 | | |
| **Matrix Spike Dup (BJ10426-MSD1)** | | **Source: 1108655-03** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chemical Oxygen Demand | 44 | 25 | 10 | mg/L | 50 | ND | 88 | 85-115 | 0 | 32 |
| **Batch BJ10524 - COD prep** | | | | | | | | | | |
| **Blank (BJ10524-BLK1)** | | | | | Prepared & Analyzed: 10/05/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BJ10524-BS1)** | | | | | Prepared & Analyzed: 10/05/11 | | | | | |
| Chemical Oxygen Demand | 53 | 25 | 10 | mg/L | 50 | | 106 | 90-110 | | |
| **Matrix Spike (BJ10524-MS1)** | | **Source: 1108655-04** | | | Prepared & Analyzed: 10/05/11 | | | | | |
| Chemical Oxygen Demand | 120 | 25 | 10 | mg/L | 50 | 67 | 112 | 85-115 | | |
| **Matrix Spike Dup (BJ10524-MSD1)** | | **Source: 1108655-04** | | | Prepared & Analyzed: 10/05/11 | | | | | |
| Chemical Oxygen Demand | 120 | 25 | 10 | mg/L | 50 | 67 | 108 | 85-115 | 2 | 32 |
| **Batch BJ11012 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BJ11012-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11012-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.475 | 0.040 | 0.010 | mg/L | 0.50 | | 95 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11012 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Matrix Spike (BJ11012-MS1)** | | **Source: 1108658-02** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.505 | 0.040 | 0.010 | mg/L | 0.50 | 0.0735 | 86 | 75-125 | | |
| **Matrix Spike Dup (BJ11012-MSD1)** | | **Source: 1108658-02** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.534 | 0.040 | 0.010 | mg/L | 0.50 | 0.0735 | 92 | 75-125 | 6 | 25 |
| **Batch BJ11019 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ11019-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ11019-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.50 | 0.20 | 0.05 | mg/L | 2.5 | | 100 | 90-110 | | |
| **Matrix Spike (BJ11019-MS1)** | | **Source: 1108658-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.63 | 0.20 | 0.05 | mg/L | 2.5 | 0.334 | 92 | 80-120 | | |
| **Matrix Spike Dup (BJ11019-MSD1)** | | **Source: 1108658-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.10 | 0.20 | 0.05 | mg/L | 2.5 | 0.334 | 71 | 80-120 | 22 | 20 |
| **Batch BJ11111 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ11111-BLK1)** | | | | | Prepared: 10/11/11 Analyzed: 10/17/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ11111-BS1)** | | | | | Prepared: 10/11/11 Analyzed: 10/17/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.32 | 0.20 | 0.05 | mg/L | 2.5 | | 93 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11111 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Matrix Spike (BJ11111-MS1)** | | **Source: 1108966-01** | | | Prepared: 10/11/11 Analyzed: 10/17/11 | | | | | |
| Total Kjeldahl Nitrogen | 7.13 | 0.20 | 0.05 | mg/L | 5.0 | 2.30 | 97 | 80-120 | | |
| **Matrix Spike Dup (BJ11111-MSD1)** | | **Source: 1108966-01** | | | Prepared: 10/11/11 Analyzed: 10/17/11 | | | | | |
| Total Kjeldahl Nitrogen | 7.72 | 0.20 | 0.05 | mg/L | 5.0 | 2.30 | 108 | 80-120 | 8 | 20 |
| **Batch BJ11735 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11735-BLK1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11735-BS1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.49 | 0.040 | 0.010 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BJ11735-MS1)** | | **Source: 1108661-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | ND | 94 | 90-110 | | |
| **Matrix Spike Dup (BJ11735-MSD1)** | | **Source: 1108661-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.46 | 0.040 | 0.010 | mg/L | 0.50 | ND | 91 | 90-110 | 3 | 10 |

**Hazen and Sawyer**
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**Tampa, FL 33619**

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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13008 - DOC prep** | | | | | | | | | | |
| **Blank (BI13008-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI13008-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 10.2 | 1.0 | 0.50 | mg/L | 10 | | 102 | 90-110 | | |
| **Matrix Spike (BI13008-MS1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 12.8 | 1.0 | 0.50 | mg/L | 10 | 2.08 | 107 | 85-125 | | |
| **Matrix Spike Dup (BI13008-MSD1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 12.9 | 1.0 | 0.50 | mg/L | 10 | 2.08 | 108 | 85-125 | 0.7 | 25 |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13006 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BI13006-BLK1)** | | | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Calcium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Iron | 0.020 U | 0.10 | 0.020 | mg/L | | | | | | |
| Magnesium | 0.025 I | 0.050 | 0.010 | mg/L | | | | | | |
| Potassium | 0.016 I | 0.050 | 0.010 | mg/L | | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Sodium | 0.010 U | 0.050 | 0.010 | mg/L | | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| **LCS (BI13006-BS1)** | | | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Magnesium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| Iron | 7.6 | 0.10 | 0.020 | mg/L | 8.0 | | 94 | 85-115 | | |
| Boron | 0.39 | 0.10 | 0.050 | mg/L | 0.40 | | 97 | 85-115 | | |
| Manganese | 0.38 | 0.010 | 0.0010 | mg/L | 0.40 | | 96 | 85-115 | | |
| Sodium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| Calcium | 18 | 0.050 | 0.010 | mg/L | 20 | | 92 | 85-115 | | |
| Potassium | 18 | 0.050 | 0.010 | mg/L | 20 | | 89 | 85-115 | | |
| **Matrix Spike (BI13006-MS1)** | | **Source: 1108620-01** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.015 | 98 | 70-130 | | |
| Iron | 7.9 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 98 | 70-130 | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 11 | 91 | 70-130 | | |
| Magnesium | 29 | 0.050 | 0.010 | mg/L | 20 | 9.5 | 97 | 70-130 | | |
| Sodium | 63 | 0.050 | 0.010 | mg/L | 20 | 43 | 98 | 70-130 | | |
| Calcium | 56 | 0.050 | 0.010 | mg/L | 20 | 37 | 93 | 70-130 | | |
| Boron | 0.53 | 0.10 | 0.050 | mg/L | 0.40 | 0.13 | 101 | 70-130 | | |
| **Matrix Spike (BI13006-MS2)** | | **Source: 1108644-11** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Magnesium | 25 | 0.050 | 0.010 | mg/L | 20 | 5.7 | 98 | 70-130 | | |
| Sodium | 31 | 0.050 | 0.010 | mg/L | 20 | 12 | 96 | 70-130 | | |
| Calcium | 40 | 0.050 | 0.010 | mg/L | 20 | 21 | 96 | 70-130 | | |
| Manganese | 0.49 | 0.010 | 0.0010 | mg/L | 0.40 | 0.11 | 96 | 70-130 | | |
| Boron | 0.50 | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 98 | 70-130 | | |
| Potassium | 29 | 0.050 | 0.010 | mg/L | 20 | 8.9 | 99 | 70-130 | | |
| Iron | 8.5 | 0.10 | 0.020 | mg/L | 8.0 | 0.59 | 98 | 70-130 | | |

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**Metals - Quality Control**

| Analyte | Result | | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13006 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | | |
| **Matrix Spike Dup (BI13006-MSD1)** | | | **Source: 1108620-01** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Calcium | 56 | | 0.050 | 0.010 | mg/L | 20 | 37 | 94 | 70-130 | 0.5 | 30 |
| Iron | 7.8 | | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 97 | 70-130 | 1 | 30 |
| Manganese | 0.40 | | 0.010 | 0.0010 | mg/L | 0.40 | 0.015 | 96 | 70-130 | 2 | 30 |
| Potassium | 30 | | 0.050 | 0.010 | mg/L | 20 | 11 | 94 | 70-130 | 1 | 30 |
| Sodium | 63 | | 0.050 | 0.010 | mg/L | 20 | 43 | 96 | 70-130 | 0.6 | 30 |
| Boron | 0.49 | | 0.10 | 0.050 | mg/L | 0.40 | 0.13 | 91 | 70-130 | 8 | 30 |
| Magnesium | 29 | | 0.050 | 0.010 | mg/L | 20 | 9.5 | 95 | 70-130 | 0.9 | 30 |
| **Matrix Spike Dup (BI13006-MSD2)** | | | **Source: 1108644-11** | | | Prepared: 09/30/11 Analyzed: 10/03/11 | | | | | |
| Iron | 8.4 | | 0.10 | 0.020 | mg/L | 8.0 | 0.59 | 98 | 70-130 | 0.3 | 30 |
| Manganese | 0.48 | | 0.010 | 0.0010 | mg/L | 0.40 | 0.11 | 93 | 70-130 | 3 | 30 |
| Magnesium | 25 | | 0.050 | 0.010 | mg/L | 20 | 5.7 | 97 | 70-130 | 0.1 | 30 |
| Potassium | 29 | | 0.050 | 0.010 | mg/L | 20 | 8.9 | 99 | 70-130 | 0.03 | 30 |
| Calcium | 41 | | 0.050 | 0.010 | mg/L | 20 | 21 | 100 | 70-130 | 2 | 30 |
| Boron | 0.42 | | 0.10 | 0.050 | mg/L | 0.40 | 0.10 | 80 | 70-130 | 16 | 30 |
| Sodium | 31 | | 0.050 | 0.010 | mg/L | 20 | 12 | 99 | 70-130 | 2 | 30 |
| **Batch BJ10404 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | | |
| **Blank (BJ10404-BLK1)** | | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Magnesium | 0.051 | I | 0.50 | 0.020 | mg/L | | | | | | |
| Boron | 0.050 | U | 0.10 | 0.050 | mg/L | | | | | | |
| Potassium | 0.11 | | 0.050 | 0.010 | mg/L | | | | | | |
| Calcium | 0.042 | U | 0.50 | 0.042 | mg/L | | | | | | |
| Iron | 0.037 | I | 0.10 | 0.020 | mg/L | | | | | | |
| Manganese | 0.0010 | U | 0.010 | 0.0010 | mg/L | | | | | | |
| Sodium | 0.13 | U | 0.50 | 0.13 | mg/L | | | | | | |

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**October 26, 2011**
**Work Order: 1108655**
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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10404 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **LCS (BJ10404-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Sodium | 21 | 0.50 | 0.13 | mg/L | 20 | | 106 | 85-115 | | |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | | 107 | 85-115 | | |
| Iron | 8.6 | 0.10 | 0.020 | mg/L | 8.0 | | 107 | 85-115 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | | 102 | 85-115 | | |
| Magnesium | 21 | 0.50 | 0.020 | mg/L | 20 | | 107 | 85-115 | | |
| Calcium | 21 | 0.50 | 0.042 | mg/L | 20 | | 104 | 85-115 | | |
| Boron | 0.39 | 0.10 | 0.050 | mg/L | 0.40 | | 97 | 85-115 | | |
| **Matrix Spike (BJ10404-MS1)** | | **Source: 1107616-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0067 | 102 | 70-130 | | |
| Boron | 0.63 | 0.10 | 0.050 | mg/L | 0.40 | 0.23 | 100 | 70-130 | | |
| Potassium | 39 | 0.050 | 0.010 | mg/L | 20 | 16 | 114 | 70-130 | | |
| Sodium | 280 +O | 0.50 | 0.13 | mg/L | 20 | 250 | 140 | 70-130 | | |
| Calcium | 85 | 0.50 | 0.042 | mg/L | 20 | 61 | 122 | 70-130 | | |
| Iron | 8.6 | 0.10 | 0.020 | mg/L | 8.0 | 0.11 | 106 | 70-130 | | |
| Magnesium | 51 | 0.50 | 0.020 | mg/L | 20 | 29 | 113 | 70-130 | | |
| **Matrix Spike (BJ10404-MS2)** | | **Source: 1108761-04** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Calcium | 21 | 0.50 | 0.042 | mg/L | 20 | ND | 106 | 70-130 | | |
| Sodium | 22 | 0.50 | 0.13 | mg/L | 20 | 0.15 | 107 | 70-130 | | |
| Iron | 8.7 | 0.10 | 0.020 | mg/L | 8.0 | 0.034 | 109 | 70-130 | | |
| Potassium | 22 | 0.050 | 0.010 | mg/L | 20 | 0.089 | 108 | 70-130 | | |
| Magnesium | 22 | 0.50 | 0.020 | mg/L | 20 | ND | 109 | 70-130 | | |
| Boron | 0.39 | 0.10 | 0.050 | mg/L | 0.40 | ND | 97 | 70-130 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | ND | 102 | 70-130 | | |
| **Matrix Spike Dup (BJ10404-MSD1)** | | **Source: 1107616-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Boron | 0.64 | 0.10 | 0.050 | mg/L | 0.40 | 0.23 | 100 | 70-130 | 0.4 | 30 |
| Manganese | 0.42 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0067 | 103 | 70-130 | 0.8 | 30 |
| Magnesium | 52 | 0.50 | 0.020 | mg/L | 20 | 29 | 114 | 70-130 | 0.2 | 30 |
| Sodium | 280 +O | 0.50 | 0.13 | mg/L | 20 | 250 | 132 | 70-130 | 0.5 | 30 |
| Iron | 8.6 | 0.10 | 0.020 | mg/L | 8.0 | 0.11 | 106 | 70-130 | 0.3 | 30 |
| Potassium | 37 | 0.050 | 0.010 | mg/L | 20 | 16 | 107 | 70-130 | 4 | 30 |
| Calcium | 85 | 0.50 | 0.042 | mg/L | 20 | 61 | 121 | 70-130 | 0.2 | 30 |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10404 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Matrix Spike Dup (BJ10404-MSD2)** | | **Source: 1108761-04** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Manganese | 0.40 | 0.010 | 0.0010 | mg/L | 0.40 | ND | 101 | 70-130 | 1 | 30 |
| Magnesium | 21 | 0.50 | 0.020 | mg/L | 20 | ND | 107 | 70-130 | 2 | 30 |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | 0.089 | 103 | 70-130 | 4 | 30 |
| Calcium | 21 | 0.50 | 0.042 | mg/L | 20 | ND | 105 | 70-130 | 1 | 30 |
| Iron | 8.6 | 0.10 | 0.020 | mg/L | 8.0 | 0.034 | 107 | 70-130 | 2 | 30 |
| Sodium | 21 | 0.50 | 0.13 | mg/L | 20 | 0.15 | 104 | 70-130 | 3 | 30 |
| Boron | 0.38 | 0.10 | 0.050 | mg/L | 0.40 | ND | 96 | 70-130 | 0.6 | 30 |

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**Work Order: 1108655**
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## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below.
Questions regarding this report should be directed to Client Services at 813-855-1844.

+O Matrix spike source sample was over the reccommended range for the method.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1108655

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-N12-14 | 092811 | 0915 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 181.3 | 0.32 | 5.0 | 26.5 | | |
| 02 | DP-N12-18 | | 0925 | GW | | X | | 1 | 1 | | | | | 234.2 | 0.45 | 5.1 | 26.9 | | |
| 03 | DP-N12-21 | | 0935 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 315.8 | 0.33 | 5.3 | 26.0 | | |
| 04 | DP-N12-24 | | 0945 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 359.4 | 0.23 | 5.2 | 25.9 | | |
| 05 | DP-N12-27 | | 0955 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 323.3 | 0.31 | 5.1 | 25.8 | | |

| | | | |
|---|---|---|---|
| Containers Prepared / Relinquished: | Date/Time: 1300 09-23-11 | Received: | Date/Time: 1300 092311 |
| Relinquished: | Date/Time: 1415 092811 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A
Samples intact upon arrival? Y N N/A
Received on ice? Temp_____ Y N N/A
Proper preservatives indicated? Y N N/A
Rec'd within holding time? Y N N/A
Volatiles rec'd w/out headspace Y N N/A
Proper containers used? Y N N/A

Instructions / Remarks:

1108655

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

Chain of Custody

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 27, 2011**
**Work Order: 1108658**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-O10-18** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108658-01** | | | | | | |
| Date/Time Collected | | **09/28/11 09:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.2 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 09:15 | SDH |
| Water Temperature | °C | 27.3 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 09:15 | SDH |
| Specific conductance | umhos/cm | 160 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 09:15 | SDH |
| Dissolved Oxygen | mg/L | 0.7 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 09:15 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/05/11 09:00 | 10/05/11 13:37 | ARP |
| Chloride | mg/L | 3.6 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 0.47 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.11 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.078 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 10/04/11 10:00 | 10/04/11 12:09 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.33 | EPA 351.2 | 0.20 | 0.05 | 10/10/11 10:29 | 10/14/11 15:47 | SMD |
| Sample Description | | **DP-O10-18-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108658-02** | | | | | | |
| Date/Time Collected | | **09/28/11 09:20** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.2 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 09:20 | SDH |
| Water Temperature | °C | 27.3 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 09:20 | SDH |
| Specific conductance | umhos/cm | 160 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 09:20 | SDH |
| Dissolved Oxygen | mg/L | 0.7 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 09:20 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/05/11 09:00 | 10/05/11 13:37 | ARP |
| Chloride | mg/L | 3.7 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 0.38 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.074 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:55 | 10/12/11 15:06 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | 10/04/11 10:00 | 10/04/11 12:09 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.48 | EPA 351.2 | 0.20 | 0.05 | 10/11/11 11:42 | 10/14/11 15:47 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
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**Tampa, FL 33619**

**October 27, 2011**
**Work Order: 1108658**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-O10-24** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108658-03** | | | | | | |
| Date/Time Collected | | **09/28/11 09:30** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 09:30 | SDH |
| Water Temperature | °C | 26.8 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 09:30 | SDH |
| Specific conductance | umhos/cm | 279 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 09:30 | SDH |
| Dissolved Oxygen | mg/L | 0.6 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 09:30 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.060 | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 10/05/11 09:00 | 10/05/11 13:37 | ARP |
| Chloride | mg/L | 6.8 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Fluoride | mg/L | 0.067 | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 3.8 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Orthophosphate as P | mg/L | 0.054 | EPA 300.0 | 0.040 | 0.010 | | 09/29/11 11:10 | MMF |
| Phosphorous - Total as P | mg/L | 0.14 | SM 4500P-E | 0.040 | 0.010 | 10/10/11 09:57 | 10/12/11 15:38 | SMD |
| Sulfate | mg/L | 77 | EPA 300.0 | 0.60 | 0.20 | | 10/04/11 18:43 | MEJ |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 10/04/11 10:00 | 10/04/11 12:09 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.47 | EPA 351.2 | 0.20 | 0.05 | 10/11/11 11:42 | 10/14/11 15:48 | SMD |
| Total Organic Carbon | mg/L | 2.4 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.6 | SM 5310B | 1.0 | 0.50 | | 09/29/11 08:16 | MEJ |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 10/04/11 09:37 | 10/04/11 16:18 | VWC |
| Calcium | mg/L | 32 | EPA 200.7 | 0.50 | 0.042 | 10/04/11 09:37 | 10/04/11 16:18 | VWC |
| Iron | mg/L | 0.048 I | EPA 200.7 | 0.10 | 0.020 | 10/04/11 09:37 | 10/04/11 16:18 | VWC |
| Magnesium | mg/L | 7.2 | EPA 200.7 | 0.50 | 0.020 | 10/04/11 09:37 | 10/04/11 16:18 | VWC |
| Manganese | mg/L | 0.16 | EPA 200.7 | 0.010 | 0.0010 | 10/04/11 09:37 | 10/04/11 16:18 | VWC |
| Potassium | mg/L | 14 | EPA 200.7 | 0.050 | 0.010 | 10/04/11 09:37 | 10/04/11 16:18 | VWC |
| Sodium | mg/L | 3.5 | EPA 200.7 | 0.50 | 0.13 | 10/04/11 09:37 | 10/04/11 16:18 | VWC |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12837 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12837-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BI12837-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Orthophosphate as P | 0.914 | 0.040 | 0.010 | mg/L | 0.90 | | 102 | 85-115 | | |
| Nitrite (as N) | 1.46 | 0.04 | 0.01 | mg/L | 1.4 | | 104 | 85-115 | | |
| Nitrate (as N) | 1.65 | 0.04 | 0.01 | mg/L | 1.7 | | 97 | 85-115 | | |
| Fluoride | 0.904 | 0.040 | 0.010 | mg/L | 0.90 | | 100 | 85-115 | | |
| Chloride | 3.03 | 0.20 | 0.050 | mg/L | 3.0 | | 101 | 85-115 | | |
| **LCS Dup (BI12837-BSD1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 1.43 | 0.04 | 0.01 | mg/L | 1.4 | | 102 | 85-115 | 2 | 200 |
| Fluoride | 0.894 | 0.040 | 0.010 | mg/L | 0.90 | | 99 | 85-115 | 1 | 200 |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | 0.6 | 200 |
| Orthophosphate as P | 0.897 | 0.040 | 0.010 | mg/L | 0.90 | | 100 | 85-115 | 2 | 200 |
| Chloride | 3.08 | 0.20 | 0.050 | mg/L | 3.0 | | 103 | 85-115 | 2 | 200 |
| **Matrix Spike (BI12837-MS1)** | | **Source: 1108650-04** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chloride | 7.07 | 0.20 | 0.050 | mg/L | 3.0 | 4.44 | 88 | 80-120 | | |
| Orthophosphate as P | 0.923 | 0.040 | 0.010 | mg/L | 0.90 | 0.0435 | 98 | 85-115 | | |
| Nitrite (as N) | 1.47 | 0.04 | 0.01 | mg/L | 1.4 | 0.151 | 94 | 85-115 | | |
| Nitrate (as N) | 1.84 | 0.04 | 0.01 | mg/L | 1.7 | 0.372 | 86 | 85-115 | | |
| Fluoride | 0.972 | 0.040 | 0.010 | mg/L | 0.90 | 0.126 | 94 | 85-115 | | |
| **Matrix Spike (BI12837-MS2)** | | **Source: 1108661-02** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Fluoride | 0.958 | 0.040 | 0.010 | mg/L | 0.90 | 0.0843 | 97 | 85-115 | | |
| Chloride | 18.0 | 0.20 | 0.050 | mg/L | 3.0 | 14.8 | 107 | 80-120 | | |
| Nitrate (as N) | 11.1 +O | 0.04 | 0.01 | mg/L | 1.7 | 9.10 | 118 | 85-115 | | |
| Nitrite (as N) | 1.49 | 0.04 | 0.01 | mg/L | 1.4 | ND | 106 | 85-115 | | |
| Orthophosphate as P | 0.875 | 0.040 | 0.010 | mg/L | 0.90 | 0.0602 | 91 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13009 - TOC prep** | | | | | | | | | | |
| **Blank (BI13009-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI13009-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 10.1 | 1.0 | 0.50 | mg/L | 10 | | 101 | 90-110 | | |
| **Matrix Spike (BI13009-MS1)** | | **Source: 1108655-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 12.1 | 1.0 | 0.50 | mg/L | 10 | 2.05 | 101 | 85-115 | | |
| **Matrix Spike Dup (BI13009-MSD1)** | | **Source: 1108655-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Total Organic Carbon | 12.5 | 1.0 | 0.50 | mg/L | 10 | 2.05 | 104 | 85-115 | 3 | 10 |
| **Batch BJ10414 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10414-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BJ10414-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **Matrix Spike (BJ10414-MS1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 360 | 8.0 | 2.0 | mg/L | 120 | 250 | 92 | 80-120 | | |
| **Matrix Spike Dup (BJ10414-MSD1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 360 | 8.0 | 2.0 | mg/L | 120 | 250 | 92 | 80-120 | 0 | 26 |
| **Batch BJ10421 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BJ10421-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10421 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS (BJ10421-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Sulfate | 8.43 | 0.60 | 0.20 | mg/L | 9.0 | | 94 | 85-115 | | |
| **LCS Dup (BJ10421-BSD1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Sulfate | 8.30 | 0.60 | 0.20 | mg/L | 9.0 | | 92 | 85-115 | 2 | 200 |
| **Matrix Spike (BJ10421-MS1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Sulfate | 131 +O | 0.60 | 0.20 | mg/L | 90 | | 146 | 85-115 | | |
| **Matrix Spike (BJ10421-MS2)** | | **Source: 1108761-04** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Sulfate | 8.74 | 0.60 | 0.20 | mg/L | 9.0 | ND | 97 | 85-115 | | |
| **Batch BJ10524 - COD prep** | | | | | | | | | | |
| **Blank (BJ10524-BLK1)** | | | | | Prepared & Analyzed: 10/05/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BJ10524-BS1)** | | | | | Prepared & Analyzed: 10/05/11 | | | | | |
| Chemical Oxygen Demand | 53 | 25 | 10 | mg/L | 50 | | 106 | 90-110 | | |
| **Matrix Spike (BJ10524-MS1)** | | **Source: 1108655-04** | | | Prepared & Analyzed: 10/05/11 | | | | | |
| Chemical Oxygen Demand | 120 | 25 | 10 | mg/L | 50 | 67 | 112 | 85-115 | | |
| **Matrix Spike Dup (BJ10524-MSD1)** | | **Source: 1108655-04** | | | Prepared & Analyzed: 10/05/11 | | | | | |
| Chemical Oxygen Demand | 120 | 25 | 10 | mg/L | 50 | 67 | 108 | 85-115 | 2 | 32 |
| **Batch BJ11012 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BJ11012-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11012 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **LCS (BJ11012-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.475 | 0.040 | 0.010 | mg/L | 0.50 | | 95 | 90-110 | | |
| **Matrix Spike (BJ11012-MS1)** | | **Source: 1108658-02** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.505 | 0.040 | 0.010 | mg/L | 0.50 | 0.0735 | 86 | 75-125 | | |
| **Matrix Spike Dup (BJ11012-MSD1)** | | **Source: 1108658-02** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.534 | 0.040 | 0.010 | mg/L | 0.50 | 0.0735 | 92 | 75-125 | 6 | 25 |
| **Batch BJ11013 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BJ11013-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11013-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.450 | 0.040 | 0.010 | mg/L | 0.50 | | 90 | 90-110 | | |
| **Matrix Spike (BJ11013-MS1)** | | **Source: 1109000-07** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.484 | 0.040 | 0.010 | mg/L | 0.50 | 0.0417 | 89 | 75-125 | | |
| **Matrix Spike Dup (BJ11013-MSD1)** | | **Source: 1109000-07** | | | Prepared: 10/10/11 Analyzed: 10/12/11 | | | | | |
| Phosphorous - Total as P | 0.490 | 0.040 | 0.010 | mg/L | 0.50 | 0.0417 | 90 | 75-125 | 1 | 25 |
| **Batch BJ11019 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ11019-BLK1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11019 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **LCS (BJ11019-BS1)** | | | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.50 | 0.20 | 0.05 | mg/L | 2.5 | | 100 | 90-110 | | |
| **Matrix Spike (BJ11019-MS1)** | | **Source: 1108658-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.63 | 0.20 | 0.05 | mg/L | 2.5 | 0.334 | 92 | 80-120 | | |
| **Matrix Spike Dup (BJ11019-MSD1)** | | **Source: 1108658-01** | | | Prepared: 10/10/11 Analyzed: 10/14/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.10 | 0.20 | 0.05 | mg/L | 2.5 | 0.334 | 71 | 80-120 | 22 | 20 |
| **Batch BJ11111 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ11111-BLK1)** | | | | | Prepared: 10/11/11 Analyzed: 10/17/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ11111-BS1)** | | | | | Prepared: 10/11/11 Analyzed: 10/17/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.32 | 0.20 | 0.05 | mg/L | 2.5 | | 93 | 90-110 | | |
| **Matrix Spike (BJ11111-MS1)** | | **Source: 1108966-01** | | | Prepared: 10/11/11 Analyzed: 10/17/11 | | | | | |
| Total Kjeldahl Nitrogen | 7.13 | 0.20 | 0.05 | mg/L | 5.0 | 2.30 | 97 | 80-120 | | |
| **Matrix Spike Dup (BJ11111-MSD1)** | | **Source: 1108966-01** | | | Prepared: 10/11/11 Analyzed: 10/17/11 | | | | | |
| Total Kjeldahl Nitrogen | 7.72 | 0.20 | 0.05 | mg/L | 5.0 | 2.30 | 108 | 80-120 | 8 | 20 |
| **Batch BJ11735 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11735-BLK1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11735 - Ammonia by SEAL** | | | | | | | | | | |
| **LCS (BJ11735-BS1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.49 | 0.040 | 0.010 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BJ11735-MS1)** | | **Source: 1108661-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | ND | 94 | 90-110 | | |
| **Matrix Spike Dup (BJ11735-MSD1)** | | **Source: 1108661-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.46 | 0.040 | 0.010 | mg/L | 0.50 | ND | 91 | 90-110 | 3 | 10 |

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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI13008 - DOC prep** | | | | | | | | | | |
| **Blank (BI13008-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI13008-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 10.2 | 1.0 | 0.50 | mg/L | 10 | | 102 | 90-110 | | |
| **Matrix Spike (BI13008-MS1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 12.8 | 1.0 | 0.50 | mg/L | 10 | 2.08 | 107 | 85-125 | | |
| **Matrix Spike Dup (BI13008-MSD1)** | | **Source: 1108620-01** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Dissolved Organic Carbon | 12.9 | 1.0 | 0.50 | mg/L | 10 | 2.08 | 108 | 85-125 | 0.7 | 25 |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10404 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BJ10404-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| Calcium | 0.042 U | 0.50 | 0.042 | mg/L | | | | | | |
| Sodium | 0.13 U | 0.50 | 0.13 | mg/L | | | | | | |
| Potassium | 0.11 | 0.050 | 0.010 | mg/L | | | | | | |
| Iron | 0.037 I | 0.10 | 0.020 | mg/L | | | | | | |
| Magnesium | 0.051 I | 0.50 | 0.020 | mg/L | | | | | | |
| **LCS (BJ10404-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Calcium | 21 | 0.50 | 0.042 | mg/L | 20 | | 104 | 85-115 | | |
| Iron | 8.6 | 0.10 | 0.020 | mg/L | 8.0 | | 107 | 85-115 | | |
| Sodium | 21 | 0.50 | 0.13 | mg/L | 20 | | 106 | 85-115 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | | 102 | 85-115 | | |
| Magnesium | 21 | 0.50 | 0.020 | mg/L | 20 | | 107 | 85-115 | | |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | | 107 | 85-115 | | |
| Boron | 0.39 | 0.10 | 0.050 | mg/L | 0.40 | | 97 | 85-115 | | |
| **Matrix Spike (BJ10404-MS1)** | | **Source: 1107616-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Boron | 0.63 | 0.10 | 0.050 | mg/L | 0.40 | 0.23 | 100 | 70-130 | | |
| Calcium | 85 | 0.50 | 0.042 | mg/L | 20 | 61 | 122 | 70-130 | | |
| Iron | 8.6 | 0.10 | 0.020 | mg/L | 8.0 | 0.11 | 106 | 70-130 | | |
| Magnesium | 51 | 0.50 | 0.020 | mg/L | 20 | 29 | 113 | 70-130 | | |
| Potassium | 39 | 0.050 | 0.010 | mg/L | 20 | 16 | 114 | 70-130 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0067 | 102 | 70-130 | | |
| Sodium | 280 +O | 0.50 | 0.13 | mg/L | 20 | 250 | 140 | 70-130 | | |
| **Matrix Spike (BJ10404-MS2)** | | **Source: 1108761-04** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | ND | 102 | 70-130 | | |
| Magnesium | 22 | 0.50 | 0.020 | mg/L | 20 | ND | 109 | 70-130 | | |
| Calcium | 21 | 0.50 | 0.042 | mg/L | 20 | ND | 106 | 70-130 | | |
| Sodium | 22 | 0.50 | 0.13 | mg/L | 20 | 0.15 | 107 | 70-130 | | |
| Boron | 0.39 | 0.10 | 0.050 | mg/L | 0.40 | ND | 97 | 70-130 | | |
| Potassium | 22 | 0.050 | 0.010 | mg/L | 20 | 0.089 | 108 | 70-130 | | |
| Iron | 8.7 | 0.10 | 0.020 | mg/L | 8.0 | 0.034 | 109 | 70-130 | | |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 27, 2011**
**Work Order: 1108658**
**Revised Report**

**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10404 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Matrix Spike Dup (BJ10404-MSD1)** | | **Source: 1107616-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Manganese | 0.42 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0067 | 103 | 70-130 | 0.8 | 30 |
| Magnesium | 52 | 0.50 | 0.020 | mg/L | 20 | 29 | 114 | 70-130 | 0.2 | 30 |
| Iron | 8.6 | 0.10 | 0.020 | mg/L | 8.0 | 0.11 | 106 | 70-130 | 0.3 | 30 |
| Boron | 0.64 | 0.10 | 0.050 | mg/L | 0.40 | 0.23 | 100 | 70-130 | 0.4 | 30 |
| Potassium | 37 | 0.050 | 0.010 | mg/L | 20 | 16 | 107 | 70-130 | 4 | 30 |
| Calcium | 85 | 0.50 | 0.042 | mg/L | 20 | 61 | 121 | 70-130 | 0.2 | 30 |
| Sodium | 280 +O | 0.50 | 0.13 | mg/L | 20 | 250 | 132 | 70-130 | 0.5 | 30 |
| **Matrix Spike Dup (BJ10404-MSD2)** | | **Source: 1108761-04** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Sodium | 21 | 0.50 | 0.13 | mg/L | 20 | 0.15 | 104 | 70-130 | 3 | 30 |
| Calcium | 21 | 0.50 | 0.042 | mg/L | 20 | ND | 105 | 70-130 | 1 | 30 |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | 0.089 | 103 | 70-130 | 4 | 30 |
| Magnesium | 21 | 0.50 | 0.020 | mg/L | 20 | ND | 107 | 70-130 | 2 | 30 |
| Boron | 0.38 | 0.10 | 0.050 | mg/L | 0.40 | ND | 96 | 70-130 | 0.6 | 30 |
| Manganese | 0.40 | 0.010 | 0.0010 | mg/L | 0.40 | ND | 101 | 70-130 | 1 | 30 |
| Iron | 8.6 | 0.10 | 0.020 | mg/L | 8.0 | 0.034 | 107 | 70-130 | 2 | 30 |

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## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

+O Matrix spike source sample was over the reccommended range for the method.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1108658

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-O10-18 | 092811 | 0915 | GW | | X | | 1 | 1 | | | | | 159.5 | 0.72 | 4.2 | 27.3 | | |
| 02 | DP-O10-18-D | ↓ | 0920 | GW | | X | | 1 | 1 | | | | | 159.5 | 0.72 | 4.2 | 27.3 | | |
| 03 | DP-O10-24 | ↓ | 0930 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | 279.0 | 0.60 | 4.9 | 26.8 | | |

| Containers Prepared / Relinquished: | Date/Time: 1230 09-23-11 | Received: | Date/Time: 1230 092311 |
|---|---|---|---|
| Relinquished: | Date/Time: 1415 092811 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A
Samples intact upon arrival? Y N N/A
Received on ice? Temp_____ Y N N/A
Proper preservatives indicated? Y N N/A
Rec'd within holding time? Y N N/A
Volatiles rec'd w/out headspace Y N N/A
Proper containers used? Y N N/A

Instructions / Remarks:

1108658

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

Chain of Custody

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
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**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108661**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-Q15-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108661-01** | | | | | | |
| Date/Time Collected | | **09/28/11 10:55** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.6 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 10:55 | SDH |
| Water Temperature | °C | 27.8 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 10:55 | SDH |
| Specific conductance | umhos/cm | 316 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 10:55 | SDH |
| Dissolved Oxygen | mg/L | 0.7 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 10:55 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chloride | mg/L | 9.5 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 5.6 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.48 | EPA 351.2 | 0.20 | 0.05 | 10/11/11 11:42 | 10/14/11 15:50 | SMD |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-Q15-21** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108661-02** | | | | | | |
| Date/Time Collected | | **09/28/11 11:00** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 11:00 | SDH |
| Water Temperature | °C | 26.6 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 11:00 | SDH |
| Specific conductance | umhos/cm | 317 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 11:00 | SDH |
| Dissolved Oxygen | mg/L | 0.5 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 11:00 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 09/29/11 11:10 | MMF |
| Nitrate (as N) | mg/L | 9.1 | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/29/11 11:10 | MMF |
| Total Alkalinity | mg/L | 5.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.48 | EPA 351.2 | 0.20 | 0.05 | 10/11/11 11:42 | 10/14/11 15:52 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108661**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-Q15-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108661-03** | | | | | | |
| Date/Time Collected | | **09/28/11 11:10** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 11:10 | SDH |
| Water Temperature | °C | 26.8 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 11:10 | SDH |
| Specific conductance | umhos/cm | 293 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 11:10 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 11:10 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chloride | mg/L | 13 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 11:37 | MEJ |
| Nitrate (as N) | mg/L | 11 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 11:37 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 11:37 | MEJ |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | 10/04/11 10:00 | 10/04/11 12:09 | JAG |
| Total Kjeldahl Nitrogen | mg/L | 0.46 | EPA 351.2 | 0.20 | 0.05 | 10/11/11 11:42 | 10/14/11 15:53 | SMD |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **DP-Q15-26-D** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108661-04** | | | | | | |
| Date/Time Collected | | **09/28/11 11:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 11:15 | SDH |
| Water Temperature | °C | 26.8 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 11:15 | SDH |
| Specific conductance | umhos/cm | 293 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 11:15 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 11:15 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/14/11 16:00 | SMD |
| Chloride | mg/L | 13 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 11:37 | MEJ |
| Nitrate (as N) | mg/L | 10 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 11:37 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 11:37 | MEJ |
| Total Alkalinity | mg/L | 6.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.9 | EPA 351.2 | 0.20 | 0.05 | 10/11/11 11:42 | 10/14/11 15:55 | SMD |

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**October 26, 2011**
**Work Order: 1108661**
**Revised Report**

**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12837 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12837-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BI12837-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 1.46 | 0.04 | 0.01 | mg/L | 1.4 | | 104 | 85-115 | | |
| Chloride | 3.03 | 0.20 | 0.050 | mg/L | 3.0 | | 101 | 85-115 | | |
| Nitrate (as N) | 1.65 | 0.04 | 0.01 | mg/L | 1.7 | | 97 | 85-115 | | |
| **LCS Dup (BI12837-BSD1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 1.43 | 0.04 | 0.01 | mg/L | 1.4 | | 102 | 85-115 | 2 | 200 |
| Nitrate (as N) | 1.66 | 0.04 | 0.01 | mg/L | 1.7 | | 98 | 85-115 | 0.6 | 200 |
| Chloride | 3.08 | 0.20 | 0.050 | mg/L | 3.0 | | 103 | 85-115 | 2 | 200 |
| **Matrix Spike (BI12837-MS1)** | | **Source: 1108650-04** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chloride | 7.07 | 0.20 | 0.050 | mg/L | 3.0 | 4.44 | 88 | 80-120 | | |
| Nitrite (as N) | 1.47 | 0.04 | 0.01 | mg/L | 1.4 | 0.151 | 94 | 85-115 | | |
| Nitrate (as N) | 1.84 | 0.04 | 0.01 | mg/L | 1.7 | 0.372 | 86 | 85-115 | | |
| **Matrix Spike (BI12837-MS2)** | | **Source: 1108661-02** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Nitrite (as N) | 1.49 | 0.04 | 0.01 | mg/L | 1.4 | ND | 106 | 85-115 | | |
| Nitrate (as N) | 11.1 +O | 0.04 | 0.01 | mg/L | 1.7 | 9.10 | 118 | 85-115 | | |
| Chloride | 18.0 | 0.20 | 0.050 | mg/L | 3.0 | 14.8 | 107 | 80-120 | | |
| **Batch BI12934 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12934-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |

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**October 26, 2011**
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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12934 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **LCS (BI12934-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Nitrite (as N) | 1.34 | 0.04 | 0.01 | mg/L | 1.4 | | 96 | 85-115 | | |
| Chloride | 2.83 | 0.20 | 0.050 | mg/L | 3.0 | | 94 | 85-115 | | |
| Nitrate (as N) | 1.57 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | | |
| **LCS Dup (BI12934-BSD1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Nitrate (as N) | 1.56 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 0.6 | 200 |
| Nitrite (as N) | 1.32 | 0.04 | 0.01 | mg/L | 1.4 | | 94 | 85-115 | 2 | 200 |
| Chloride | 2.73 | 0.20 | 0.050 | mg/L | 3.0 | | 91 | 85-115 | 4 | 200 |
| **Matrix Spike (BI12934-MS1)** | | **Source: 1108622-06** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Nitrite (as N) | 13.9 | 0.04 | 0.01 | mg/L | 14 | ND | 99 | 85-115 | | |
| Nitrate (as N) | 31.0 | 0.04 | 0.01 | mg/L | 17 | 15.9 | 89 | 85-115 | | |
| Chloride | 60.3 | 0.20 | 0.050 | mg/L | 30 | 32.9 | 91 | 80-120 | | |
| **Matrix Spike (BI12934-MS2)** | | **Source: 1108906-01** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Nitrite (as N) | 1.32 | 0.04 | 0.01 | mg/L | 1.4 | ND | 94 | 85-115 | | |
| Nitrate (as N) | 3.34 | 0.04 | 0.01 | mg/L | 1.7 | 1.68 | 98 | 85-115 | | |
| Chloride | 12.2 | 0.20 | 0.050 | mg/L | 3.0 | 9.09 | 104 | 80-120 | | |
| **Batch BJ10103 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10103-BLK1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BJ10103-BLK2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10103 - alkalinity** | | | | | | | | | | |
| **LCS (BJ10103-BS1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **LCS (BJ10103-BS2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **Matrix Spike (BJ10103-MS1)** | | **Source: 1108663-07** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 98 | 80-120 | | |
| **Matrix Spike (BJ10103-MS2)** | | **Source: 1108647-03** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | | |
| **Matrix Spike Dup (BJ10103-MSD1)** | | **Source: 1108663-07** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | 8 | 26 |
| **Matrix Spike Dup (BJ10103-MSD2)** | | **Source: 1108647-03** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | 0 | 26 |
| **Batch BJ10414 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10414-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BJ10414-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 130 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **Matrix Spike (BJ10414-MS1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 360 | 8.0 | 2.0 | mg/L | 120 | 250 | 92 | 80-120 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10414 - alkalinity** | | | | | | | | | | |
| **Matrix Spike Dup (BJ10414-MSD1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Total Alkalinity | 360 | 8.0 | 2.0 | mg/L | 120 | 250 | 92 | 80-120 | 0 | 26 |
| **Batch BJ11111 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ11111-BLK1)** | | | | | Prepared: 10/11/11 Analyzed: 10/17/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ11111-BS1)** | | | | | Prepared: 10/11/11 Analyzed: 10/17/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.32 | 0.20 | 0.05 | mg/L | 2.5 | | 93 | 90-110 | | |
| **Matrix Spike (BJ11111-MS1)** | | **Source: 1108966-01** | | | Prepared: 10/11/11 Analyzed: 10/17/11 | | | | | |
| Total Kjeldahl Nitrogen | 7.13 | 0.20 | 0.05 | mg/L | 5.0 | 2.30 | 97 | 80-120 | | |
| **Matrix Spike Dup (BJ11111-MSD1)** | | **Source: 1108966-01** | | | Prepared: 10/11/11 Analyzed: 10/17/11 | | | | | |
| Total Kjeldahl Nitrogen | 7.72 | 0.20 | 0.05 | mg/L | 5.0 | 2.30 | 108 | 80-120 | 8 | 20 |
| **Batch BJ11735 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11735-BLK1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11735-BS1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.49 | 0.040 | 0.010 | mg/L | 0.50 | | 97 | 90-110 | | |
| **Matrix Spike (BJ11735-MS1)** | | **Source: 1108661-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | ND | 94 | 90-110 | | |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
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**October 26, 2011**
**Work Order: 1108661**
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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11735 - Ammonia by SEAL** | | | | | | | | | | |
| **Matrix Spike Dup (BJ11735-MSD1)** | | **Source: 1108661-03** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.46 | 0.040 | 0.010 | mg/L | 0.50 | ND | 91 | 90-110 | 3 | 10 |
| **Batch BJ11736 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11736-BLK1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11736-BS1)** | | | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.50 | 0.040 | 0.010 | mg/L | 0.50 | | 100 | 90-110 | | |
| **Matrix Spike (BJ11736-MS1)** | | **Source: 1109016-01** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.46 | 0.040 | 0.010 | mg/L | 0.50 | ND | 92 | 90-110 | | |
| **Matrix Spike Dup (BJ11736-MSD1)** | | **Source: 1109016-01** | | | Prepared & Analyzed: 10/14/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | ND | 94 | 90-110 | 2 | 10 |

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## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

+O Matrix spike source sample was over the reccommended range for the method.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1108661

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes:
DW-Drinking Water WW-Wastewater
SW-SurfaceWater SL-Sludge SO-Soil
GW-Groundwater SA-Saline Water O-Other
R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| Sample No. | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | Field Conductivity | Field DO | Field pH | Field Temperature | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | DP-Q15-15 | 092811 | 1055 | GW | | X | | 1 | | 1 | | | | 316.1 | 0.73 | 4.6 | 27.8 | | |
| 02 | DP-Q15-21 | 092811 | 1100 | GW | | X | | 1 | | 1 | | | | 316.6 | 0.49 | 5.0 | 26.6 | | |
| 03 | DP-Q15-26 | 092811 | 1110 | GW | | X | | 1 | | 1 | | | | 293.4 | 0.34 | 5.1 | 26.8 | | |
| 04 | DP-Q15-26-D | 092811 | 1115 | GW | | X | | 1 | | 1 | | | | 293.4 | 0.34 | 5.1 | 26.8 | | |

| | | | |
|---|---|---|---|
| Containers Prepared/ Relinquished: | Date/Time: 1215 09-25-11 | Received: | Date/Time: 092811 1215 |
| Relinquished: | Date/Time: 1415 092811 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

Seal intact? Y N N/A
Samples intact upon arrival? Y N N/A
Received on ice? Temp.____ Y N N/A
Proper preservatives indicated? Y N N/A
Rec'd within holding time? Y N N/A
Volatiles rec'd w/out headspace Y N N/A
Proper containers used? Y N N/A

Instructions / Remarks:

1108661

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

Chain of Custody

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
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**Hazen and Sawyer**
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**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108663**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ03-H11-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-01** | | | | | | |
| Date/Time Collected | | **09/26/11 08:43** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.4 | DEP FT1100 | 0.1 | 0.1 | | 09/26/11 08:43 | SDH |
| Water Temperature | °C | 26.5 | DEP FT1400 | 0.1 | 0.1 | | 09/26/11 08:43 | SDH |
| Specific conductance | umhos/cm | 136 | DEP FT1200 | 0.1 | 0.1 | | 09/26/11 08:43 | SDH |
| Dissolved Oxygen | mg/L | 1.4 | DEP FT1500 | 0.1 | 0.1 | | 09/26/11 08:43 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.024 I | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chemical Oxygen Demand | mg/L | 15 I | EPA 410.4 | 25 | 10 | | 09/27/11 10:00 | MMF |
| Chloride | mg/L | 8.5 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 10:49 | MEJ |
| Nitrate (as N) | mg/L | 0.67 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Phosphorous - Total as P | mg/L | 0.010 U | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:13 | 10/05/11 14:30 | SMD |
| Total Alkalinity | mg/L | 2.0 U | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.74 | EPA 351.2 | 0.20 | 0.05 | 10/03/11 13:38 | 10/05/11 14:44 | SMD |
| Sample Description | | **PZ04-BKG-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-02** | | | | | | |
| Date/Time Collected | | **09/26/11 10:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 09/26/11 10:35 | SDH |
| Water Temperature | °C | 28.2 | DEP FT1400 | 0.1 | 0.1 | | 09/26/11 10:35 | SDH |
| Specific conductance | umhos/cm | 120 | DEP FT1200 | 0.1 | 0.1 | | 09/26/11 10:35 | SDH |
| Dissolved Oxygen | mg/L | 1.7 | DEP FT1500 | 0.1 | 0.1 | | 09/26/11 10:35 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.017 I | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chemical Oxygen Demand | mg/L | 11 I | EPA 410.4 | 25 | 10 | | 09/27/11 10:00 | MMF |
| Chloride | mg/L | 3.4 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 10:49 | MEJ |
| Fluoride | mg/L | 0.24 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 10:49 | MEJ |
| Nitrate (as N) | mg/L | 5.5 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Orthophosphate as P | mg/L | 0.042 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 10:49 | MEJ |
| Phosphorous - Total as P | mg/L | 0.010 U | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:13 | 10/05/11 14:30 | SMD |
| Sulfate | mg/L | 10 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 10:49 | MEJ |

**Hazen and Sawyer**
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**October 26, 2011**
**Work Order: 1108663**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ04-BKG-9** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-02** | | | | | | |
| Date/Time Collected | | **09/26/11 10:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | |
| Total Alkalinity | mg/L | 5.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.95 | EPA 351.2 | 0.20 | 0.05 | 10/03/11 13:38 | 10/05/11 14:44 | SMD |
| Total Organic Carbon | mg/L | 3.4 | SM 5310B | 1.0 | 0.50 | | 09/27/11 09:32 | ARM |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 3.8 | SM 5310B | 1.0 | 0.50 | | 09/27/11 17:46 | ARM |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 09/27/11 09:32 | 10/03/11 15:03 | VWC |
| Calcium | mg/L | 12 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 15:03 | VWC |
| Iron | mg/L | 0.11 | EPA 200.7 | 0.10 | 0.020 | 09/27/11 09:32 | 10/03/11 15:03 | VWC |
| Magnesium | mg/L | 2.8 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 15:03 | VWC |
| Manganese | mg/L | 0.048 | EPA 200.7 | 0.010 | 0.0010 | 09/27/11 09:32 | 10/03/11 15:03 | VWC |
| Potassium | mg/L | 0.64 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 15:03 | VWC |
| Sodium | mg/L | 1.7 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 15:03 | VWC |
| Sample Description | | **PZ07-D05-7** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-03** | | | | | | |
| Date/Time Collected | | **09/26/11 09:22** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.6 | DEP FT1100 | 0.1 | 0.1 | | 09/26/11 09:22 | SDH |
| Water Temperature | °C | 25.5 | DEP FT1400 | 0.1 | 0.1 | | 09/26/11 09:22 | SDH |
| Specific conductance | umhos/cm | 361 | DEP FT1200 | 0.1 | 0.1 | | 09/26/11 09:22 | SDH |
| Dissolved Oxygen | mg/L | 0.9 | DEP FT1500 | 0.1 | 0.1 | | 09/26/11 09:22 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.042 | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chemical Oxygen Demand | mg/L | 22 I | EPA 410.4 | 25 | 10 | | 09/27/11 10:00 | MMF |
| Chloride | mg/L | 29 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 10:49 | MEJ |
| Nitrate (as N) | mg/L | 10 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Phosphorous - Total as P | mg/L | 0.010 U | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:13 | 10/05/11 14:30 | SMD |
| Total Alkalinity | mg/L | 5.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | EPA 351.2 | 0.20 | 0.05 | 10/03/11 13:38 | 10/05/11 14:44 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108663**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ11-E09-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-04** | | | | | | |
| Date/Time Collected | | **09/26/11 09:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.7 | DEP FT1100 | 0.1 | 0.1 | | 09/26/11 09:15 | SDH |
| Water Temperature | °C | 26.0 | DEP FT1400 | 0.1 | 0.1 | | 09/26/11 09:15 | SDH |
| Specific conductance | umhos/cm | 413 | DEP FT1200 | 0.1 | 0.1 | | 09/26/11 09:15 | SDH |
| Dissolved Oxygen | mg/L | 5.6 | DEP FT1500 | 0.1 | 0.1 | | 09/26/11 09:15 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.046 | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chemical Oxygen Demand | mg/L | 140 | EPA 410.4 | 25 | 10 | | 09/27/11 10:00 | MMF |
| Chloride | mg/L | 37 | EPA 300.0 | 0.20 | 0.050 | | 10/01/11 07:59 | MEJ |
| Nitrate (as N) | mg/L | 12 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Phosphorous - Total as P | mg/L | 0.021 I | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:13 | 10/05/11 14:30 | SMD |
| Total Alkalinity | mg/L | 36 | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.4 | EPA 351.2 | 0.20 | 0.05 | 10/03/11 13:38 | 10/05/11 14:44 | SMD |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ15-A11-6** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-05** | | | | | | |
| Date/Time Collected | | **09/26/11 09:35** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 09/26/11 09:35 | SDH |
| Water Temperature | °C | 27.1 | DEP FT1400 | 0.1 | 0.1 | | 09/26/11 09:35 | SDH |
| Specific conductance | umhos/cm | 84 | DEP FT1200 | 0.1 | 0.1 | | 09/26/11 09:35 | SDH |
| Dissolved Oxygen | mg/L | 1.7 | DEP FT1500 | 0.1 | 0.1 | | 09/26/11 09:35 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.040 | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chemical Oxygen Demand | mg/L | 38 | EPA 410.4 | 25 | 10 | | 09/27/11 10:00 | MMF |
| Chloride | mg/L | 6.8 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 10:49 | MEJ |
| Nitrate (as N) | mg/L | 0.52 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Phosphorous - Total as P | mg/L | 0.010 I | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:13 | 10/05/11 14:30 | SMD |
| Total Alkalinity | mg/L | 9.0 | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.74 | EPA 351.2 | 0.20 | 0.05 | 10/03/11 13:38 | 10/05/11 14:44 | SMD |

**Hazen and Sawyer**
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**October 26, 2011**
**Work Order: 1108663**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ16-C12-28** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-06** | | | | | | |
| Date/Time Collected | | **09/26/11 10:03** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.3 | DEP FT1100 | 0.1 | 0.1 | | 09/26/11 10:03 | SDH |
| Water Temperature | °C | 24.6 | DEP FT1400 | 0.1 | 0.1 | | 09/26/11 10:03 | SDH |
| Specific conductance | umhos/cm | 311 | DEP FT1200 | 0.1 | 0.1 | | 09/26/11 10:03 | SDH |
| Dissolved Oxygen | mg/L | 0.3 | DEP FT1500 | 0.1 | 0.1 | | 09/26/11 10:03 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.022 I | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | | 09/27/11 10:00 | MMF |
| Chloride | mg/L | 19 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 10:49 | MEJ |
| Nitrate (as N) | mg/L | 0.27 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Phosphorous - Total as P | mg/L | 0.48 | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:13 | 10/05/11 14:30 | SMD |
| Total Alkalinity | mg/L | 10 | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.21 | EPA 351.2 | 0.20 | 0.05 | 10/03/11 13:38 | 10/05/11 14:44 | SMD |
| Sample Description | | **PZ17-I15-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-07** | | | | | | |
| Date/Time Collected | | **09/28/11 10:48** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 10:48 | SDH |
| Water Temperature | °C | 24.9 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 10:48 | SDH |
| Specific conductance | umhos/cm | 283 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 10:48 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 10:48 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.38 | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chloride | mg/L | 14 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 11:37 | MEJ |
| Nitrate (as N) | mg/L | 9.2 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 11:37 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 11:37 | MEJ |
| Total Alkalinity | mg/L | 3.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.5 | EPA 351.2 | 0.20 | 0.05 | 10/03/11 13:38 | 10/05/11 14:44 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

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**October 26, 2011**
**Work Order: 1108663**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ18-R12-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-08** | | | | | | |
| Date/Time Collected | | **09/28/11 11:44** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 11:44 | SDH |
| Water Temperature | °C | 26.3 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 11:44 | SDH |
| Specific conductance | umhos/cm | 223 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 11:44 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 11:44 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.020 I | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 12 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 17:20 | MEJ |
| Nitrate (as N) | mg/L | 0.51 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 17:20 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 17:20 | MEJ |
| Phosphorous - Total as P | mg/L | 0.59 | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:13 | 10/05/11 14:30 | SMD |
| Total Alkalinity | mg/L | 8.0 | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.22 | EPA 351.2 | 0.20 | 0.05 | 10/03/11 13:38 | 10/05/11 14:44 | SMD |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ19-G10-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-09** | | | | | | |
| Date/Time Collected | | **09/26/11 08:08** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.0 | DEP FT1100 | 0.1 | 0.1 | | 09/26/11 08:08 | SDH |
| Water Temperature | °C | 24.6 | DEP FT1400 | 0.1 | 0.1 | | 09/26/11 08:08 | SDH |
| Specific conductance | umhos/cm | 302 | DEP FT1200 | 0.1 | 0.1 | | 09/26/11 08:08 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/26/11 08:08 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.016 I | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | | 09/27/11 10:00 | MMF |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 10:49 | MEJ |
| Fluoride | mg/L | 0.19 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 10:49 | MEJ |
| Nitrate (as N) | mg/L | 8.4 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Orthophosphate as P | mg/L | 0.093 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 10:49 | MEJ |
| Phosphorous - Total as P | mg/L | 0.053 | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:13 | 10/05/11 14:30 | SMD |
| Sulfate | mg/L | 52 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 10:49 | MEJ |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108663**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ19-G10-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-09** | | | | | | |
| Date/Time Collected | | **09/26/11 08:08** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 2.3 | EPA 351.2 | 0.20 | 0.05 | 10/03/11 13:38 | 10/05/11 14:44 | SMD |
| Total Organic Carbon | mg/L | 0.77 I | SM 5310B | 1.0 | 0.50 | | 09/27/11 09:32 | ARM |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.1 | SM 5310B | 1.0 | 0.50 | | 09/27/11 17:46 | ARM |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 09/27/11 09:32 | 10/03/11 15:13 | VWC |
| Calcium | mg/L | 22 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 15:13 | VWC |
| Iron | mg/L | 0.034 I | EPA 200.7 | 0.10 | 0.020 | 09/27/11 09:32 | 10/03/11 15:13 | VWC |
| Magnesium | mg/L | 8.2 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 15:13 | VWC |
| Manganese | mg/L | 0.21 | EPA 200.7 | 0.010 | 0.0010 | 09/27/11 09:32 | 10/03/11 15:13 | VWC |
| Potassium | mg/L | 11 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 15:13 | VWC |
| Sodium | mg/L | 6.2 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 15:13 | VWC |
| Sample Description | | **PZ20-G10-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-10** | | | | | | |
| Date/Time Collected | | **09/26/11 08:36** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.9 | DEP FT1100 | 0.1 | 0.1 | | 09/26/11 08:36 | SDH |
| Water Temperature | °C | 25.6 | DEP FT1400 | 0.1 | 0.1 | | 09/26/11 08:36 | SDH |
| Specific conductance | umhos/cm | 308 | DEP FT1200 | 0.1 | 0.1 | | 09/26/11 08:36 | SDH |
| Dissolved Oxygen | mg/L | 0.2 | DEP FT1500 | 0.1 | 0.1 | | 09/26/11 08:36 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.041 | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chemical Oxygen Demand | mg/L | 26 | EPA 410.4 | 25 | 10 | | 09/27/11 10:00 | MMF |
| Chloride | mg/L | 16 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 10:49 | MEJ |
| Fluoride | mg/L | 0.21 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 10:49 | MEJ |
| Nitrate (as N) | mg/L | 8.5 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Nitrite (as N) | mg/L | 0.16 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Orthophosphate as P | mg/L | 0.052 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 10:49 | MEJ |
| Phosphorous - Total as P | mg/L | 1.1 | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:13 | 10/05/11 14:30 | SMD |
| Sulfate | mg/L | 54 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 10:49 | MEJ |
| Total Alkalinity | mg/L | 8.0 | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108663**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ20-G10-15** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-10** | | | | | | |
| Date/Time Collected | | **09/26/11 08:36** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | |
| Total Kjeldahl Nitrogen | mg/L | 1.4 | EPA 351.2 | 0.20 | 0.05 | 10/03/11 13:38 | 10/05/11 14:44 | SMD |
| Total Organic Carbon | mg/L | 6.8 | SM 5310B | 1.0 | 0.50 | | 09/27/11 09:32 | ARM |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.3 | SM 5310B | 1.0 | 0.50 | | 09/27/11 17:46 | ARM |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 09/27/11 09:32 | 10/03/11 15:16 | VWC |
| Calcium | mg/L | 26 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 15:16 | VWC |
| Iron | mg/L | 0.054 I | EPA 200.7 | 0.10 | 0.020 | 09/27/11 09:32 | 10/03/11 15:16 | VWC |
| Magnesium | mg/L | 6.2 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 15:16 | VWC |
| Manganese | mg/L | 0.22 | EPA 200.7 | 0.010 | 0.0010 | 09/27/11 09:32 | 10/03/11 15:16 | VWC |
| Potassium | mg/L | 7.8 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 15:16 | VWC |
| Sodium | mg/L | 11 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 15:16 | VWC |
| Sample Description | | **PZ21-E11-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-11** | | | | | | |
| Date/Time Collected | | **09/26/11 08:14** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.1 | DEP FT1100 | 0.1 | 0.1 | | 09/26/11 08:14 | SDH |
| Water Temperature | °C | 24.7 | DEP FT1400 | 0.1 | 0.1 | | 09/26/11 08:14 | SDH |
| Specific conductance | umhos/cm | 298 | DEP FT1200 | 0.1 | 0.1 | | 09/26/11 08:14 | SDH |
| Dissolved Oxygen | mg/L | 0.9 | DEP FT1500 | 0.1 | 0.1 | | 09/26/11 08:14 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.12 | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chloride | mg/L | 13 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 10:49 | MEJ |
| Nitrate (as N) | mg/L | 8.9 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Nitrite (as N) | mg/L | 0.17 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Total Alkalinity | mg/L | 8.0 | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.4 | EPA 351.2 | 0.20 | 0.05 | 10/03/11 13:38 | 10/05/11 14:44 | SMD |

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**October 26, 2011**
**Work Order: 1108663**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ24-BKG-26** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-12** | | | | | | |
| Date/Time Collected | | **09/26/11 10:48** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 4.8 | DEP FT1100 | 0.1 | 0.1 | | 09/26/11 10:48 | SDH |
| Water Temperature | °C | 25.5 | DEP FT1400 | 0.1 | 0.1 | | 09/26/11 10:48 | SDH |
| Specific conductance | umhos/cm | 299 | DEP FT1200 | 0.1 | 0.1 | | 09/26/11 10:48 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | DEP FT1500 | 0.1 | 0.1 | | 09/26/11 10:48 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.018 I | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | | 09/27/11 10:00 | MMF |
| Chloride | mg/L | 15 | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 10:49 | MEJ |
| Fluoride | mg/L | 0.12 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 10:49 | MEJ |
| Nitrate (as N) | mg/L | 11 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Nitrite (as N) | mg/L | 0.12 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Orthophosphate as P | mg/L | 0.12 | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 10:49 | MEJ |
| Phosphorous - Total as P | mg/L | 0.028 I | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:13 | 10/05/11 14:30 | SMD |
| Sulfate | mg/L | 42 | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 10:49 | MEJ |
| Total Alkalinity | mg/L | 4.0 I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.2 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:23 | 10/11/11 16:57 | SMD |
| Total Organic Carbon | mg/L | 0.64 I | SM 5310B | 1.0 | 0.50 | | 09/27/11 09:32 | ARM |
| **Inorganic, Dissolved** | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.4 | SM 5310B | 1.0 | 0.50 | | 09/27/11 17:46 | ARM |
| **Metals** | | | | | | | | |
| Boron | mg/L | 0.050 U | EPA 200.7 | 0.10 | 0.050 | 09/27/11 09:32 | 10/03/11 15:20 | VWC |
| Calcium | mg/L | 20 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 15:20 | VWC |
| Iron | mg/L | 0.035 I | EPA 200.7 | 0.10 | 0.020 | 09/27/11 09:32 | 10/03/11 15:20 | VWC |
| Magnesium | mg/L | 11 | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 15:20 | VWC |
| Manganese | mg/L | 0.16 | EPA 200.7 | 0.010 | 0.0010 | 09/27/11 09:32 | 10/03/11 15:20 | VWC |
| Potassium | mg/L | 8.0 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 15:20 | VWC |
| Sodium | mg/L | 7.8 | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 15:20 | VWC |

| | |
|---|---|
| Sample Description | **PZ24-BKG-26-D** |
| Matrix | **Groundwater** |
| SAL Sample Number | **1108663-13** |
| Date/Time Collected | **09/26/11 10:54** |
| Collected by | **Sean Harmon** |
| Date/Time Received | **09/26/11 14:55** |

**Field Parameters**

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108663**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ24-BKG-26-D** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1108663-13** | | | | | | | |
| Date/Time Collected | | **09/26/11 10:54** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | | |
| pH | SU | 4.8 | | DEP FT1100 | 0.1 | 0.1 | | 09/26/11 10:54 | SDH |
| Water Temperature | °C | 25.5 | | DEP FT1400 | 0.1 | 0.1 | | 09/26/11 10:54 | SDH |
| Specific conductance | umhos/cm | 299 | | DEP FT1200 | 0.1 | 0.1 | | 09/26/11 10:54 | SDH |
| Dissolved Oxygen | mg/L | 0.4 | | DEP FT1500 | 0.1 | 0.1 | | 09/26/11 10:54 | SDH |
| **Inorganics** | | | | | | | | | |
| Ammonia as N | mg/L | 0.015 | I | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chemical Oxygen Demand | mg/L | 10 | U | EPA 410.4 | 25 | 10 | | 09/27/11 10:00 | MMF |
| Chloride | mg/L | 16 | | EPA 300.0 | 0.20 | 0.050 | | 09/27/11 10:49 | MEJ |
| Fluoride | mg/L | 0.11 | | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 10:49 | MEJ |
| Nitrate (as N) | mg/L | 12 | | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Nitrite (as N) | mg/L | 0.01 | U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Orthophosphate as P | mg/L | 0.090 | | EPA 300.0 | 0.040 | 0.010 | | 09/27/11 10:49 | MEJ |
| Phosphorous - Total as P | mg/L | 0.022 | I | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:13 | 10/05/11 14:30 | SMD |
| Sulfate | mg/L | 45 | | EPA 300.0 | 0.60 | 0.20 | | 09/27/11 10:49 | MEJ |
| Total Alkalinity | mg/L | 4.0 | I | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 1.3 | | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:23 | 10/11/11 16:57 | SMD |
| Total Organic Carbon | mg/L | 0.63 | I | SM 5310B | 1.0 | 0.50 | | 09/27/11 09:32 | ARM |
| **Inorganic, Dissolved** | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.3 | | SM 5310B | 1.0 | 0.50 | | 09/27/11 17:46 | ARM |
| **Metals** | | | | | | | | | |
| Boron | mg/L | 0.050 | U | EPA 200.7 | 0.10 | 0.050 | 09/27/11 09:32 | 10/03/11 15:23 | VWC |
| Calcium | mg/L | 20 | | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 15:23 | VWC |
| Iron | mg/L | 0.022 | I | EPA 200.7 | 0.10 | 0.020 | 09/27/11 09:32 | 10/03/11 15:23 | VWC |
| Magnesium | mg/L | 11 | | EPA 200.7 | 0.050 | 0.010 | 09/27/11 09:32 | 10/03/11 15:23 | VWC |
| Manganese | mg/L | 0.16 | | EPA 200.7 | 0.010 | 0.0010 | 09/27/11 09:32 | 10/03/11 15:23 | VWC |
| Potassium | mg/L | 8.3 | | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 15:23 | VWC |
| Sodium | mg/L | 8.0 | | EPA 200.7 | 0.50 | 0.10 | 09/27/11 09:32 | 10/03/11 15:23 | VWC |
| Sample Description | | **PZ25-A06-10** | | | | | | | |
| Matrix | | **Groundwater** | | | | | | | |
| SAL Sample Number | | **1108663-14** | | | | | | | |
| Date/Time Collected | | **09/26/11 09:51** | | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | | |
| **Field Parameters** | | | | | | | | | |
| pH | SU | 6.0 | | DEP FT1100 | 0.1 | 0.1 | | 09/26/11 09:51 | SDH |

**FDOH Laboratory No.E84129**
**NELAP Accredited**

**Francis I. Daniels, Laboratory Director**
**Leslie C. Boardman, Q.A. Manager**

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108663**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **PZ25-A06-10** | | | | | | |
| Matrix | | **Groundwater** | | | | | | |
| SAL Sample Number | | **1108663-14** | | | | | | |
| Date/Time Collected | | **09/26/11 09:51** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/26/11 14:55** | | | | | | |
| Water Temperature | °C | 27.4 | DEP FT1400 | 0.1 | 0.1 | | 09/26/11 09:51 | SDH |
| Specific conductance | umhos/cm | 608 | DEP FT1200 | 0.1 | 0.1 | | 09/26/11 09:51 | SDH |
| Dissolved Oxygen | mg/L | 2.2 | DEP FT1500 | 0.1 | 0.1 | | 09/26/11 09:51 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.020 I | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chemical Oxygen Demand | mg/L | 26 | EPA 410.4 | 25 | 10 | | 09/27/11 10:00 | MMF |
| Chloride | mg/L | 37 | EPA 300.0 | 0.20 | 0.050 | | 10/04/11 18:43 | MEJ |
| Nitrate (as N) | mg/L | 19 | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/27/11 10:49 | MEJ |
| Phosphorous - Total as P | mg/L | 0.49 | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:13 | 10/05/11 14:30 | SMD |
| Total Alkalinity | mg/L | 66 | SM 2320B | 8.0 | 2.0 | | 09/27/11 16:00 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 2.0 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:23 | 10/11/11 16:57 | SMD |
| Sample Description | | **Equipment Blank** | | | | | | |
| Matrix | | **Reagent Water** | | | | | | |
| SAL Sample Number | | **1108663-15** | | | | | | |
| Date/Time Collected | | **09/28/11 09:40** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.6 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 09:40 | SDH |
| Water Temperature | °C | 25.1 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 09:40 | SDH |
| Specific conductance | umhos/cm | 1 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 09:40 | SDH |
| Dissolved Oxygen | mg/L | 4.6 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 09:40 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.021 I | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 0.050 U | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 17:20 | MEJ |
| Nitrate (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 17:20 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 17:20 | MEJ |
| Phosphorous - Total as P | mg/L | 0.010 U | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:13 | 10/05/11 14:30 | SMD |
| Total Alkalinity | mg/L | 6.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.21 | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:23 | 10/11/11 16:57 | SMD |

**SOUTHERN ANALYTICAL LABORATORIES, INC.**
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

**Hazen and Sawyer**
**10002 Princess Palm Ave, Suite 200**
**Tampa, FL 33619**

**October 26, 2011**
**Work Order: 1108663**
**Revised Report**

## Laboratory Report

**Project Name** **GCREC Mound Groundwater Analyses**

| Parameters | Units | Results * | Method | PQL | MDL | Prepared | Analyzed | By |
|---|---|---|---|---|---|---|---|---|
| Sample Description | | **Field Blank - DI** | | | | | | |
| Matrix | | **Reagent Water** | | | | | | |
| SAL Sample Number | | **1108663-16** | | | | | | |
| Date/Time Collected | | **09/28/11 09:45** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 5.6 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 09:45 | SDH |
| Water Temperature | °C | 25.1 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 09:45 | SDH |
| Specific conductance | umhos/cm | 1 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 09:45 | SDH |
| Dissolved Oxygen | mg/L | 4.6 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 09:45 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 0.050 U | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 17:20 | MEJ |
| Nitrate (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 17:20 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 17:20 | MEJ |
| Phosphorous - Total as P | mg/L | 0.010 U | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:13 | 10/05/11 14:30 | SMD |
| Total Alkalinity | mg/L | 2.0 I | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.05 U | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:23 | 10/11/11 16:57 | SMD |
| Sample Description | | **Field Blank - Tap** | | | | | | |
| Matrix | | **Reagent Water** | | | | | | |
| SAL Sample Number | | **1108663-17** | | | | | | |
| Date/Time Collected | | **09/28/11 12:15** | | | | | | |
| Collected by | | **Sean Harmon** | | | | | | |
| Date/Time Received | | **09/28/11 14:15** | | | | | | |
| **Field Parameters** | | | | | | | | |
| pH | SU | 7.6 | DEP FT1100 | 0.1 | 0.1 | | 09/28/11 12:15 | SDH |
| Water Temperature | °C | 29.0 | DEP FT1400 | 0.1 | 0.1 | | 09/28/11 12:15 | SDH |
| Specific conductance | umhos/cm | 430 | DEP FT1200 | 0.1 | 0.1 | | 09/28/11 12:15 | SDH |
| Dissolved Oxygen | mg/L | 5.2 | DEP FT1500 | 0.1 | 0.1 | | 09/28/11 12:15 | SDH |
| **Inorganics** | | | | | | | | |
| Ammonia as N | mg/L | 0.010 U | EPA 350.1 | 0.040 | 0.010 | | 10/11/11 16:44 | SMD |
| Chemical Oxygen Demand | mg/L | 10 U | EPA 410.4 | 25 | 10 | 09/29/11 09:20 | 09/29/11 15:40 | ARP |
| Chloride | mg/L | 19 | EPA 300.0 | 0.20 | 0.050 | | 09/28/11 17:20 | MEJ |
| Nitrate (as N) | mg/L | 0.26 | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 17:20 | MEJ |
| Nitrite (as N) | mg/L | 0.01 U | EPA 300.0 | 0.04 | 0.01 | | 09/28/11 17:20 | MEJ |
| Phosphorous - Total as P | mg/L | 0.010 U | SM 4500P-E | 0.040 | 0.010 | 10/03/11 11:13 | 10/05/11 14:30 | SMD |
| Total Alkalinity | mg/L | 120 | SM 2320B | 8.0 | 2.0 | | 10/01/11 11:30 | KTC |
| Total Kjeldahl Nitrogen | mg/L | 0.05 U | EPA 351.2 | 0.20 | 0.05 | 10/04/11 13:23 | 10/11/11 16:57 | SMD |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12717 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12717-BLK1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Sulfate | 0.20 U | 0.60 | 0.20 | mg/L | | | | | | |
| Orthophosphate as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Fluoride | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BI12717-BS1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Nitrate (as N) | 1.56 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | | |
| Chloride | 2.70 | 0.20 | 0.050 | mg/L | 3.0 | | 90 | 85-115 | | |
| Orthophosphate as P | 0.917 | 0.040 | 0.010 | mg/L | 0.90 | | 102 | 85-115 | | |
| Sulfate | 8.11 | 0.60 | 0.20 | mg/L | 9.0 | | 90 | 85-115 | | |
| Nitrite (as N) | 1.30 | 0.04 | 0.01 | mg/L | 1.4 | | 93 | 85-115 | | |
| Fluoride | 0.866 | 0.040 | 0.010 | mg/L | 0.90 | | 96 | 85-115 | | |
| **LCS Dup (BI12717-BSD1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Orthophosphate as P | 0.925 | 0.040 | 0.010 | mg/L | 0.90 | | 103 | 85-115 | 0.9 | 200 |
| Fluoride | 0.824 | 0.040 | 0.010 | mg/L | 0.90 | | 92 | 85-115 | 5 | 200 |
| Nitrite (as N) | 1.29 | 0.04 | 0.01 | mg/L | 1.4 | | 92 | 85-115 | 0.8 | 200 |
| Sulfate | 8.15 | 0.60 | 0.20 | mg/L | 9.0 | | 91 | 85-115 | 0.5 | 200 |
| Nitrate (as N) | 1.56 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 0 | 200 |
| Chloride | 2.70 | 0.20 | 0.050 | mg/L | 3.0 | | 90 | 85-115 | 0 | 200 |
| **Matrix Spike (BI12717-MS1)** | | **Source: 1108663-06** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chloride | 22.6 | 0.20 | 0.050 | mg/L | 3.0 | 19.3 | 110 | 80-120 | | |
| Fluoride | 1.26 | 0.040 | 0.010 | mg/L | 0.90 | 0.415 | 94 | 85-115 | | |
| Nitrate (as N) | 8.39 J5 | 0.04 | 0.01 | mg/L | 1.7 | 0.268 | 478 | 85-115 | | |
| Nitrite (as N) | 1.35 | 0.04 | 0.01 | mg/L | 1.4 | ND | 96 | 85-115 | | |
| Orthophosphate as P | 1.29 | 0.040 | 0.010 | mg/L | 0.90 | 0.361 | 103 | 85-115 | | |
| Sulfate | 97.6 | 0.60 | 0.20 | mg/L | 9.0 | 89.3 | 92 | 85-115 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12717 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BI12717-MS2)** | | **Source: 1108308-01** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Orthophosphate as P | 98.0 | 0.040 | 0.010 | mg/L | 90 | | 109 | 85-115 | | |
| Nitrate (as N) | 169 | 0.04 | 0.01 | mg/L | 170 | 0.866 | 99 | 85-115 | | |
| Fluoride | 94.9 | 0.040 | 0.010 | mg/L | 90 | 0.262 | 105 | 85-115 | | |
| Nitrite (as N) | 151 | 0.04 | 0.01 | mg/L | 140 | ND | 108 | 85-115 | | |
| Chloride | 344 | 0.20 | 0.050 | mg/L | 300 | 32.7 | 104 | 80-120 | | |
| Sulfate | 1,440 | 0.60 | 0.20 | mg/L | 900 | 614 | 92 | 85-115 | | |
| **Batch BI12742 - COD prep** | | | | | | | | | | |
| **Blank (BI12742-BLK1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BI12742-BS1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chemical Oxygen Demand | 53 | 25 | 10 | mg/L | 50 | | 106 | 90-110 | | |
| **LCS (BI12742-BS2)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | | 110 | 90-110 | | |
| **LCS (BI12742-BS3)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chemical Oxygen Demand | 53 | 25 | 10 | mg/L | 50 | | 106 | 90-110 | | |
| **LCS (BI12742-BS4)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chemical Oxygen Demand | 53 | 25 | 10 | mg/L | 50 | | 106 | 90-110 | | |
| **LCS (BI12742-BS5)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | | 110 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12742 - COD prep** | | | | | | | | | | |
| **Matrix Spike (BI12742-MS1)** | | **Source: 1108663-01** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chemical Oxygen Demand | 63 | 25 | 10 | mg/L | 50 | 15 | 96 | 85-115 | | |
| **Matrix Spike Dup (BI12742-MSD1)** | | **Source: 1108663-01** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Chemical Oxygen Demand | 65 | 25 | 10 | mg/L | 50 | 15 | 100 | 85-115 | 3 | 32 |
| **Batch BI12744 - TOC prep** | | | | | | | | | | |
| **Blank (BI12744-BLK1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **Blank (BI12744-BLK2)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI12744-BS1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Organic Carbon | 10.8 | 1.0 | 0.50 | mg/L | 10 | | 108 | 90-110 | | |
| **LCS (BI12744-BS2)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Organic Carbon | 10.5 | 1.0 | 0.50 | mg/L | 10 | | 105 | 90-110 | | |
| **Matrix Spike (BI12744-MS1)** | | **Source: 1108663-02** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Organic Carbon | 14.2 | 1.0 | 0.50 | mg/L | 10 | 3.40 | 108 | 85-115 | | |
| **Matrix Spike (BI12744-MS2)** | | **Source: 1108772-03** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Organic Carbon | 32.1 | 1.0 | 0.50 | mg/L | 20 | 13.9 | 91 | 85-115 | | |
| **Matrix Spike Dup (BI12744-MSD1)** | | **Source: 1108663-02** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Organic Carbon | 13.7 | 1.0 | 0.50 | mg/L | 10 | 3.40 | 103 | 85-115 | 4 | 10 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12744 - TOC prep** | | | | | | | | | | |
| **Matrix Spike Dup (BI12744-MSD2)** | | **Source: 1108772-03** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Organic Carbon | 30.7 | 1.0 | 0.50 | mg/L | 20 | 13.9 | 84 | 85-115 | 4 | 10 |
| **Batch BI12747 - alkalinity** | | | | | | | | | | |
| **Blank (BI12747-BLK1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BI12747-BLK2)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BI12747-BS1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | | 108 | 90-110 | | |
| **LCS (BI12747-BS2)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | | 108 | 90-110 | | |
| **Matrix Spike (BI12747-MS1)** | | **Source: 1108663-01** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | ND | 108 | 80-120 | | |
| **Matrix Spike (BI12747-MS2)** | | **Source: 1108624-06** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 150 | 8.0 | 2.0 | mg/L | 120 | 10 | 109 | 80-120 | | |
| **Matrix Spike Dup (BI12747-MSD1)** | | **Source: 1108663-01** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | ND | 108 | 80-120 | 0 | 26 |
| **Matrix Spike Dup (BI12747-MSD2)** | | **Source: 1108624-06** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Total Alkalinity | 150 | 8.0 | 2.0 | mg/L | 120 | 10 | 109 | 80-120 | 0 | 26 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12929 - COD prep** | | | | | | | | | | |
| **Blank (BI12929-BLK1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chemical Oxygen Demand | 10 U | 25 | 10 | mg/L | | | | | | |
| **LCS (BI12929-BS1)** | | | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | | 110 | 90-110 | | |
| **Matrix Spike (BI12929-MS1)** | | **Source: 1108628-03** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | | |
| **Matrix Spike Dup (BI12929-MSD1)** | | **Source: 1108628-03** | | | Prepared & Analyzed: 09/29/11 | | | | | |
| Chemical Oxygen Demand | 55 | 25 | 10 | mg/L | 50 | ND | 110 | 85-115 | 0 | 32 |
| **Batch BI12934 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI12934-BLK1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Nitrite (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| **LCS (BI12934-BS1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chloride | 2.83 | 0.20 | 0.050 | mg/L | 3.0 | | 94 | 85-115 | | |
| Nitrate (as N) | 1.57 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | | |
| Nitrite (as N) | 1.34 | 0.04 | 0.01 | mg/L | 1.4 | | 96 | 85-115 | | |
| **LCS Dup (BI12934-BSD1)** | | | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chloride | 2.73 | 0.20 | 0.050 | mg/L | 3.0 | | 91 | 85-115 | 4 | 200 |
| Nitrite (as N) | 1.32 | 0.04 | 0.01 | mg/L | 1.4 | | 94 | 85-115 | 2 | 200 |
| Nitrate (as N) | 1.56 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 0.6 | 200 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12934 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Matrix Spike (BI12934-MS1)** | | **Source: 1108622-06** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Nitrite (as N) | 13.9 | 0.04 | 0.01 | mg/L | 14 | ND | 99 | 85-115 | | |
| Nitrate (as N) | 31.0 | 0.04 | 0.01 | mg/L | 17 | 15.9 | 89 | 85-115 | | |
| Chloride | 60.3 | 0.20 | 0.050 | mg/L | 30 | 32.9 | 91 | 80-120 | | |
| **Matrix Spike (BI12934-MS2)** | | **Source: 1108906-01** | | | Prepared & Analyzed: 09/28/11 | | | | | |
| Chloride | 12.2 | 0.20 | 0.050 | mg/L | 3.0 | 9.09 | 104 | 80-120 | | |
| Nitrite (as N) | 1.32 | 0.04 | 0.01 | mg/L | 1.4 | ND | 94 | 85-115 | | |
| Nitrate (as N) | 3.34 | 0.04 | 0.01 | mg/L | 1.7 | 1.68 | 98 | 85-115 | | |
| **Batch BI13021 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BI13021-BLK1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BI13021-BS1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 3.02 | 0.20 | 0.050 | mg/L | 3.0 | | 101 | 85-115 | | |
| **LCS Dup (BI13021-BSD1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 2.93 | 0.20 | 0.050 | mg/L | 3.0 | | 98 | 85-115 | 3 | 200 |
| **Matrix Spike (BI13021-MS1)** | | **Source: 1108628-18** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 16.6 | 0.20 | 0.050 | mg/L | 3.0 | 13.4 | 107 | 80-120 | | |
| **Matrix Spike (BI13021-MS2)** | | **Source: 1108897-01** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Chloride | 82.6 +O | 0.20 | 0.050 | mg/L | 3.0 | 280 | NR | 80-120 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10103 - alkalinity** | | | | | | | | | | |
| **Blank (BJ10103-BLK1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **Blank (BJ10103-BLK2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 2.0 U | 8.0 | 2.0 | mg/L | | | | | | |
| **LCS (BJ10103-BS1)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **LCS (BJ10103-BS2)** | | | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | | 100 | 90-110 | | |
| **Matrix Spike (BJ10103-MS1)** | | **Source: 1108663-07** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 120 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 98 | 80-120 | | |
| **Matrix Spike (BJ10103-MS2)** | | **Source: 1108647-03** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | | |
| **Matrix Spike Dup (BJ10103-MSD1)** | | **Source: 1108663-07** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | 8 | 26 |
| **Matrix Spike Dup (BJ10103-MSD2)** | | **Source: 1108647-03** | | | Prepared & Analyzed: 10/01/11 | | | | | |
| Total Alkalinity | 140 | 8.0 | 2.0 | mg/L | 120 | 3.0 | 106 | 80-120 | 0 | 26 |
| **Batch BJ10304 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **Blank (BJ10304-BLK1)** | | | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Phosphorous - Total as P | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10304 - Digestion for TP by EPA 365.2/SM4500PE** | | | | | | | | | | |
| **LCS (BJ10304-BS1)** | | | | | Prepared: 10/03/11 | Analyzed: 10/05/11 | | | | |
| Phosphorous - Total as P | 0.500 | 0.040 | 0.010 | mg/L | 0.50 | | 100 | 90-110 | | |
| **Matrix Spike (BJ10304-MS1)** | | **Source: 1108683-02** | | | Prepared: 10/03/11 | Analyzed: 10/05/11 | | | | |
| Phosphorous - Total as P | 0.468 | 0.040 | 0.010 | mg/L | 0.50 | ND | 94 | 75-125 | | |
| **Matrix Spike Dup (BJ10304-MSD1)** | | **Source: 1108683-02** | | | Prepared: 10/03/11 | Analyzed: 10/05/11 | | | | |
| Phosphorous - Total as P | 0.483 | 0.040 | 0.010 | mg/L | 0.50 | ND | 97 | 75-125 | 3 | 25 |
| **Batch BJ10315 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ10315-BLK1)** | | | | | Prepared: 10/03/11 | Analyzed: 10/05/11 | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BJ10315-BLK2)** | | | | | Prepared: 10/03/11 | Analyzed: 10/05/11 | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BJ10315-BLK3)** | | | | | Prepared: 10/03/11 | Analyzed: 10/05/11 | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BJ10315-BLK4)** | | | | | Prepared: 10/03/11 | Analyzed: 10/05/11 | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **LCS (BJ10315-BS1)** | | | | | Prepared: 10/03/11 | Analyzed: 10/05/11 | | | | |
| Total Kjeldahl Nitrogen | 2.62 | 0.20 | 0.05 | mg/L | 2.5 | | 105 | 90-110 | | |
| **LCS (BJ10315-BS2)** | | | | | Prepared: 10/03/11 | Analyzed: 10/05/11 | | | | |
| Total Kjeldahl Nitrogen | 2.59 | 0.20 | 0.05 | mg/L | 2.5 | | 103 | 90-110 | | |

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| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10315 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **LCS (BJ10315-BS3)** | | | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.61 | 0.20 | 0.05 | mg/L | 2.5 | | 104 | 90-110 | | |
| **LCS (BJ10315-BS4)** | | | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.66 | 0.20 | 0.05 | mg/L | 2.5 | | 106 | 90-110 | | |
| **Matrix Spike (BJ10315-MS1)** | | **Source: 1108325-04** | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.00 | 0.20 | 0.05 | mg/L | 2.5 | 0.690 | 92 | 80-120 | | |
| **Matrix Spike (BJ10315-MS2)** | | **Source: 1108330-06** | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.74 | 0.20 | 0.05 | mg/L | 2.5 | 0.383 | 94 | 80-120 | | |
| **Matrix Spike (BJ10315-MS3)** | | **Source: 1108663-01** | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.29 | 0.20 | 0.05 | mg/L | 2.5 | 0.738 | 102 | 80-120 | | |
| **Matrix Spike (BJ10315-MS4)** | | **Source: 1108663-11** | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 4.24 | 0.20 | 0.05 | mg/L | 2.5 | 1.36 | 115 | 80-120 | | |
| **Matrix Spike Dup (BJ10315-MSD1)** | | **Source: 1108325-04** | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.14 | 0.20 | 0.05 | mg/L | 2.5 | 0.690 | 98 | 80-120 | 5 | 20 |
| **Matrix Spike Dup (BJ10315-MSD2)** | | **Source: 1108330-06** | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.67 | 0.20 | 0.05 | mg/L | 2.5 | 0.383 | 91 | 80-120 | 3 | 20 |
| **Matrix Spike Dup (BJ10315-MSD3)** | | **Source: 1108663-01** | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.17 | 0.20 | 0.05 | mg/L | 2.5 | 0.738 | 97 | 80-120 | 4 | 20 |
| **Matrix Spike Dup (BJ10315-MSD4)** | | **Source: 1108663-11** | | | Prepared: 10/03/11 Analyzed: 10/05/11 | | | | | |
| Total Kjeldahl Nitrogen | 4.27 | 0.20 | 0.05 | mg/L | 2.5 | 1.36 | 116 | 80-120 | 0.8 | 20 |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10421 - Ion Chromatography 300.0 Prep** | | | | | | | | | | |
| **Blank (BJ10421-BLK1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Nitrate (as N) | 0.01 U | 0.04 | 0.01 | mg/L | | | | | | |
| Chloride | 0.050 U | 0.20 | 0.050 | mg/L | | | | | | |
| **LCS (BJ10421-BS1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Nitrate (as N) | 1.60 | 0.04 | 0.01 | mg/L | 1.7 | | 94 | 85-115 | | |
| Chloride | 2.78 | 0.20 | 0.050 | mg/L | 3.0 | | 93 | 85-115 | | |
| **LCS Dup (BJ10421-BSD1)** | | | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Nitrate (as N) | 1.57 | 0.04 | 0.01 | mg/L | 1.7 | | 92 | 85-115 | 2 | 200 |
| Chloride | 2.72 | 0.20 | 0.050 | mg/L | 3.0 | | 91 | 85-115 | 2 | 200 |
| **Matrix Spike (BJ10421-MS1)** | | **Source: 1108619-01** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chloride | 68.5 +O | 0.20 | 0.050 | mg/L | 30 | 68.5 | 0 | 80-120 | | |
| Nitrate (as N) | 16.9 | 0.04 | 0.01 | mg/L | 17 | 0.238 | 98 | 85-115 | | |
| **Matrix Spike (BJ10421-MS2)** | | **Source: 1108761-04** | | | Prepared & Analyzed: 10/04/11 | | | | | |
| Chloride | 3.25 | 0.20 | 0.050 | mg/L | 3.0 | ND | 108 | 80-120 | | |
| Nitrate (as N) | 1.68 | 0.04 | 0.01 | mg/L | 1.7 | ND | 99 | 85-115 | | |
| **Batch BJ10424 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **Blank (BJ10424-BLK1)** | | | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |
| **Blank (BJ10424-BLK2)** | | | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 0.05 U | 0.20 | 0.05 | mg/L | | | | | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ10424 - Digestion for TKN by EPA 351.2** | | | | | | | | | | |
| **LCS (BJ10424-BS1)** | | | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.68 | 0.20 | 0.05 | mg/L | 2.5 | | 107 | 90-110 | | |
| **LCS (BJ10424-BS2)** | | | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.34 | 0.20 | 0.05 | mg/L | 2.5 | | 93 | 90-110 | | |
| **Matrix Spike (BJ10424-MS1)** | | **Source: 1108685-02** | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.32 | 0.20 | 0.05 | mg/L | 2.5 | 0.827 | 99 | 80-120 | | |
| **Matrix Spike (BJ10424-MS2)** | | **Source: 1108772-05** | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.74 | 0.20 | 0.05 | mg/L | 2.5 | 0.762 | 79 | 80-120 | | |
| **Matrix Spike Dup (BJ10424-MSD1)** | | **Source: 1108685-02** | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 3.25 | 0.20 | 0.05 | mg/L | 2.5 | 0.827 | 96 | 80-120 | 2 | 20 |
| **Matrix Spike Dup (BJ10424-MSD2)** | | **Source: 1108772-05** | | | Prepared: 10/04/11 Analyzed: 10/11/11 | | | | | |
| Total Kjeldahl Nitrogen | 2.94 | 0.20 | 0.05 | mg/L | 2.5 | 0.762 | 87 | 80-120 | 7 | 20 |
| **Batch BJ11107 - Ammonia by SEAL** | | | | | | | | | | |
| **Blank (BJ11107-BLK1)** | | | | | Prepared & Analyzed: 10/11/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **Blank (BJ11107-BLK2)** | | | | | Prepared & Analyzed: 10/11/11 | | | | | |
| Ammonia as N | 0.010 U | 0.040 | 0.010 | mg/L | | | | | | |
| **LCS (BJ11107-BS1)** | | | | | Prepared & Analyzed: 10/11/11 | | | | | |
| Ammonia as N | 0.47 | 0.040 | 0.010 | mg/L | 0.50 | | 94 | 90-110 | | |

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**Inorganics - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BJ11107 - Ammonia by SEAL** | | | | | | | | | | |
| **LCS (BJ11107-BS2)** | | | | | Prepared & Analyzed: 10/11/11 | | | | | |
| Ammonia as N | 0.48 | 0.040 | 0.010 | mg/L | 0.50 | | 95 | 90-110 | | |
| **Matrix Spike (BJ11107-MS1)** | | **Source: 1108614-01** | | | Prepared & Analyzed: 10/11/11 | | | | | |
| Ammonia as N | 0.52 | 0.040 | 0.010 | mg/L | 0.50 | ND | 103 | 90-110 | | |
| **Matrix Spike (BJ11107-MS2)** | | **Source: 1108663-17** | | | Prepared & Analyzed: 10/11/11 | | | | | |
| Ammonia as N | 0.57 | 0.040 | 0.010 | mg/L | 0.50 | ND | 114 | 90-110 | | |
| **Matrix Spike Dup (BJ11107-MSD1)** | | **Source: 1108614-01** | | | Prepared & Analyzed: 10/11/11 | | | | | |
| Ammonia as N | 0.55 | 0.040 | 0.010 | mg/L | 0.50 | ND | 110 | 90-110 | 6 | 10 |
| **Matrix Spike Dup (BJ11107-MSD2)** | | **Source: 1108663-17** | | | Prepared & Analyzed: 10/11/11 | | | | | |
| Ammonia as N | 0.54 | 0.040 | 0.010 | mg/L | 0.50 | ND | 108 | 90-110 | 5 | 10 |

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**Inorganic, Dissolved - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12745 - DOC prep** | | | | | | | | | | |
| **Blank (BI12745-BLK1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Dissolved Organic Carbon | 0.50 U | 1.0 | 0.50 | mg/L | | | | | | |
| **LCS (BI12745-BS1)** | | | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Dissolved Organic Carbon | 10.5 | 1.0 | 0.50 | mg/L | 10 | | 105 | 90-110 | | |
| **Matrix Spike (BI12745-MS1)** | | **Source: 1108663-09** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Dissolved Organic Carbon | 11.7 | 1.0 | 0.50 | mg/L | 10 | 1.10 | 106 | 85-125 | | |
| **Matrix Spike Dup (BI12745-MSD1)** | | **Source: 1108663-09** | | | Prepared & Analyzed: 09/27/11 | | | | | |
| Dissolved Organic Carbon | 11.8 | 1.0 | 0.50 | mg/L | 10 | 1.10 | 107 | 85-125 | 0.9 | 25 |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12710 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Blank (BI12710-BLK1)** | | | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Boron | 0.050 U | 0.10 | 0.050 | mg/L | | | | | | |
| Iron | 0.034 I | 0.10 | 0.020 | mg/L | | | | | | |
| Potassium | 0.066 | 0.050 | 0.010 | mg/L | | | | | | |
| Calcium | 0.034 I | 0.050 | 0.010 | mg/L | | | | | | |
| Magnesium | 0.053 | 0.050 | 0.010 | mg/L | | | | | | |
| Manganese | 0.0010 U | 0.010 | 0.0010 | mg/L | | | | | | |
| Sodium | 0.078 | 0.050 | 0.010 | mg/L | | | | | | |
| **LCS (BI12710-BS1)** | | | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Iron | 7.6 | 0.10 | 0.020 | mg/L | 8.0 | | 95 | 85-115 | | |
| Manganese | 0.38 | 0.010 | 0.0010 | mg/L | 0.40 | | 96 | 85-115 | | |
| Calcium | 19 | 0.050 | 0.010 | mg/L | 20 | | 95 | 85-115 | | |
| Magnesium | 19 | 0.050 | 0.010 | mg/L | 20 | | 96 | 85-115 | | |
| Boron | 0.43 | 0.10 | 0.050 | mg/L | 0.40 | | 107 | 85-115 | | |
| Potassium | 19 | 0.050 | 0.010 | mg/L | 20 | | 93 | 85-115 | | |
| Sodium | 20 | 0.050 | 0.010 | mg/L | 20 | | 98 | 85-115 | | |
| **Matrix Spike (BI12710-MS1)** | | **Source: 1108663-02** | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Calcium | 31 | 0.050 | 0.010 | mg/L | 20 | 12 | 97 | 70-130 | | |
| Manganese | 0.44 | 0.010 | 0.0010 | mg/L | 0.40 | 0.048 | 99 | 70-130 | | |
| Boron | 0.52 | 0.10 | 0.050 | mg/L | 0.40 | ND | 131 | 70-130 | | |
| Potassium | 19 | 0.050 | 0.010 | mg/L | 20 | 0.64 | 93 | 70-130 | | |
| Sodium | 22 | 0.050 | 0.010 | mg/L | 20 | 1.7 | 101 | 70-130 | | |
| Magnesium | 22 | 0.050 | 0.010 | mg/L | 20 | 2.8 | 97 | 70-130 | | |
| Iron | 7.9 | 0.10 | 0.020 | mg/L | 8.0 | 0.11 | 97 | 70-130 | | |
| **Matrix Spike (BI12710-MS2)** | | **Source: 1108780-03** | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Potassium | 22 | 0.050 | 0.010 | mg/L | 20 | 2.9 | 94 | 70-130 | | |
| Manganese | 0.41 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0040 | 101 | 70-130 | | |
| Sodium | 30 | 0.050 | 0.010 | mg/L | 20 | 9.7 | 101 | 70-130 | | |
| Magnesium | 32 | 0.050 | 0.010 | mg/L | 20 | 12 | 96 | 70-130 | | |
| Boron | 0.57 | 0.10 | 0.050 | mg/L | 0.40 | ND | 141 | 70-130 | | |
| Iron | 7.9 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 98 | 70-130 | | |
| Calcium | 65 | 0.050 | 0.010 | mg/L | 20 | 45 | 101 | 70-130 | | |

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**Metals - Quality Control**

| Analyte | Result | PQL | MDL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BI12710 - Metals Preparation for EPA Method 200.7** | | | | | | | | | | |
| **Matrix Spike Dup (BI12710-MSD1)** | | **Source: 1108663-02** | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Iron | 8.1 | 0.10 | 0.020 | mg/L | 8.0 | 0.11 | 100 | 70-130 | 3 | 30 |
| Calcium | 32 | 0.050 | 0.010 | mg/L | 20 | 12 | 102 | 70-130 | 3 | 30 |
| Manganese | 0.45 | 0.010 | 0.0010 | mg/L | 0.40 | 0.048 | 100 | 70-130 | 1 | 30 |
| Sodium | 22 | 0.050 | 0.010 | mg/L | 20 | 1.7 | 101 | 70-130 | 0.4 | 30 |
| Potassium | 21 | 0.050 | 0.010 | mg/L | 20 | 0.64 | 101 | 70-130 | 8 | 30 |
| Boron | 0.47 | 0.10 | 0.050 | mg/L | 0.40 | ND | 116 | 70-130 | 12 | 30 |
| Magnesium | 23 | 0.050 | 0.010 | mg/L | 20 | 2.8 | 101 | 70-130 | 3 | 30 |
| **Matrix Spike Dup (BI12710-MSD2)** | | **Source: 1108780-03** | | | Prepared & Analyzed: 10/03/11 | | | | | |
| Calcium | 65 | 0.050 | 0.010 | mg/L | 20 | 45 | 101 | 70-130 | 0.005 | 30 |
| Iron | 7.9 | 0.10 | 0.020 | mg/L | 8.0 | 0.076 | 97 | 70-130 | 0.5 | 30 |
| Magnesium | 32 | 0.050 | 0.010 | mg/L | 20 | 12 | 97 | 70-130 | 0.6 | 30 |
| Boron | 0.50 | 0.10 | 0.050 | mg/L | 0.40 | ND | 126 | 70-130 | 11 | 30 |
| Potassium | 22 | 0.050 | 0.010 | mg/L | 20 | 2.9 | 98 | 70-130 | 3 | 30 |
| Manganese | 0.40 | 0.010 | 0.0010 | mg/L | 0.40 | 0.0040 | 99 | 70-130 | 2 | 30 |
| Sodium | 30 | 0.050 | 0.010 | mg/L | 20 | 9.7 | 102 | 70-130 | 0.8 | 30 |

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## * Qualifiers, Notes and Definitions

Results followed by a "U" indicate that the sample was analyzed but the compound was not detected. Results followed by "I" indicate that the reported value is between the laboratory method detection limts and the laboratory practical quantitation limit.

A statement of estimated uncertainty of test results is available upon request.

For methods marked with **, all QC criteria have been met for this method which is equivalent to a SAL certified method.

Test results in this report meet all the requirements of the NELAC standards. Any applicable qualifiers are shown below. Questions regarding this report should be directed to Client Services at 813-855-1844.

| | |
|---|---|
| J5 | Matrix spike of this sample was outside typical range. All other QC criteria were acceptable. |
| +O | Matrix spike source sample was over the reccommended range for the method. |

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1108663

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | | | | | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | PZ03-H11-6 | 092611 | 0843 | GW | | X | | 1 | 1 | | | | | | | | | | |
| 02 | PZ04-BKG-9 | 092611 | 1035 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | | | | | | |
| 03 | PZ07-D05-7 | 092611 | 0922 | GW | | X | | 1 | 1 | | | | | | | | | | |
| 04 | PZ11-E09-10 | 092611 | 0915 | GW | | X | | 1 | 1 | | | | | | | | | | |
| 05 | PZ15-A11-6 | 092611 | 0935 | GW | | X | | 1 | 1 | | | | | | | | | | |
| 06 | PZ16-C12-28 | 092611 | 1003 | GW | | X | | 1 | 1 | | | | | | | | | | |
| 07 | PZ17-I15-26 | 092811 | 1048 | GW | | X | | 1 | | 1 | | | | | | | | | |
| 08 | PZ18-R12-26 | 092811 | 1144 | GW | | X | | 1 | 1 | | | | | | | | | | |
| 09 | PZ19-G10-26 | 092611 | 0808 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | | | | | | |
| 10 | PZ20-G10-15 | 092611 | 0836 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | | | | | | |
| 11 | PZ21-E11-26 | 092611 | 0814 | GW | | X | | 1 | 1 | | | | | | | | | | |
| 12 | PZ24-BKG-26 | 092611 | 1048 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | | | | | | |

| Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|
| Containers Prepared/ Relinquished: JR | 9/23/11 1415 | | 9/23/11 1415 |
| Relinquished: | 092611 1455 | Received: | Date/Time: |
| Relinquished: | 092811 1415 | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |
| Relinquished: | Date/Time: | Received: | Date/Time: |

01-06
09-12
9-8

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp_____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks:

1108663

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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

SAL Project No. 1108663

Client Name: Hazen and Sawyer

Contact / Phone:

Project Name / Location: GCREC Mound Groundwater Analyses

Samplers: (Signature)

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

PARAMETER / CONTAINER DESCRIPTION

| | Sample Description | Date | Time | Matrix | Composite | Grab | 1LP, Cool F, Cl, NO3, OP, SO4, NO2, Alk-T | 1LP, Cool NO3, NO2, Cl, Alk-T | 250mL P, $H_2SO_4$ TKN, $NH_3$, TotalP, COD | 250mL P, $H_2SO_4$ TKN, $NH_3$ | 250mLaG, Cool DOC | 40mLaV, HCl TOC | 250mL P, $HNO_3$ B, Ca, K, Fe, Mg, Mn, Na | | | | | | No. of Containers (Total per each location) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | PZ24-BKG-26-D | 092611 | 1054 | GW | | X | 1 | | 1 | | 1 | 2 | 1 | | | | | | |
| 14 | PZ25-A06-10 | 092611 | 0951 | GW | | X | | 1 | 1 | | | | | | | | | | |
| 15 | Equipment blank | 092811 | 0940 | R | | X | | 1 | 1 | | | | | | | | | | |
| 16 | Field Blank - DI | 092811 | 0945 | R | | X | | 1 | 1 | | | | | | | | | | |
| 17 | Field Blank - Tap | 092811 | 1215 | R | | X | | 1 | 1 | | | | | | | | | | |

| Containers Prepared/ Relinquished: | Date/Time: | Received: | Date/Time: |
|---|---|---|---|
| 9R | 1415 9/23/11 | | 1415 92311 |
| B-14 | 1455 92611 | | |
| 15-17 | ~~1630~~ 92711 9/28/11, 1415 | | |
| | | | |
| | | | |

Seal intact? Y N N/A

Samples intact upon arrival? Y N N/A

Received on ice? Temp____ Y N N/A

Proper preservatives indicated? Y N N/A

Rec'd within holding time? Y N N/A

Volatiles rec'd w/out headspace Y N N/A

Proper containers used? Y N N/A

Instructions / Remarks:

1108663

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

Chain of Custody

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092611 | SAL Project # | 1108663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | P23 | Sample ID | 01 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK To UNK | Static Depth to Water (Feet) | 6.40 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

*WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.156 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.468 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 0833 | PURGE TIME END | 0842 | TOTAL PURGED | 0.90 |

| INST. ID | | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-4 | SAL-SAM-02 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0836 | 0.30 | 0.30 | 0.10 | 6.52 | 4.4 | 26.4 | 133.8 | 1.48 | 13.9 | clear | none |
| 0839 | 0.30 | 0.60 | 0.10 | \| | 4.4 | 26.5 | 134.9 | 1.39 | 8.67 | \| | \| |
| 0842 | 0.30 | 0.90 | 0.10 | \| | 4.4 | 26.5 | 136.5 | 1.36 | 6.82 | \| | \| |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | 0843 | SAMPLING ENDED | 0843 | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | Cloudy | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092611 | SAL Project # | 1108663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | MW04 | Sample ID | D2 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 5.94 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.1836 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.5508 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 1025 | PURGE TIME END | 1035 | TOTAL PURGED | 0.90 |

| INST. ID | | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-4 | SAL-SAM-0-X | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <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 | CLEAR | 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 | 1.74 | 0.97 | \| | NONE |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 1035 | SAMPLING ENDED | 1035 | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | Cloudy | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092611 | SAL Project # | 11086663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | MC01 | Sample ID | 03 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | 6.04 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.177 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.53 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 0912 | PURGE TIME END | 0921 | TOTAL PURGED | 0.90 |

| INST. ID | | | | | SAL-SAM-63-04 | SAL-SAM-65-04 | SAL-SAM-63-04 | SAL-SAM-55-04 | SAL-SAM-02 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0915 | 0.30 | 0.30 | 0.10 | 6.09 | 4.62 | 25.4 | 375.0 | 0.80 | 8.94 | CLEAR | NONE |
| 0918 | 0.30 | 0.60 | 0.10 | ↓ | 4.61 | 25.5 | 368.4 | 0.83 | 8.85 | ↓ | ↓ |
| 0921 | 0.30 | 0.90 | 0.10 | ↓ | 4.60 | 25.5 | 360.8 | 0.86 | 8.78 | ↓ | ↓ |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 0922 | SAMPLING ENDED | 0927 | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | Cloudy | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092611 | SAL Project # | 11086663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ11 | Sample ID | 04 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK To UNK | Static Depth to Water (Feet) | 3.0 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 9.8 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.136 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.408 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 0905 | PURGE TIME END | 0914 | TOTAL PURGED | 0.90 |

| INST. ID | | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-4 | SAL-SAM-02 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0908 | 0.30 | 0.30 | 0.10 | N/A | 5.5 | 25.8 | 408.1 | 4.79 | 13.6 | clear | NOM |
| 0911 | \| | 0.60 | \| | \| | 5.5 | 25.9 | 411.1 | 4.86 | 11.1 | \| | \| |
| 0914 | \| | 0.90 | \| | \| | 5.7 | 26.0 | 413.2 | 5.61 | 8.74 | \| | \| |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 0915 | SAMPLING ENDED | 0915 | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | cloudy | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092611 | SAL Project # | 1108663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ15 | Sample ID | 05 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 1.25 | WELL CAPACITY (gal/ft) | 0.06 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 4.91 | PURGE PUMP CODE (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 7.50 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.155 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.466 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 0925 | PURGE TIME END | 0934 | TOTAL PURGED | 0.90 |
| INST. ID | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-4 | SAL-SAM-02 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <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 | NONE |
| 0931 | | 0.60 | | | 4.7 | 27.1 | 84.0 | 1.80 | 17.4 | | |
| 0934 | | 0.90 | | | 4.8 | 27.1 | 84.2 | 1.66 | 16.8 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 0935 | SAMPLING ENDED | 0935 | FIELD CLEANED | Y (N) | CLEANING STEPS | |
| FIELD FILTERED? | (Y) N | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | cloudy | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092611 | SAL Project # | 11086663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | P216 | Sample ID | 06 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | 2.62 | PURGE PUMP CODE (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 29.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.52 | 1/4 WELL VOLUME | 0.13 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 0950 | PURGE TIME END | 1002 | TOTAL PURGED | 1.20 | |
| INST. ID | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-4 | SAL-SAM-02 | | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <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 | N/A | ~~24.8~~ 5.4 | 24.8 | 309.8 | 0.46 | 10.6 | clear | none |
| 0959 | 0.30 | 0.90 | \| | \| | ~~24~~ 5.4 | 24.8 | 309.3 | 0.36 | 9.63 | \| | \| |
| 1002 | 0.30 | 1.20 | \| | \| | 5.3 | 24.6 | 310.9 | 0.33 | 7.49 | \| | \| |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 1003 | SAMPLING ENDED | 1003 | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | cloudy | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092811 | SAL Project # | 1108663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ-17 | Sample ID | 07 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 7.89 | PURGE PUMP CODE (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 30.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.44 | 1/4 WELL VOLUME | 0.11 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 1030 | PURGE TIME END | 1047 | TOTAL PURGED | 1.70 |

| INST. ID | | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-4 | SAL-SAM-02 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1035 | 0.50 | 0.50 | 0.10 | N/A | 4.9 | 25.2 | 279.9 | 0.51 | 332 | Brown | None |
| 1038 | 0.30 | 0.80 | | | 4.8 | 25.1 | 280.2 | 0.36 | 158 | | |
| 1041 | 0.30 | 1.10 | | | 4.8 | 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 | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 1048 | SAMPLING ENDED | 1048 | FIELD CLEANED | Y (N) | CLEANING STEPS | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | clear windy | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092811 | SAL Project # | 1108663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ-18 | Sample ID | 08 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 2.46 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 25.49 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.46 | 1/4 WELL VOLUME | 0.11 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 1126 | PURGE TIME END | 1143 | TOTAL PURGED | 1.70 |
| INST. ID | X | X | X | X | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-4 | SAL-SAM-02 | X | X |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <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 | N/A | 5.1 | 26.9 | 221.9 | 0.35 | Above Detectable | Brown | None |
| 1134 | 0.30 | 0.80 | | | 5.1 | 26.4 | 222.1 | 0.35 | 360 | | |
| 1137 | 0.30 | 1.10 | | | 5.1 | 26.4 | 222.4 | 0.36 | 209 | | |
| 1140 | 0.30 | 1.40 | | | 5.0 | 26.4 | 222.5 | 0.28 | 137.6 | | |
| 1143 | 0.30 | 1.70 | | | 5.0 | 26.3 | 222.6 | 0.25 | 79.1 | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 1144 | SAMPLING ENDED | 1144 | FIELD CLEANED | Y (N) | CLEANING STEPS | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) |
| SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) | | | | | | |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | |
| WEATHER CONDITIONS | Sunny and breezy | | | | | | |
| COMMENTS | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092611 | SAL Project # | 11086663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | P219 | Sample ID | 09 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 2.0 | WELL CAPACITY (gal/ft) | 0.16 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 6.96 | PURGE PUMP CODE: PP GP IBP |
| TOTAL WELL DEPTH (Feet) | 30.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 3.68 | 1/4 WELL VOLUME | 0.92 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 0744 | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-4 | SAL-SAM-0-2 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0759 | 3.75 | 3.75 | 0.25 | N/A | 5.0 | 24.5 | 302.6 | 0.46 | 19.4 | clear | NONE |
| 0803 | 1.00 | 4.75 | \| | \| | 5.0 | 24.6 | 302.2 | 0.57 | 14.3 | \| | \| |
| 0807 | 1.00 | 5.75 | \| | \| | 5.0 | 24.6 | 302.4 | 0.42 | 11.6 | \| | \| |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 0808 | SAMPLING ENDED | 0808 | FIELD CLEANED | Y N | CLEANING STEPS | | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | Drizzle | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092611 | SAL Project # | 1108663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ20 | Sample ID | 1D | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | 0.02 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 6.96 | PURGE PUMP CODE (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 19.36 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.24 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.74 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 0820 | PURGE TIME END | 0835 | TOTAL PURGED | 1.50 |
| INST. ID | X | X | X | X | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-4 | SAL-SAM-02 |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0823 | 0.30 | 0.30 | 0.10 | N/A | 5.0 | 25.5 | 312.1 | 0.61 | 397 | Brown | none |
| 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 | 0.30 | 1.20 | \| | \| | 5.0 | 25.5 | 310.8 | 0.23 | 376 | \| | \| |
| 0835 | 0.30 | 1.50 | | | 4.9 | 25.6 | 307.6 | 0.23 | 370 | \| | \| |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | 0836 | SAMPLING ENDED | 0836 | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | cloudy | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092611 | SAL Project # | 11086663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | PZ 21 | Sample ID | 11 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 2.0 | WELL CAPACITY (gal/ft) | 0.16 | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | 6.87 | PURGE PUMP CODE (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 30.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 3.70 | 1/4 WELL VOLUME | 0.92 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 0742 | PURGE TIME END | 0813 SH ~~0805~~ | TOTAL PURGED | 7.75 |
| INST. ID | X | X | X | X | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-4 | SAL-SAM-0 2 |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <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 | Gray | None |
| 0801 | 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 | | | 5.1 | 24.7 | 297.6 | 0.92 | 73.7 | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 0814 ~~0806~~ | SAMPLING ENDED | 0814 ~~0806~~ | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | SK | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | Drizzle | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092611 | SAL Project # | 11086663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | ~~3~~ PZ24 | Sample ID | 12 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 2.0 | WELL CAPACITY (gal/ft) | 0.16 | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | 8.84 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 30.0 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 3.38 | 1/4 WELL VOLUME | 0.84 | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | 1025 | PURGE TIME END | 1047 | TOTAL PURGED | 5.5 |
| INST. ID | X | X | X | X | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-4 | SAL-SAM-02 | X | X |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 1039 | 3.5 | 3.5 | 0.25 | 8.92 | 11.9 | 25.6 | 299.1 | 0.30 | 5.92 | clear | None |
| 1043 | 1.0 | 4.5 | \| | \| | 4.9 | 25.6 | 298.8 | 0.33 | 4.57 | \| | \| |
| 1047 | 1.0 | 5.5 | \| | \| | 4.8 | 25.5 | 299.3 | 0.36 | 3.41 | \| | \| |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP (TL) TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 1047 SH | SAMPLING ENDED | 1047 SH | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | (Y) ~~N~~ | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | SH 092611 | | | | | |
| WEATHER CONDITIONS | cloudy | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092611 | SAL Project # | 1108663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | P225 | Sample ID | 14 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | 0.75 | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | Static Depth to Water (Feet) | 10.93 ~~10.93~~ 5.3 | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | 13.52 | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | 0.0518 | 1/4 WELL VOLUME | | 3 WELL VOLUMES | 0.1554 | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | 0941 | PURGE TIME END | 0951 | TOTAL PURGED | 0.90 |

| INST. ID | | | | | SAL-SAM-63-04 | SAL-SAM-65-04 | SAL-SAM-63-04 | SAL-SAM-55-04 | SAL-SAM-02 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <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 | CLEAR | NONE |
| 0947 | 0.30 | 0.60 | 0.10 | | 6.0 | ↓ | 612 | 2.23 | 11.28 | ↓ | ↓ |
| 0950 | 0.30 | 0.90 | 0.10 | | 6.0 | ↓ | 608 | 2.21 | 5.32 | ↓ | ↓ |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 0951 | SAMPLING ENDED | 0951 | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | Cloudy | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092811 | SAL Project # | 1108663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | EQ Blank | Sample ID | 15 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK | To | UNK | Static Depth to Water (Feet) | | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | | TUBING DIAMETER (Inches) | | TUBING CAPACITY (gal/ft) | |
| Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes) | | | | | | | | | | | |
| WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY = | | | | | | | | | | | |
| ONE WELL VOLUME | | | 1/4 WELL VOLUME | | | 3 WELL VOLUMES | | | 5 WELL VOLUMES | | |
| EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME | | | | | | | | | | | |
| PUMP VOLUME | | | TUBING LEGNTH | | | FLOW CELL VOLUME | | | EQUIPMENT VOLUME | | |
| INITIAL TUBING LEGNTH IN WELL (FEET) | | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-4 | SAL-SAM-02 | | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0940 | | | | | 5.6 | 25.1 | 1.4 | 4.61 | 0.31 | clear | NONE |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | | SAMPLE PUMP FLOW RATE (mL/min) | |
| SAMPLING INITIATED | 0940 | SAMPLING ENDED | 0940 | FIELD CLEANED | Y N | CLEANING STEPS | DI x2 | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y N | VOC COLLECTED BY REVERSE FLOW? | Y N N/A | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N N/A |
| PRESERVATION CHECKED IN FIELD? | Y N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | clear / windy | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092811 | SAL Project # | 1108663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | Blank - Field | Sample ID | 16 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | PURGE PUMP CODE | (PP) GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-4 | SAL-SAM-02 | |
| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <5%) | DO (mg/L) (% SAT <20) | TURBIDITY (NTUs) (<20 NTU) | COLOR (Describe) | ODOR (Describe) |
| 0945 | | | | | 5.6 | 25.1 | 1.4 | 4.61 | 0.31 | clear | NOM |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | | SAL | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | | PP PE NP (TL) TT | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | 0945 | SAMPLING ENDED | 0945 | FIELD CLEANED | (Y) N | CLEANING STEPS | DI | | |
| FIELD FILTERED? | Y N | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | |
| WEATHER CONDITIONS | | clear / windy | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09

# SOUTHERN ANALYTICAL LABORATORIES, INC.

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 | 092011 | SAL Project # | 1108663 | Project Name | GCREC Mound Groundwater Analyses |
| Well Number | Tap - Blank | Sample ID | 17 | GPS LAT | |
| | | | | GPS LONG | |

## PURGING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WELL DIAMETER (Inches) | | WELL CAPACITY (gal/ft) | | Screen Interval (Feet) | UNK To UNK | | Static Depth to Water (Feet) | PURGE PUMP CODE | PP GP IBP |
| TOTAL WELL DEPTH (Feet) | | REFERENCE ELEVATION (NGVD) | | GROUND WATER ELEVATION (REFERENCE-STATIC) | | | TUBING DIAMETER (Inches) | TUBING CAPACITY (gal/ft) | |

Purge Technique: q Submerged Screen (1,1/4,1/4 Well) q Submerged Screen (1EQ Volume, 3, 3 Minutes) q Partially Submerged Screen (1 Well, 3,3 minutes)

WELL VOLUME = (TOTAL DEPTH - STATIC DEPTH) x WELL CAPICITY =

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ONE WELL VOLUME | | 1/4 WELL VOLUME | | 3 WELL VOLUMES | | 5 WELL VOLUMES | |

EQUIPMENT VOLUME = PUMP VOLUME + (TUBING CAPACITY X TUBING LEGNTH) + FLOW CELL VOLUME

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PUMP VOLUME | | TUBING LEGNTH | | FLOW CELL VOLUME | | EQUIPMENT VOLUME | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL TUBING LEGNTH IN WELL (FEET) | | FINAL TUBING LEGNTH IN WELL (FEET) | | PURGE TIME START | | PURGE TIME END | | TOTAL PURGED | |
| INST. ID | | | | SAL-SAM-63-4 | SAL-SAM-65-4 | SAL-SAM-63-4 | SAL-SAM-55-4 | SAL-SAM-02 | |

| TIME | VOLUME PURGED (Gallons) | TOTAL VOLUME PURGED (Gallons) | PURGE RATE (gpm) | Depth to Water (Feet) | pH (SU) (Δ <0.2) | TEMP (oC) (Δ <0.2) | SP COND (uS/cm) (Δ <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 | None |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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"=1.47, 12"5.88

TUBING INSIDE DIA. CAPACITY (Gal./Ft.): 1/8" = 0.0006; 3/16" = 0.0014; 1/4" = 0.0026; 5/16" = 0.004; 3/8" = 0.006; 1/2" = 0.010; 5/8" = 0.016

## SAMPLING DATA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLED BY / COMPANY (PRINT) | SAL | | | | | SAMPLER(S) SIGNATURES: | | | |
| TUBING MATERIAL CODE (CIRCLE ONE) | PP PE NP TL TT | | | SAMPLE TUBING LEGNTH IN WELL (FEET) | | | SAMPLE PUMP FLOW RATE (mL/min) | | |
| SAMPLING INITIATED | 1215 | SAMPLING ENDED | 1215 | FIELD CLEANED | Y (N) | CLEANING STEPS | | | |
| FIELD FILTERED? | Y (N) | FILTER SIZE (µm) | | DUPLICATE | Y (N) | VOC COLLECTED BY REVERSE FLOW? | Y N (N/A) | SEMI-VOLS COLLECTED THROUGH TRAP? | Y N (N/A) |
| PRESERVATION CHECKED IN FIELD? | (Y) N N/A | LIST PRESERVATIVES ADDED | | | | | | | |
| WEATHER CONDITIONS | clear | | | | | | | | |
| COMMENTS | | | | | | | | | |

PUMP CODES: PP=Peristaltic Pump, GP= Submersible Grundfos Pump, IBP= In-place Bladder Pump

TUBING MATERIAL CODES: PP= Polypropylene, PE= Polyethylene, NP= Non-inert Plastic, TL= Teflon Lined, TT= Teflon

Reviewed By: Date:

Revision Date 09/25/09