

**Assessment Monitoring Report  
December 17-18, 2012  
Swift Creek Project  
Highway 301**

**Nash County  
Rocky Mount, North Carolina**

**Prepared for:  
REUSE TECHNOLOGY, INC.  
Charlotte, North Carolina**

**January 2013**

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**Prepared by:  
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NC DENR **Environmental Monitoring Reporting Form**  
 Division of Waste Management - Solid Waste

**Notice:** This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

**Instructions:**

- Prepare one form for each individually monitored unit.
- Please type or print legibly.
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i)).
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

**Solid Waste Monitoring Data Submittal Information**

Name of entity submitting data (laboratory, consultant, facility owner):

Sherrill Environmental, Inc.

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: John (Jack) Sherrill Phone: 919 493-6555  
 E-mail: sherrill@nc.rr.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Swift Creek Coal Combustion By-Products Structural Fill	Highway 301 Battleboro, NC Nash County			December 17-18, 2012

**Environmental Status: (Check all that apply)**

- Initial/Background Monitoring  Detection Monitoring  Assessment Monitoring  Corrective Action

**Type of data submitted: (Check all that apply)**

- Groundwater monitoring data from monitoring wells  Methane gas monitoring data  
 Groundwater monitoring data from private water supply wells  Corrective action data (specify) \_\_\_\_\_  
 Leachate monitoring data  Other(specify) \_\_\_\_\_  
 Surface water monitoring data

**Notification attached?**

- No. No groundwater or surface water standards were exceeded.  
 Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.  
 Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

**Certification**

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

Sherrill Environmental, Inc., John Sherrill, LG President 919 493 6555

Facility Representative Name (Print) Title (Area Code) Telephone Number  
 Signature *John Sherrill* Date 1/24/2013  
 Affix NC Licensed Professional Geologist Seal



Facility Representative Address

NOTIFICATION OF EXCEEDANCE OF A REPORTING LIMIT  
 SWIFT CREEK CCB STRUCTURAL FILL

June 29, 2012

Summary of Environmental Samples with Detections above SWSLs			
	Concentration	SWLS	
MW-1S	ug/L	ug/L	
Arsenic	18	10	
Barium	567	100	
MW-3			
Arsenic	13	10	
Barium	136	100	
Sulfate	910,000	250,000	
MW-4			
Barium	262	100	
Cadmium	19	1	
Lead	95	10	
MW-6			
Arsenic	31	10	
Barium	131	100	
Sulfate	270,000	250,000	
MW-7			
Arsenic	<100	10	
Barium	158	100	
Lead	397	10	
Sulfate	700,000	250,000	
MW-8			
Arsenic	110	10	
Barium	168	100	
Lead	234	10	
Sulfate	580,000	250,000	
SW-1	None		
SW-2	None		
SW-3	None		



NOTIFICATION OF EXCEEDANCE OF A STANDARD  
 SWIFT CREEK CCB STRUCTURAL FILL  
 June 29, 2012

Summary of Environmental Samples with Exceedances		
	Concentration	Standard
MW-1S	ug/L	ug/L
Arsenic	18	10
MW-3		
Arsenic	13	10
Sulfate	910,000	250,000
MW-4		
Cadmium	19	2
Lead	95	15
MW-6		
Arsenic	31	10
Sulfate	270,000	250,000
MW-7		
Arsenic	<100	10
Lead	397	15
Sulfate	700,000	250,000
MW-8		
Arsenic	110	10
Lead	234	15
Sulfate	580,000	250,000
The above listed constituents are believed to be the result of materials in the structural fill. These constituents are not detected in the surface water samples from the creek/swamp that is the receptor of groundwater from the site. These results are consistent with historical data.		



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## 1.0 INTRODUCTION

Sherrill Environmental, Inc. (Sherrill) was contracted by ReUse Technology, Inc. (ReUse) to perform Semi-Annual Groundwater and Surface Water Monitoring at the Swift Creek Project. The Swift Creek Project is a “Beneficial Use” fill utilizing coal combustion by-products (CCBs) in the development of a commercial property. The Project is located on the east side on US Highway 301 at Swift Creek near Battleboro, North Carolina (Figure 1). As determined by a review of historical DOT aerial photographs the property was previously developed as a motel with a restaurant (1961). A 1981 aerial photograph shows the project area to consist of the motel and restaurant with the remaining portion of the project area in agricultural use.

On November 11, 1991, ReUse Technology, Inc. submitted a letter to the Solid Waste Management Section seeking approval to use coal ash as structural fill material in the development of 25 acres of commercial property along Highway 301 at Swift Creek. On December 3, 1991, the Solid Waste Section issued a letter to ReUse that stated “Based upon the information received, the project appears to meet the guidelines previously agreed to for such reuse.” In September 1992, ReUse began placement of coal ash at the site. In January 2003, the last shipment of coal ash was accepted at the site. On March 23, 2003, the site had been graded, compacted, covered with an 18 inch soil cap and planted with grass seed. On November 4, 2004, the Closure Notice was forwarded to the Solid Waste Section. In March 2006, a Comprehensive Site Assessment (CSA) for the Swift Creek Project was submitted to the Solid Waste Section. In December 2006, an Assessment Monitoring Plan was submitted to the Solid Waste Section. On February 22, 2007, the Assessment Monitoring Plan was approved by the Solid Waste Section.

Eight sampling events have indicated that groundwater associated with the deeper monitoring wells (MW-1D, MW-2D, MW-5D) have not shown any impact from the CCB structural fill. The deeper wells were not sampled for this sampling event as Sherrill believes the existing analytical database is sufficient.

## 2.0 CORRECTIVE MEASURES

A corrective measure designed by Appian Consulting Engineers, P.A. consisting of a longitudinal subsurface drain along the western portion of the site was completed in January 2008. The purpose of the measure is to intercept groundwater flowing from west to east and therefore reduce the groundwater level in the area of the site. To monitor the effectiveness of the corrective measure, two piezometers (P-23 and P-24) were installed at 20 feet east and west of the cut-off drain. These piezometers monitor the effect of the cut-off drain in reducing the groundwater level at the project. The location of the cut-off drain (6" Lateral Subsurface Drain) and the piezometers are shown on the site map (Figure 2).

## 3.0 SITE GEOLOGY

The site surficial geology consists of an alluvial terrace constructed by the fluvial deposition of silts, sands and gravels. The sequence coarsens downward with some coarse sand with gravel present near the base. The terrace deposit overlies the massive and extensive Yorktown Formation. The Yorktown Formation is Pliocene in age and was deposited in the Pliocene Yorktown Sea that covered the entire coastal plain and the eastern most portions of the Piedmont. Depositional environments were back barrier lagoons, shallow inner-bay and estuarine environments and on the open shallow shelf (The Geology of the Carolinas, Horton and Zullo, 1991). The Yorktown in the region of the site is generally described as blueish-gray fine to very fine, silty sands, sandy silt or silty clay, well-sorted and very shelly.

### 3.1 SOIL SURVEY

Figure 1-2 shows the location of the site on Sheet 1 of the Soil Survey of Nash County produced by the US Department of Agriculture, Soil Conservation Service. The soils underlying the coal ash fill project are largely Altavista with a smaller portion of Norfolk in the area of higher topography on the southern end of the site.

Altavista soils are alluvial deposits that formed on flood plains. These old flood plains were erosionally dissected and the remaining terrace areas are now topographically higher than the surrounding stream and swamps. The seasonal high water table for Altavista is 1.5 to 2.5 feet below the top of the soil surface and occurs during December through March.

The Soil Survey describes Altavista sandy loam (AaA) as moderately well drained and nearly level to gently sloping. It is on low terraces along large streams. Typically, the surface layer is grayish brown sandy loam 12 inches thick. The next layer, to a depth of

14 inches is olive yellow sandy loam that has yellow mottles. The subsoil extends to a depth of 44 inches. It is yellow sandy clay loam in the upper part. The middle part is yellowish brown clay loam that has mottles of light gray, red, and yellowish red. The lower part of the subsoil is light yellowish brown clay loam that has mottles of red, yellowish red, strong brown and light gray. The underlying material to a depth of 60 inches is mottled brownish yellow, light gray, strong brown and yellowish red sandy clay loam.

Permeability tests on site samples of the Altavista subsoil were performed by Geotechnologies, Inc. in April 2003. Permeability values for the three samples ranged from 1E-7 cm/sec to 7E-8 cm/sec. This information was presented in Sherrill's "Site Investigation" report prepared in May 2003.

The Norfolk soils underlie the site along the western and southern sides in the topographically higher portions of the site. The percentage of Norfolk soil underlying the coal ash fill is relatively small compared to the Altavista. The seasonal high water table for Norfolk is 4 to 6 feet below ground surface and occurs during January through March.

The Soil Survey describes Norfolk loamy sand (NoB) as well drained and gently sloping. It is on convex ridges and side slopes of the Coastal Plain uplands. Typically the surface layer is grayish brown loamy sand about 10 inches thick. The subsurface layer is very pale brown sandy loam to a depth of about 19 inches. The subsoil extends to a depth of at least 79 inches. It is brownish yellow sandy clay loam in the upper part. The middle part is brownish yellow sandy clay loam that has red and very pale brown mottles, and the lower part is a mottled brownish yellow, yellow, red and gray sandy loam.

### 3.2 MONITORING WELLS

A total of 11 monitoring wells are located around the perimeter of the Swift Creek Project (Figure 2). Monitoring wells MW-1S (shallow) and MW-1D (deep) are paired monitoring wells located near the center of the project approximately 25 feet east from the edge of the CCB fill. The MW-1S is completed in alluvial sediments and MW-1D is completed in the deeper marine sediments of the Yorktown Formation.

The paired monitoring wells MW-2S (shallow) and MW-2D (deep) are constructed similar to the MW-1 pair. The MW-2 pair is located on a roadway constructed into the swamp and is approximately 160 feet downgradient from the edge of the CCB fill and 135 feet downgradient of MW-1S and MW-1D.

Another paired monitoring well set, MW-5S (shallow) and MW-5D (deep), is located upgradient of the Swift Creek Project on the west side of US Highway 301. Again, the

construction of this monitoring well set is similar with the shallow well screened in alluvial sandy sediments and the deeper well screened in the massive marine sediments.

Monitoring wells MW-3, MW-4, MW-6, MW-7 and MW-8 are shallow wells located at the southeast, southwest, northwest and northeast corners of the project. The borings were advanced through the alluvial material until the underlying marine unit was encountered as determined by split-spoon sampling. The alluvial material varied from a silty fine sand and clayey silty fine sand in the upper portion that generally coarsened downward. Borings at MW-5S, MW-6, MW-7 and MW-8 encountered medium to coarse quartz sand above the contact with the underlying marine unit.

All of the eleven borings were completed using 2-inch schedule 40 PVC with 10-foot slotted screens. The monitoring wells were completed with stick-up casing and 4-inch schedule 40 PVC protective casings with lockable caps.

### 3.3 SLUG-TEST ANALYSIS (From March 2006 CSA)

On January 8, 2006, Sherrill performed single-well slug-tests at the site on the shallow monitoring wells MW-2S, MW-5S and MW-7 and the deep monitoring wells MW-2D and MW-5D. The tests were performed by pumping water from the monitoring well and then recording the rate of recovery (rising head). The data was analyzed using the US Geological Survey, Open-File Report 02-197 *Documentation of Spreadsheets for the Analysis of Aquifer-Test and Slug-Test Data*. The Bouwer and Rice method was chosen for analysis of the data.

The analysis of the data revealed a large contrast in the hydraulic conductivity of the two geologic units. The overlying alluvial terrace deposit consisted of layers and mixtures of silt, clay, fine sand, medium sand, coarse sand and gravel. The terrace deposit at the site ranged in thickness from approximately 16 feet at the southwest (MW-4) and thinned towards the swamp to a thickness of approximately 8 feet (MW-2S). The percentage of sand and the grain size appeared to increase at lower elevations to the north and northeast (MW-6 and MW-7). The bottoms of the shallow monitoring well were placed at the contact with the top of the marine sediments and screen the lower 10 feet of the alluvial material. Hydraulic conductivities (K) of the tests conducted for MW-1S and MW-5S were very similar and ranged from 0.34 to 0.43 feet per day ( $1.2E-4$  to  $1.5E-4$  cm/sec). Hydraulic conductivity of the test conducted for MW-7, which has 6 feet of clean sand, was 1.40 feet per day ( $4.8 E-04$  cm/sec).

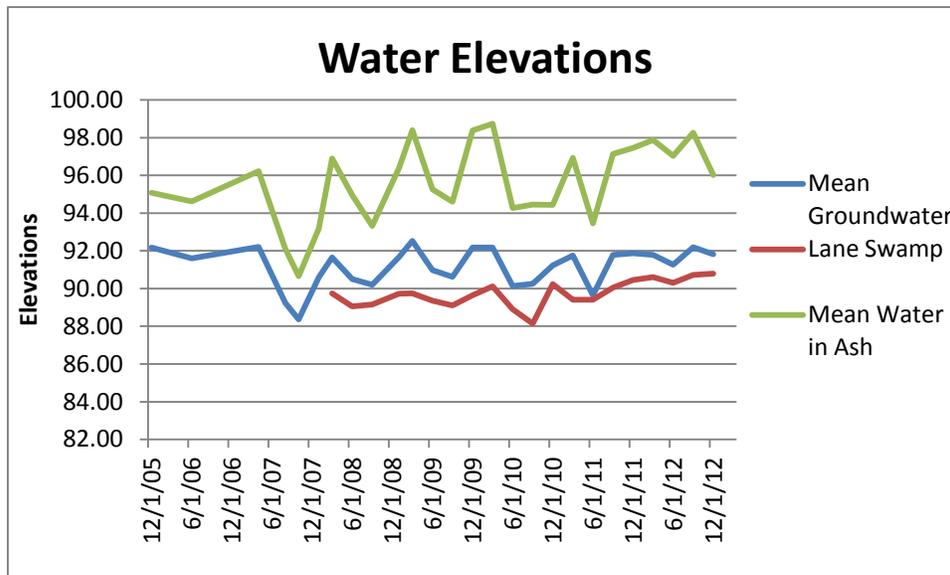
The deep monitoring wells, MW-1D and MW-5D are screened approximately 10 to 20 feet below the top of the marine sediments. The marine sediments are part of the Yorktown Formation and consist of a massive and uniformed, very shelly, greenish-gray silty very fine sand. Hydraulic conductivities for the deep wells were similar and ranged

from 0.0017 to 0.0026 feet per day ( $6.1E-7$  to  $9.0E-7$  cm/sec) and averaged 0.0022 feet per day ( $7.6E-7$  cm/sec).

Seepage velocities were calculated for groundwater movement in the west to east direction with data from MW-5S and MW-2S for alluvial material and MW-5D and MW-2D for marine sediments (Table 3). Seepage velocities were estimated at 0.0166 feet per day for alluvial material and 0.00009 feet per day for marine sediments.

#### 4.0 GROUNDWATER TABLE

The average groundwater elevation as measured in the shallow site monitoring wells from 2005 to 2012 is 91.22 feet with a standard deviation of 1.06 feet. The average water elevation as measured in piezometers screened in the coal ash fill (P-12 through P-20) from 2005 to 2012 is 95.62 feet with a standard deviation of 2.10 feet. The average surface water level measured at the Lane Swamp Bridge is 89.73 feet with a standard deviation of 0.69 feet. Surface water levels in Lane Swamp have been rising due to increased beaver activity. Beaver dams are visible from the 301 Highway Bridge where the water levels are measured.



The corrective measure of the longitudinal subsurface drain along the western portion of the site was completed in January 2008. The corrective measure did not appear to have a significant effect on lowering the site groundwater table but appears to have reduced the amount of fluctuation. Before the drain the average shallow groundwater elevation was 91.15 feet with a standard deviation of 1.66 feet. After installation of the drain, the average shallow groundwater elevation was 91.60 feet with a standard deviation of 0.84

feet. The longitudinal subsurface drain did not appear to have an effect on the water elevations in the CCB fill. The difference in the water elevation in the CCB fill and the elevation of the shallow groundwater table suggests that they are not connected. The separation is; however, not complete as evident from the detection of CCB related contaminants in the shallow groundwater table.

A map of the shallow groundwater table is shown on Figure 3. The map shows that the shallow groundwater flow is in an east northeast direction.

## 5.0 SAMPLE COLLECTION

On December 17, 2012, the site monitoring wells were purged using a new disposable polyethylene bailer for each well. On December 18, 2012, groundwater samples were collected within 24 hours after purging. The resting period allowed for possible particulate in the water to settle prior to sampling. No samples were collected at MW-2S due to the presence of a decaying deer body adjacent to the well. Samples were collected into laboratory prepared glassware, placed in an iced cooler and transferred to Enco Laboratories in Cary, North Carolina. Groundwater samples were analyzed for the Division's requested parameters of sulfate and total RCRA metals.

On December 18, 2012, surface water levels were collected at the three sampling stations. The surface water level at the Lane Swamp Bridge (not a sampling location) was higher than normal for this time of year due to a beaver dam located on the downstream side of the bridge.

## 6.0 GROUNDWATER ANALYSIS

The analytical results for this and the previous groundwater sampling event are summarized on Table 3 and the laboratory report is included in the Appendix. Exceedences of the NCAC 2L Groundwater Standard were detected in the groundwater samples from the shallow monitoring wells MW-1S, MW-3, MW-4, MW-6, MW-7 and MW-8 (Figure 4). No exceedance of the 2L Groundwater Standard was detected in the groundwater samples from the shallow upgradient monitoring well MW-5S. The analytical laboratory (Enco) reported that samples for MW-7 and MW-8 were diluted due to matrix interference. This resulted in elevated reporting limits for the RCRA metals.

Arsenic – The 2L Standard for arsenic is 0.010 mg/L. Arsenic was detected in the northeast monitoring wells in concentrations 0.031 mg/L at MW-6, less than 100 mg/L at MW-7 and 0.110 mg/L at MW-8. Arsenic was detected in the southeast monitoring wells in concentrations 0.018 mg/L at MW-1S and 0.013 mg/L at MW-3.

Lead – The 2L Standard for lead is 0.015 mg/L. Lead concentrations that exceeded the 2L Standard have typically been limited to the northeast portion of the site. Lead concentrations were 0.397 mg/L at MW-7 and 0.234 mg/L at MW-8. Lead was detected in a concentration of 0.095 mg/L in the sample from MW-4.

Cadmium – The 2L Standard for cadmium is 0.002 mg/L. Cadmium was detected in a concentration of 0.019 mg/L in the sample from MW-4.

Sulfate – The 2L Standard for sulfate is 250 mg/L. Concentrations of sulfate were detected in the southeastern downgradient monitoring well MW-3 at 910 mg/L. Sulfate concentrations in the northern portion of the site were 270 mg/L at MW-6, 700 mg/L at MW-7 and 580 mg/L at MW-8.

Barium was detected in concentrations less than the 2L Standard and above the NC Solid Waste Section Limit (SWSL). Chromium, mercury, silver and selenium were not detected in any concentration above the Solid Waste Section SWSLs.

## 7.0 SURFACE WATER ANALYSIS

The analytical results for this and the previous surface water sampling events are summarized on Table 4. No RCRA metals were detected in exceedance of the 2B Surface Standard. Barium was the only metal detected above the NC Solid Waste Section Limit (SWSL). Sulfate concentrations were less than 5 mg/L at SW-1 and SW-2 and 6.5 mg/L at SW-3. In summary, surface water analysis did not identify any indication of contamination.

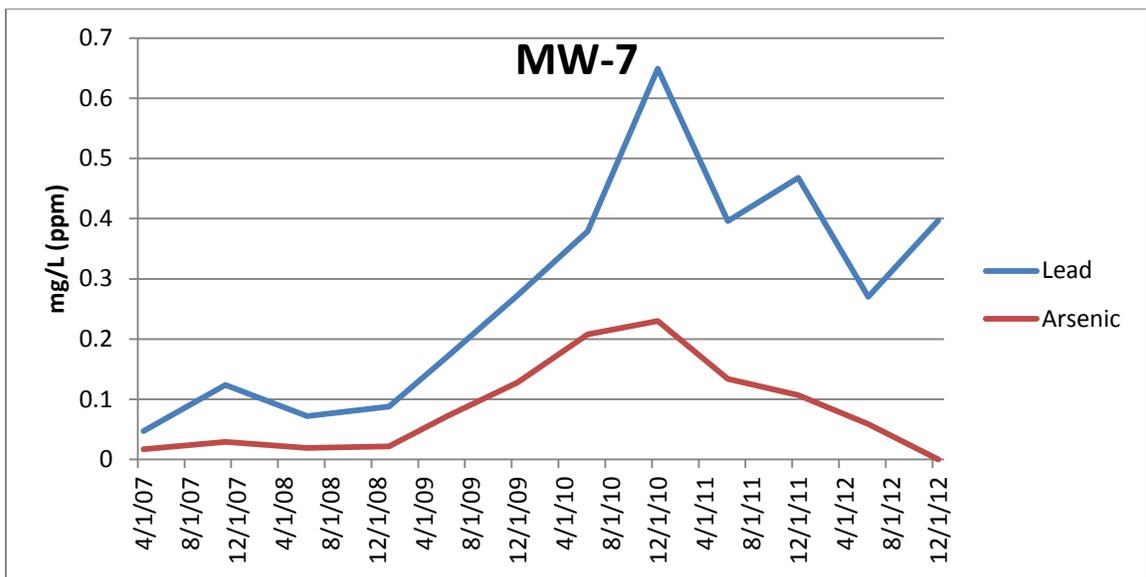
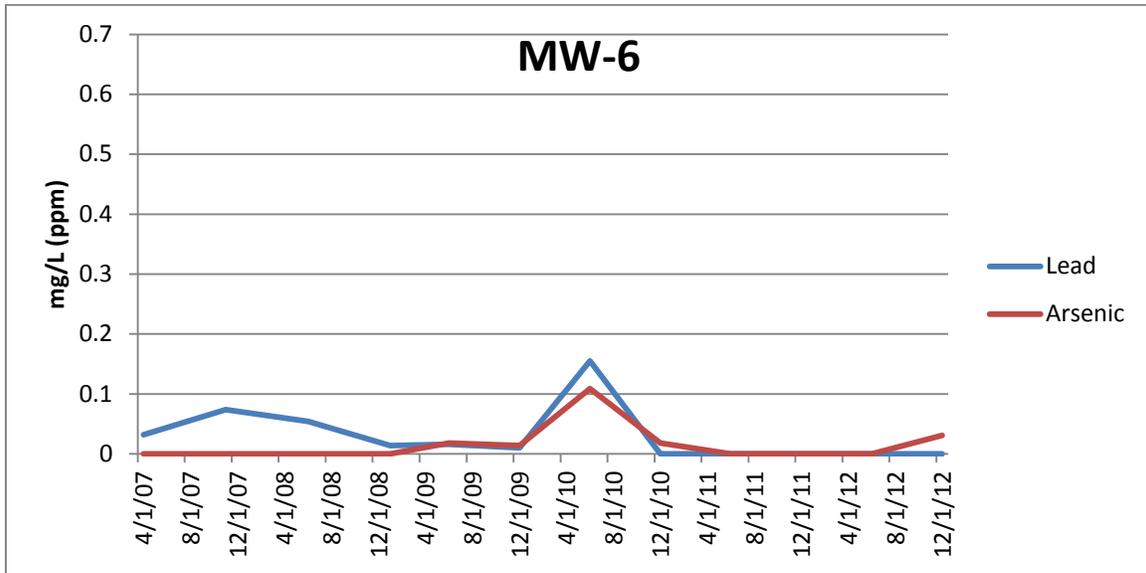
## 8.0 DISCUSSION AND SUMMARY

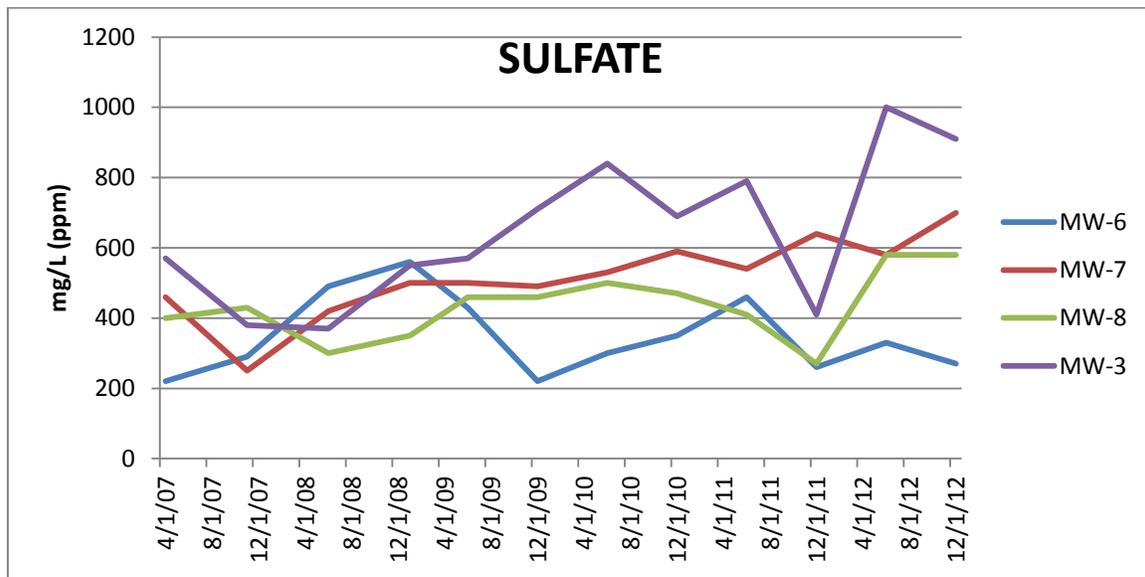
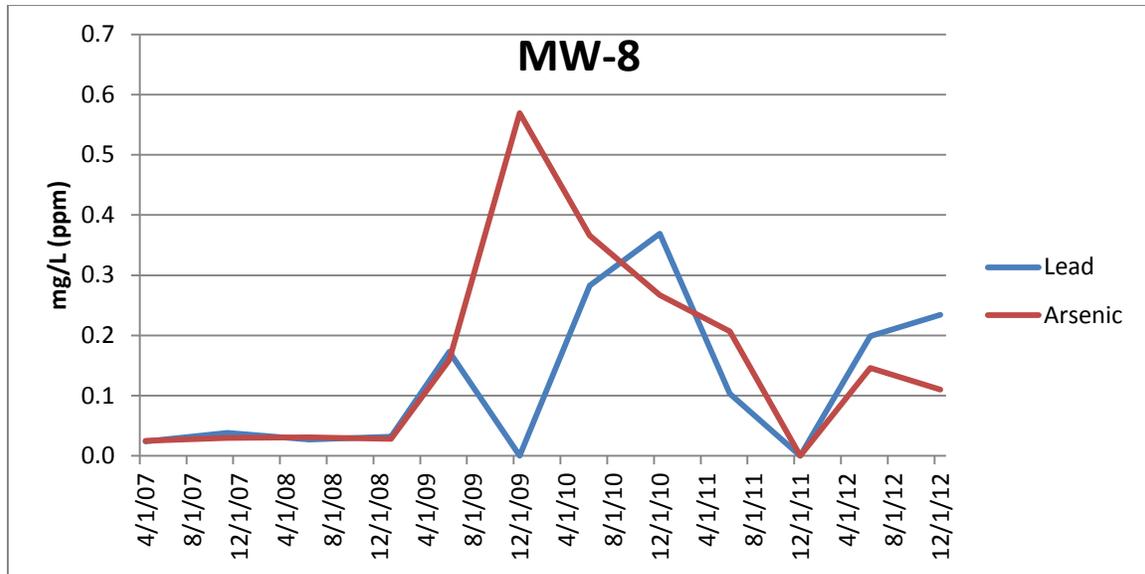
Exceedances of the 2L Groundwater Standard were detected in the samples from monitoring wells MW-1S, MW-3, MW-4, MW-6, MW-7 and MW-8. These wells monitor shallow groundwater downgradient of the CCB fill. No exceedance of a 2L Standard was detected in the upgradient monitoring well MW-5S. The deeper monitoring wells (MW-1D, MW-2D and MW-5D) were not sampled as it has been demonstrated that they are not in connection with the shallow site contamination.

The corrective measure of the longitudinal subsurface drain along the western portion of the site was completed in January 2008. The water elevations in the ash fill appear to have risen since the installation of the corrective measure. The elevation of groundwater appears to be approximately the same with a lower standard deviation suggesting that the subsurface drain has served to reduce site groundwater fluctuation. This data suggests a separation between the CCB fill and the shallow groundwater table. The separation is, however, not complete as evident from the detection of ash related contaminants in the

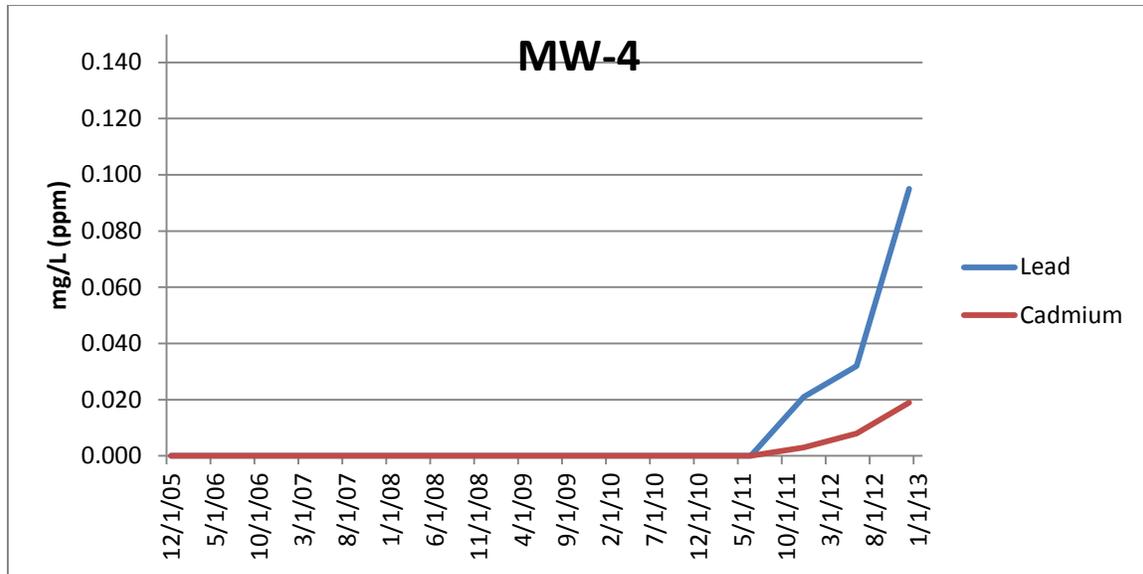
shallow groundwater table. This information also suggests that the source of the water present in the CCB fill is from on site precipitation.

The principal contaminants of interest at the site are arsenic, lead and sulfate. An increasing concentration trend of these contaminants had been identified at the monitoring wells located in the north and northeast. The last four sampling events have shown a general decreasing trend at MW-6, MW-7 and MW-8.





These data suggest that the concentrations of arsenic and lead maybe on a pathway of attenuation. When monitoring was initiated at the site in 2004, groundwater samples from MW-1S contained exceedances for arsenic, lead and sulfate. Sampling data has shown that the concentration of arsenic and lead at MW-1S have attenuated. The overall concentration of sulfate in the site groundwater appears to be attenuating but also shows up and down fluctuation.



The last three sampling events have shown an increasing trend of lead, cadmium and sulfate concentrations at the southwest monitoring well MW-4. Since June 2011, concentrations of cadmium have gone from less than detection to 0.003 mg/L to 0.008 mg/L to 0.019 mg/L. Lead concentrations have increased from less than detection to 0.021 mg/L to 0.032 mg/L to 0.095 mg/L. Sulfate concentrations have increased from 28 mg/L to 51 mg/L to 100 mg/L to 220 mg/L. At present, we have no explanation for the increasing concentrations at MW-4.

The hydrogeology of the site is characterized by three materials. The site surficial geology consists of an alluvial terrace constructed by the fluvial deposition of silts, sands and gravels. The top portion of the alluvial terrace has developed into an Altavista soil. The Altavista is described as a sandy loam from 0 to 14 inches and a sandy clay loam from 14 to 60 inches. Permeability tests on site samples of the Altavista subsoil were performed by Geotechnologies, Inc. Permeability values for the subsoil samples ranged from 1E-7 cm/sec to 7E-8 cm/sec. The alluvial terrace deposit at the site ranges from 8 to 16 feet thick and coarsens downward with some sand with gravel near the base. Slug test analysis of the terrace deposit showed a range of hydraulic conductivity of 1.2 E-4 cm/sec to 4.8 E-4 cm/sec. The terrace deposit overlies the massive and extensive Yorktown Formation. Slug test analysis of the upper Yorktown showed a range of hydraulic conductivity of 6.1 E-7 cm/sec to 9.0 E-7 cm/sec.

In summary, some shallow groundwater contamination is present adjacent and downgradient of the CCB fill. The contamination appears limited vertically as has been shown by no contaminants detected in the deeper monitoring wells. The contamination appears limited to the east side of Highway 301 as no contaminants have been detected in the upgradient shallow and deep pair of monitoring wells MW-5S and MW-5D on the west side of Highway 301. The direction of groundwater flow is to the east and

northeast. The shallow groundwater associated with the site is likely to discharge to the surface water of Lane Creek Swamp and the Swift Creek Swamp. Analysis of surface water samples has not indicated any contamination. No receptors are identifiable for this site and the low level of contamination attenuates as it migrates from the project area into the adjacent swamp.

## 9.0 RECOMMENDATIONS

Sherrill recommends continuing with the Assessment Monitoring. The next quarterly event for measuring water levels is scheduled for March 2013. The next semiannual event for measuring water levels and collecting groundwater and surface water samples is scheduled for June 2013.

# **TABLES**

**TABLE 1  
GROUNDWATER ELEVATIONS  
SWIFT CREEK PROJECT**

Sherrill Environmental, Inc.

	MW-1S	MW-3	MW-4	MW-6	MW-7	Average	MW-2S	MW-5S	MW-8	MW-1D	MW-2D	MW-5D	Lane Swamp
TOC ELV.	99.54	102.15	106.06	98.41	98.63		94.87	102.68	95.42	99.90	95.22	102.67	92.25
12/1/2005	8.21	9.65	11.24	7.17	7.63		4.72	6.01		8.57	4.70	6.40	
GW ELV.	91.33	92.50	94.82	91.24	91.00	92.18	90.15	96.67		91.33	90.52	96.27	
1/8/2006	8.11	9.48	10.15	7.18	7.74		NM	5.86		8.28	NM	5.68	
GW ELV.	91.43	92.67	95.91	91.23	90.89	92.43		96.82		91.62		96.99	
6/9/2006	8.69	10.32	11.41	7.74	8.66		4.83	6.94		9.05	4.87	6.84	
GW ELV.	90.85	91.83	94.65	90.67	89.97	91.59	90.04	95.74		90.85	90.35	95.83	
4/4/2007	7.80	9.31	9.96	7.28	7.80		4.40	6.12	4.84	8.18	4.75	5.96	
GW ELV.	91.74	92.84	96.10	91.13	90.83	92.53	90.47	96.56	90.58	91.72	90.47	96.71	
8/21/2007	10.89	11.40	13.28	10.80	10.71		6.77	9.57	7.67	11.30	6.82	9.42	
GW ELV.	88.65	90.75	92.78	87.61	87.92	89.54	88.10	93.11	87.75	88.60	88.40	93.25	
10/21/2007	11.40	12.98	14.06	11.90	11.41		7.31	10.62	8.30	11.76	7.43	10.63	
GW ELV.	88.14	89.17	92.00	86.51	87.22	88.61	87.56	92.06	87.12	88.14	87.79	92.04	
1/31/2008	9.13	10.70	14.11	8.44	8.71		4.86	7.65	5.57	9.42	5.02	8.11	
GW ELV.	90.41	91.45	91.95	89.97	89.92	90.74	90.01	95.03	89.85	90.48	90.20	94.56	
3/22/2008	8.10	9.18	13.28	7.18	7.79		4.40	6.98	4.78	8.44	4.54	7.34	2.51
GW ELV.	91.44	92.97	92.78	91.23	90.84	91.85	90.47	95.70	90.64	91.46	90.68	95.33	89.74
6/17/2008	9.12	10.54	14.05	8.36	9.06		5.03	8.93	6.09	9.42	5.23	8.92	3.20
GW ELV.	90.42	91.61	92.01	90.05	89.57	90.73	89.84	93.75	89.33	90.48	89.99	93.75	89.05
9/4/2008	9.26	10.98	14.82	8.92	9.06		4.58	10.87	5.97	9.47	5.02	10.72	3.10
GW ELV.	90.28	91.17	91.24	89.49	89.57	90.35	90.29	91.81	89.45	90.43	90.20	91.95	89.15
1/13/2009	8.22	9.35	13.41	7.02	7.60		4.26	7.16	4.58	8.55	4.46	7.54	2.52
GW ELV.	91.32	92.80	92.65	91.39	91.03	91.84	90.61	95.52	90.84	91.35	90.76	95.13	89.73
3/31/2009	7.60	6.74	12.43	6.81	7.20		4.36	5.98	4.21	7.96	4.38	6.22	2.50
GW ELV.	91.94	95.41	93.63	91.60	91.43	92.80	90.51	96.70	91.21	91.94	90.84	96.45	89.75
6/23/2009	8.62	10.06	13.86	7.72	8.52		4.41	9.83	5.56	8.92	4.77	9.63	2.90
GW ELV.	90.92	92.09	92.20	90.69	90.11	91.20	90.46	92.85	89.86	90.98	90.45	93.04	89.35
9/30/2009	8.86	10.82	14.70	8.08	8.51		4.64	10.40	5.50	9.18	5.00	10.26	3.15
GW ELV.	90.68	91.33	91.36	90.33	90.12	90.76	90.23	92.28	89.92	90.72	90.22	92.41	89.10
12/15/2009	7.54	8.68	12.85	6.78	7.13		4.22	6.30	4.21	NM	NM	NM	2.60
GW ELV.	92.00	93.47	93.21	91.63	91.50	92.36	90.65	96.38	91.21				89.65
3/31/2010	7.37	8.64	12.52	6.77	7.93		2.42	5.80	3.96	7.74	4.46	6.19	2.14
GW ELV.	92.17	93.51	93.54	91.64	90.70	92.31	92.45	96.88	91.46	92.16	90.76	96.48	90.11
6/29/2010	9.35	10.66	14.62	9.21	9.25		4.94	9.97	6.31	NM	NM	NM	3.35
GW ELV.	90.19	91.49	91.44	89.20	89.38	90.34	89.93	92.71	89.11				88.90
9/28/2010	9.23	11.55	14.80	9.11	8.52		4.80	10.85	5.48	10.05	5.50	11.10	4.10
GW ELV.	90.31	90.60	91.26	89.30	90.11	90.32	90.07	91.83	89.94	89.85	89.72	91.57	88.15
12/13/2010	8.54	10.12	14.02	7.37	7.93		4.36	8.72	4.81	NM	NM	NM	2.02
GW ELV.	91.00	92.03	92.04	91.04	90.70	91.36	90.51	93.96	90.61				90.23
3/28/2011	8.03	9.17	13.32	7.25	7.53		4.35	7.45	4.42	8.42	4.67	7.84	2.85
GW ELV.	91.51	92.98	92.74	91.16	91.10	91.90	90.52	95.23	91.00	91.48	90.55	94.83	89.40
6/26/2011	10.05	11.23	14.82	9.20	9.98		6.02	10.59	7.04	10.35	6.32	10.43	2.85
GW ELV.	89.49	90.92	91.24	89.21	88.65	89.90	88.85	92.09	88.38	89.55	88.90	92.24	89.40
9/28/2011	7.84	8.90	13.09	7.13	7.71		4.24	7.62	4.83	NM	NM	NM	2.20
GW ELV.	91.70	93.25	92.97	91.28	90.92	92.02	90.63	95.06	90.59				90.05
12/18/2011	8.00	8.88	13.10	6.98	7.53		4.32	7.35	4.47	8.35	4.65	7.70	1.80
GW ELV.	91.54	93.27	92.96	91.43	91.10	92.06	90.55	95.33	90.95	91.55	90.57	94.97	90.45
3/23/2012	8.01	8.89	13.01	7.03	7.75		4.31	7.35	4.80	8.35	4.56	7.66	1.65
GW ELV.	91.53	93.26	93.05	91.38	90.88	92.02	90.56	95.33	90.62	91.55	90.66	95.01	90.60
6/28/2012	8.39	9.40	13.38	7.42	8.45		4.65	8.52	5.63	8.72	4.92	8.54	1.95
GW ELV.	91.15	92.75	92.68	90.99	90.18	91.55	90.22	94.16	89.79	91.18	90.30	94.13	90.30
9/18/2012	7.41	8.21	12.73	6.82	7.37		4.16	7.21	4.51	7.86	4.50	7.45	1.52
GW ELV.	92.13	93.94	93.33	91.59	91.26	92.45	90.71	95.47	90.91	92.04	90.72	95.22	90.73
12/17/2012	8.04	9.19	13.36	6.82	7.37		NM	8.55	4.51	8.44	NM	8.76	1.45
GW ELV.	91.50	92.96	92.70	91.59	91.26	92.00		94.13	90.91	91.46		93.91	90.80
		Average Groundwater Elevation				91.40		94.56	Average GW Elv. At MW-5S (upgradient)				
		Standard Deviation (12/1/05-12/17/12)				1.04		1.71	Standard Deviation				
		Average Groundwater Elevation				91.15			Average SW Elv at Lane Swamp				89.73
		Standard Deviation (12/1/05-10/21/07)				1.66			Standard Deviation				0.69
		Average Groundwater Elevation				91.60							
		Standard Deviation (1/13/09-12/17/12)				0.84							

**TABLE 2  
PIEZOMETER WATER ELEVATIONS  
SWIFT CREEK PROJECT**

	P-12	P-13	P-14	P-15	P-16	P-17	P-18	P-19	P-20	Average	St. Dev.
12/1/05	96.00	96.71	93.08	93.83	93.64	94.23	95.12	98.41	94.61	95.07	1.70
6/10/06	95.93	97.23	91.60	92.19	92.89	93.80	95.51	97.82	94.66	94.63	2.19
9/25/06	97.92	98.89	93.43	94.75	94.16	95.11	97.04	99.56	95.24	96.23	2.19
8/21/07	93.11	95.09	88.16	90.18		88.59	93.67	94.80	93.20	92.10	2.74
10/22/07	91.60	93.45	87.67	87.09		87.69	93.07	93.11	91.54	90.65	2.72
1/31/08	94.47	94.43	89.93	92.15	91.13	93.96	93.33	94.93	94.20	93.17	1.72
3/22/08	97.84	98.56	95.17	96.47	95.00	94.93	95.64	102.24	96.27	96.90	2.37
6/17/08	96.04	97.04	92.68	91.66	93.58	94.14	94.99	99.23	95.25	94.96	2.30
9/4/08	94.89	95.19	90.66	90.96	NM	90.47	93.49	96.38	94.50	93.32	2.31
1/13/09	98.13	97.35	95.16	97.08	94.60	95.03	94.62	99.50	96.11	96.40	1.73
3/31/2009	100.94	101.09	96.72	98.12	95.58	95.29	96.51	104.45	96.98	98.41	3.09
6/23/2009	97.57	96.99	92.92	94.13	93.38	94.56	94.73	98.09	95.06	95.27	1.85
9/30/09	95.89	95.45	92.54	94.91	NM	94.43	93.35	95.56	94.73	94.61	1.15
12/15/09	100.42	100.53	96.16	98.51	NM	95.26	96.07	103.01	97.10	98.38	2.72
3/31/10	101.67	101.87	97.14	98.42	95.50	95.21	97.56	104.41	96.94	98.75	3.18
6/29/10	95.92	96.69	91.76	91.22	92.45	93.08	94.61	97.84	94.80	94.26	2.29
9/28/10	94.10	97.85	95.30	93.09	93.70	93.14	94.71	94.32	93.90	94.46	1.45
12/14/10	95.64	95.89	92.48	93.34	92.80	93.81	94.26	97.08	94.70	94.44	1.53
3/28/11	98.46	99.46	94.73	96.70	94.20	95.00	96.63	101.26	96.03	96.94	2.36
6/26/11	95.38	96.21	91.10	90.56	91.80	89.86	94.38	97.27	94.57	93.46	2.68
9/28/11	98.74	99.34	94.32	96.40		95.03	96.78	100.43	96.12	97.15	2.15
12/18/11	99.29	100.49	94.23	96.41		95.01	97.14	101.12	96.00	97.46	2.56
3/23/12	99.66	100.86	94.74	96.59		95.09	97.65	102.03	96.47	97.89	2.69
6/29/12	98.84	99.58	94.07	95.69		94.93	96.70	100.51	96.03	97.04	2.33
9/18/12	100.19	101.15	94.86	96.88		95.19	98.01	103.01	96.79	98.26	2.92
12/18/12	97.83	98.04	93.09	94.22		94.61	95.85	99.29	95.20	96.02	2.16
Average										95.62	2.10
	Average Water Elevation in Ashfill (12/05 to 10/07)					93.74					
	Standard Deviation					2.29					
	Average Water Elevation in Ashfill (3/08 to 12/12)					96.22					
	Standard Deviation					1.75					

**TABLE 3**  
**SUMMARY OF GROUNDWATER ANALYSES**  
**SWIFT CREEK PROJECT**

		Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury	Sulfate
<b>NCAC</b>	<b>2L Std.</b>	0.01	0.7	0.002	0.01	0.015	0.02	0.02	0.001	250
<b>NCDWM</b>	<b>SWSL</b>	0.01	0.1	0.001	0.01	0.01	0.01	0.01	0.0002	250
<b>MW-1S</b>	6/7/04	<b>0.028</b>	0.190	<0.001	<0.01	<b>0.068</b>	<0.01	<0.01	<0.0002	<b>490</b>
	12/1/05	<b>0.020</b>	0.170	<0.001	<0.01	<b>0.042</b>	<0.01	<0.01	<0.0002	<b>608</b>
	6/10/06	<b>0.012</b>	0.472	<0.001	<0.01	<b>0.052</b>	<0.01	<0.01	0.00064	<b>740</b>
	4/5/07	<0.01	0.458	<0.001	<0.01	<0.010	<0.01	<0.01	0.00047	<b>420</b>
	11/15/07	<0.01	0.529	<0.001	<0.01	<b>0.031</b>	<0.01	<0.01	0.00089	<b>520</b>
	6/18/08	<0.01	0.619	<0.001	<0.01	0.011	<0.01	<0.01	0.00051	<b>470</b>
	1/14/09	<0.01	0.416	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	210
	6/24/09	<0.01	0.412	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	220
	12/16/09	<0.01	0.256	0.001	<0.01	<0.010	<b>0.022</b>	<0.01	<0.0002	160
	6/30/10	<b>0.012</b>	0.691	0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	<b>280</b>
	12/14/10	<0.01	0.599	<b>0.003</b>	<0.01	<0.010	<0.01	<0.01	<0.0002	<b>400</b>
	6/27/11	<0.10	0.475	<0.01	<0.10	<0.10	<0.10	<0.10	<0.00028	<b>590</b>
	12/19/11	<0.050	0.422	<0.005	<0.050	<0.050	<0.050	<0.050	<0.0002	170
	6/29/12	<0.01	0.419	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	150
	12/18/12	<b>0.018</b>	0.567	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	180
<b>MW-1D</b>	6/7/04	<0.01	0.540	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	13
	12/1/05	<0.01	0.360	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	7.7
	6/10/06	<0.01	0.341	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	20
	4/5/07	<0.01	0.343	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	12
	10/22/07	<0.01	0.365	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	11
	6/18/08	<0.01	0.334	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	14
	1/14/08	<0.01	0.356	NR	NR	<0.010	NR	NR	<0.0002	14
	6/24/09	<0.01	0.403	NR	NR	<0.010	NR	NR	<0.0002	20
<b>MW-2S</b>	6/22/04	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	32
	12/1/05	<0.01	0.180	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	10.1
	6/10/06	<0.01	0.198	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<5
	4/5/07	<0.01	0.232	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	4.4
	10/22/07	<0.01	0.256	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	3.6
	6/18/08	<0.01	0.103	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	4.4
	1/14/09	<0.01	0.164	NR	NR	<0.010	NR	NR	<0.0002	<5
	6/24/09	<0.01	0.173	NR	NR	<0.010	NR	NR	<0.0002	<5
	12/16/09	<0.01	0.218	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	<5
	6/30/10	<0.01	0.229	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	<5
	12/14/10	<0.01	0.235	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	<5
	6/27/11	<0.01	0.182	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	<5
	12/19/11	<0.01	0.216	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	<5
	6/29/12	<0.01	0.178	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	<5
<b>MW-2D</b>	6/22/04	<0.01	0.170	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	5.6
	12/1/05	<0.01	0.300	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	3.1
	6/10/06	<0.01	0.290	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	11
	4/5/07	<0.01	0.254	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	2.9
	10/22/07	<0.01	0.273	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	4.8
	6/18/08	<0.01	0.265	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	22
	1/14/09	<0.01	0.253	NR	NR	<0.010	NR	NR	<0.0002	16
	6/24/09	<0.01	0.289	NR	NR	<0.010	NR	NR	<0.0002	6.3

**TABLE 3**  
**SUMMARY OF GROUNDWATER ANALYSES**  
**SWIFT CREEK PROJECT**

		Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury	Sulfate
<b>NCAC</b>	<b>2L Std.</b>	0.01	0.7	0.002	0.01	0.015	0.02	0.02	0.001	250
<b>NCDWM</b>	<b>SWSL</b>	0.01	0.1	0.001	0.01	0.01	0.01	0.01	0.0002	250
<b>MW-5S</b>	12/1/05	<0.01	0.450	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	6.1
	6/10/06	<0.01	0.121	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	7
	4/5/07	<0.01	0.218	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	4.7
	10/22/07	<0.01	0.278	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	4.9
	6/18/08	<0.01	0.046	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	8.7
	1/14/09	<0.01	0.051	NR	NR	<0.010	NR	NR	<0.0002	10
	6/24/09	<0.01	0.058	NR	NR	<0.010	NR	NR	<0.0002	13
	12/16/09	<0.01	0.056	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	17
	6/30/10	<0.01	0.057	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	12
	12/14/10	<0.01	0.102	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	14
	6/27/11	<0.01	0.064	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	17
	12/19/11	<0.01	0.087	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	21
	6/29/12	<0.01	0.095	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	22
	12/18/12	<0.01	0.131	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	25
<b>MW-5D</b>	12/1/05	<0.01	0.170	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	8.1
	6/10/06	<0.01	0.236	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	6
	4/5/07	<0.01	0.227	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	5.8
	10/22/07	<0.01	0.258	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	6.6
	6/18/08	<0.01	0.254	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	10
	1/14/09	<0.01	0.255	NR	NR	<0.010	NR	NR	<0.0002	10
	6/24/09	<0.01	0.261	NR	NR	<0.010	NR	NR	<0.0002	17
<b>MW-3</b>	12/1/05	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<b>334</b>
	6/10/06	<0.01	0.192	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<b>580</b>
	4/5/07	<0.01	0.342	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	<b>570</b>
	11/15/07	<0.01	0.133	<0.001	<0.01	<b>0.036</b>	<0.01	<0.01	<0.0002	<b>380</b>
	6/18/08	<0.01	0.145	<0.001	<0.01	<b>0.022</b>	<0.01	<0.01	<0.0002	<b>370</b>
	1/14/09	<0.01	0.144	<0.001	<0.01	0.013	<0.01	<0.01	<0.0002	<b>550</b>
	6/24/09	<0.01	0.202	<0.001	<0.01	<b>0.081</b>	<0.01	<0.01	<0.0002	<b>570</b>
	12/16/09	<b>0.012</b>	0.192	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	<b>710</b>
	6/30/10	<b>0.011</b>	0.094	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	<b>840</b>
	12/14/10	<0.01	0.125	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	<b>690</b>
	6/27/11	<0.10	0.119	<0.01	<0.10	<0.10	<0.10	<0.10	<0.0002	<b>790</b>
	12/19/11	<0.01	0.234	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<b>410</b>
	6/29/12	<0.01	0.125	<0.001	<0.01	<0.01	<0.05	<0.01	<0.0002	<b>1,000</b>
	12/18/12	<b>0.013</b>	0.136	<0.001	<0.01	<0.01	0.011	<0.01	<0.0002	<b>910</b>
<b>MW-4</b>	12/1/05	<0.01	0.460	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	5.7
	6/10/06	<0.01	0.171	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<5
	4/5/07	<0.01	<0.100	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	8.6
	10/22/07	<0.01	0.147	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	5.9
	6/18/08	<0.01	0.198	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	5.4
	1/14/09	<0.01	0.083	NR	NR	<0.010	NR	NR	<0.0002	6.4
	6/24/09	<0.01	0.349	NR	NR	<0.010	NR	NR	<0.0002	7.7
	12/16/09	<0.01	0.121	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	7.5
	6/30/10	<0.01	0.181	<0.001	0.018	<0.010	<0.01	<0.01	0.0006	15
	12/14/10	<b>0.016</b>	0.195	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	16
	6/27/11	<0.01	0.227	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	28
	12/19/11	<0.01	0.516	<b>0.003</b>	<0.01	<b>0.021</b>	<0.01	<0.01	<0.0002	51
	6/29/12	<0.01	0.356	<b>0.008</b>	<0.01	<b>0.032</b>	<0.01	<0.01	<0.0002	100
	12/18/12	<0.01	0.262	<b>0.019</b>	<0.01	<b>0.095</b>	<0.01	<0.01	<0.0002	220

**TABLE 3**  
**SUMMARY OF GROUNDWATER ANALYSES**  
**SWIFT CREEK PROJECT**

		Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury	Sulfate
<b>NCAC</b>	<b>2L Std.</b>	0.01	0.7	0.002	0.01	0.015	0.02	0.02	0.001	250
<b>NCDWM</b>	<b>SWSL</b>	0.01	0.1	0.001	0.01	0.01	0.01	0.01	0.0002	250
<b>MW-6</b>	12/1/05	<0.01	1.300	<0.001	<0.01	0.01	<0.01	<0.01	<0.0002	174
	6/10/06	<0.01	0.816	<0.001	<0.01	0.013	<0.01	<0.01	<0.0002	<b>510</b>
	4/5/07	<0.01	0.312	<0.001	<0.01	<b>0.032</b>	<0.01	<0.01	<0.0002	220
	11/15/07	<0.01	0.120	<0.001	<0.01	<b>0.074</b>	<0.01	<0.01	0.00026	<b>290</b>
	6/18/08	<0.01	0.080	<0.001	<0.01	<b>0.054</b>	<0.01	<0.01	0.00091	<b>490</b>
	1/14/09	<0.01	0.066	NR	NR	0.014	NR	NR	<0.0002	<b>560</b>
	6/24/09	0.018	0.155	NR	NR	<b>0.016</b>	NR	NR	0.00026	<b>430</b>
	12/16/09	<b>0.014</b>	0.126	<0.001	<0.01	0.010	<0.01	<0.01	<0.0002	220
	6/30/10	<b>0.109</b>	0.313	<0.001	<0.01	<b>0.155</b>	<0.01	<0.01	0.0003	<b>300</b>
	12/14/10	<b>0.018</b>	0.138	<0.001	<0.01	<0.010	<0.01	<0.01	<0.0002	<b>350</b>
	6/27/11	<0.10	0.717	<0.01	<0.10	<0.10	<0.10	<0.10	0.00095	<b>460</b>
	12/19/11	<0.01	0.148	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<b>260</b>
	6/29/12	<0.05	0.156	<0.001	<0.01	<0.01	<0.05	<0.01	<0.0002	<b>330</b>
	12/18/12	<b>0.031</b>	0.131	<0.001	<0.01	<0.01	0.012	<0.01	<0.0002	<b>270</b>
<b>MW-7</b>	12/1/05	0.038	<0.10	<0.001	<0.01	<b>0.093</b>	<0.01	<0.01	<0.0002	<b>379</b>
	6/10/06	0.03	0.059	<0.001	<0.01	<b>0.053</b>	<0.01	<0.01	<0.0002	<b>500</b>
	4/5/07	0.017	<0.100	<0.001	<0.01	<b>0.047</b>	<0.01	<0.01	0.0003	<b>460</b>
	11/15/07	0.029	<0.100	<0.001	<0.01	<b>0.124</b>	<0.01	<0.01	0.00072	<b>250</b>
	6/18/08	0.019	0.042	<0.001	<0.01	<b>0.072</b>	<0.01	<0.01	<0.0002	<b>420</b>
	1/14/09	0.022	0.052	<0.001	<0.01	<b>0.088</b>	<0.01	<0.01	<0.0002	<b>500</b>
	6/24/09	<b>0.072</b>	0.080	<0.001	<0.01	<b>0.171</b>	<0.01	<0.01	<0.0002	<b>500</b>
	12/16/09	<b>0.128</b>	0.123	<0.01	<0.01	<b>0.273</b>	<0.10	<0.10	0.0006	<b>490</b>
	6/30/10	<b>0.208</b>	0.172	<0.01	<0.01	<b>0.379</b>	<0.10	<0.10	0.0002	<b>530</b>
	12/14/10	<b>0.230</b>	0.255	<0.01	<0.01	<b>0.649</b>	<0.10	<0.10	0.00057	<b>590</b>
	6/27/11	<b>0.134</b>	0.159	<0.01	<0.10	<b>0.396</b>	<0.10	<0.10	0.00033	<b>540</b>
	12/19/11	<b>0.107</b>	0.172	<0.01	<0.10	<b>0.468</b>	<0.10	<0.10	<0.0002	<b>640</b>
	6/29/12	<b>0.059</b>	0.120	<0.005	<0.05	<b>0.270</b>	<0.05	<0.05	<0.0002	<b>580</b>
	12/18/12	<b>&lt;0.100</b>	0.158	<0.01	<0.10	<b>0.397</b>	<0.10	<0.10	<0.0002	<b>700</b>
<b>MW-8</b>	4/5/07	0.025	<0.100	<0.001	<0.01	<b>0.024</b>	<0.01	<0.01	<0.0002	<b>400</b>
	11/15/07	0.030	<0.100	<0.001	<0.01	<b>0.038</b>	<0.01	<0.01	<0.0002	<b>430</b>
	6/18/08	0.031	0.048	<0.001	<0.01	<b>0.027</b>	<0.01	<0.01	<0.0002	<b>300</b>
	1/14/09	0.028	0.039	NR	NR	<b>0.032</b>	NR	NR	<0.0002	<b>350</b>
	6/24/09	<b>0.159</b>	0.114	NR	NR	<b>0.173</b>	NR	NR	0.0003	<b>460</b>
	12/16/09	<b>0.569</b>	0.286j	<0.016	<0.050	<b>0.376j</b>	<0.135	<0.095	0.0002	<b>460</b>
	6/30/10	<b>0.366</b>	0.232	<0.016	<0.050	<b>0.283</b>	<0.135	<0.095	0.0002	<b>500</b>
	12/14/10	<b>0.267</b>	0.243	<0.01	<0.100	<b>0.369</b>	<0.100	<0.100	<b>0.0013</b>	<b>470</b>
	6/27/11	<b>0.207</b>	0.223	<0.01	<0.100	<b>0.103</b>	<0.100	<0.100	<0.0002	<b>410</b>
	12/19/11	<0.100	0.321	<0.01	<0.100	<0.100	<0.100	<0.100	<0.0002	<b>270</b>
	6/29/12	<b>0.146</b>	0.169	<0.005	<0.05	<b>0.199</b>	<0.05	<0.05	<0.0002	<b>580</b>
	12/18/12	<b>0.110</b>	0.168	<0.01	<0.100	<b>0.234</b>	<0.10	<0.10	<0.0002	<b>580</b>
Concentrations in mg/L (ppm), "j" = estimated concn										
Bold values exceed the 2L Groundwater Standard										
MW-1S, MW-2S and MW-5S are screened shallow (approx. 3 to 13 feet).										
MW-1D, MW-2D, and MW-5D are screened deep (approx. 23 to 33 feet).										
MW-3, MW-4, MW-6 and MW-7 are shallow wells located on the SE, SW, NW and NE corners.										

**TABLE 4**  
**SUMMARY OF SURFACE WATER ANALYSES**  
**SWIFT CREEK PROJECT**

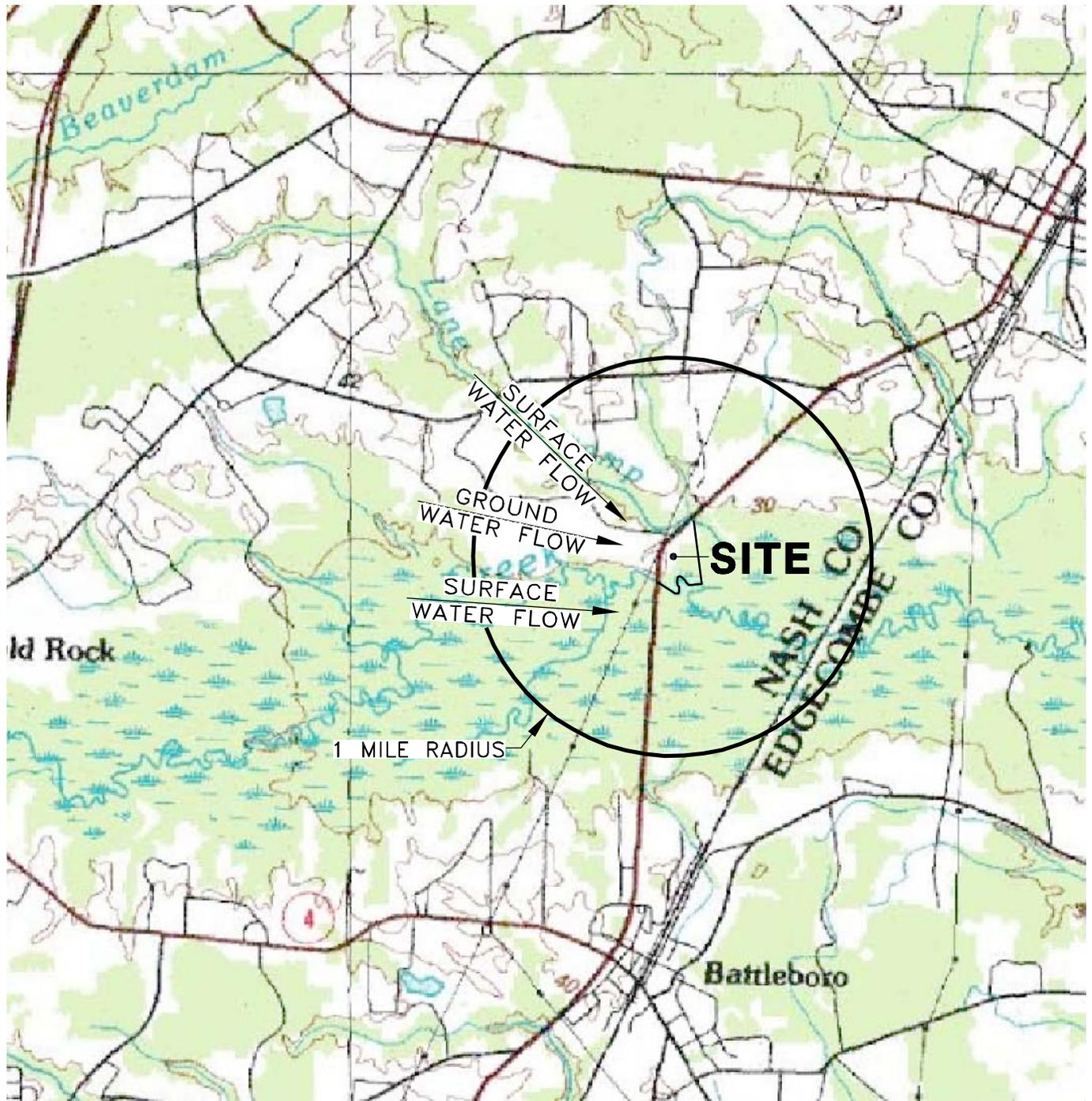
		Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury	Sulfate
<b>NCAC</b>	<b>2B Std.</b>	0.05	1.0	0.002	0.05	0.025	0.005	0.06	0.000012	250
<b>NCDWM</b>	<b>SWSL</b>	0.01	0.1	0.001	0.01	0.01	0.01	0.01	0.0002	
<b>SW-1</b>	3/4/03	<0.01	<0.10	<0.001	<0.01	<0.005	<0.01	<0.01	<0.0002	12
	6/22/04	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<2.0
	12/1/05	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	6.3
	6/10/06	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<5
	4/5/07	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	6.6
	10/22/07	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	3.8
	6/18/08	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	2.5
	1/14/09	<0.01	<0.10	NR	NR	<0.01	NR	NR	<0.0002	5.6
	6/24/09	<0.01	0.03	NR	NR	<0.01	NR	NR	<0.0002	<5
	12/16/09	<0.01	0.048	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	6.2
	6/30/10	<0.01	0.032	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<5
	12/14/10	<0.01	0.025	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<5
	6/27/11	<0.01	0.041	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<5
	12/19/11	<0.01	0.025	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<5
	12/18/12	<0.01	0.028	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<5
<b>SW-2</b>	3/4/03	<0.01	<0.10	<0.001	<0.01	<0.005	<0.01	<0.01	<0.0002	13
	6/22/04	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<2.0
	12/1/05	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	10.2
	6/10/06	<0.01	0.090	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<5
	4/5/07	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	3.5
	10/22/07	DRY								
	7/8/08	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	13
	1/14/09	<0.01	<0.10	NR	NR	<0.01	NR	NR	<0.0002	6.1
	6/24/09	<0.01	0.088	NR	NR	<0.01	NR	NR	<0.0002	<5
	12/16/09	<0.01	0.025	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	7.5
	6/30/10	DRY								
	12/14/10	<0.01	0.034	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	5.3
	6/27/11	DRY								
	12/19/11	<0.01	0.027	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<5
	12/18/12	<0.01	0.031	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	<5
<b>SW-3</b>	4/5/07	<0.01	<0.10	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	2.4
	10/22/07	DRY								
	6/18/08	<0.01	0.089	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	3.3
	1/14/09	<0.01	<0.10	NR	NR	<0.01	NR	NR	<0.0002	20
	6/24/09	<0.01	0.087	NR	NR	<0.01	NR	NR	<0.0002	<5
	12/16/09	<0.01	0.075	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	14
	6/30/10	<0.01	0.328	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	47
	12/14/10	<0.01	0.074	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	16
	6/27/11	DRY								
	12/19/11	<0.01	0.065	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	8
	12/18/12	<0.01	0.067	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0002	6.5
Concentrations in mg/L (ppm)										
Bold values exceed the 2B Surface Water Standard										
SW-1 Swift Creek at bridge (background).										
SW-2 in swamp near MW-2S and MW-2D										
SW-3 in Lane Swamp north of MW-8										

**TABLE 5  
MONITORING WELL AND PIEZOMETER SUMMARY  
SWIFT CREEK PROJECT**

Piezometer	Top of Casing Elev.	Ground Surface Elev.	Casing Stick Up	Screen Interval	Total Depth (TOC)	Measured Total Depth 8/2007	Ash/Soil Contact	Ash/Soil Contact Elev.	Alluvial/ Marine contact Elev.	Comments
P-1	108.19	105.6	2.6	20-30	32.6		14.4	91.2		Missing
P-2	109.53	106.7	2.8	20-30	32.8	33.90	16.1	90.6		
P-3	106.18	104.4	1.8	18-28	30.0		12.5	91.9		
P-4	106.57	104.0	2.6	20-30	32.6		14.0	90.0		Damaged
P-5	108.39	105.9	2.5	20-30	32.5	32.57	13	92.9		
P-6	109.79	107.5	2.3	20-30	32.3	32.35	13.5	94.0		
P-7	107.77	105.9	1.9	30-40	41.9	42.30	14.3	91.6	82.9	Damaged
P-8	106.53	103.9	2.6	30-40	42.6	42.15	13.3	90.7	82.9	
P-9	103.32	100.9	2.4	20-30	32.4	32.87	Soil		87.0	Damaged
P-10	108.17	106.1	2.1	20-30	32.1		Soil		89.1	Removed
P-11	101.88	99.2	2.7	13-23	25.7		Soil		82.0	Removed
P-12	107.04	104.0	3.0	6-16	19.0	19.44	13.8	90.2		
P-13	108.99	105.9	3.1	6-16	19.1	19.16	13.3	92.7		
P-14	105.38	101.9	3.5	4-14	17.5	17.95	11.5	90.4		
P-15	103.76	101.0	2.8	4-14	16.8	16.85	11.1	89.9		
P-16	105.28	102.1	3.2	4-14	17.2		11.5	90.6		Damaged
P-17	105.31	101.8	3.5	4-14	17.5	17.93	11.5	90.3		
P-18	111.21	107.5	3.7	5-15	18.7	18.30	13.5	94.0		
P-19	111.86	108.3	3.6	7-17	20.6	20.00	15.2	93.1		
P-20	107.00	104.2	2.8	7-17	19.8	19.94	15.0	89.2		
P-21	104.99	99.5	5.5	4.5-11.5	16.5	16.60	9.5	90.0		
P-22	103.60	101.8	1.8	17-27	28.8		Soil		87.0	
P-23	109.75	107.1	2.7	9-19	21.8		12.0	95.0	90.0	
P-24	103.17	101.1	2.1	3-13	15.3		Soil		90.0	
B-1	107.66	105.7	2.0	14-19	21.0	19.40	13.5	92.2	88.9	1" casing
<b>Monitoring Wells</b>										
MW-1S	99.54	96.8	2.7	3-13	15.7				84.0	
MW-1D	99.90	97.1	2.8	23-33	35.7				84.0	
MW-2S	94.87	92.1	2.8	6-16	18.7				78.5	
MW-2D	95.22	92.2	3.0	26-36	39.1				78.5	
MW-3	102.15	99.2	3.0	7-17	20.0				82.2	
MW-4	106.06	104.1	2.0	8-18	20.0				89.1	
MW-5S	102.68	99.7	3.0	6-16	17.0				88.2	
MW-5D	102.67	99.8	2.9	25-35	37.9				88.2	
MW-6	98.41	95.0	3.4	6-16	19.4				79.0	
MW-7	98.63	95.1	3.5	6-16	19.5				79.0	
MW-8	95.42	92.4	3.0	6-16	19.0				76.4	

# FIGURES

# REUSE TECHNOLOGY, INC. SWIFT CREEK PROJECT



**FIGURE 1**  
**SITE LOCATON**  
**MAP**



3326 Rugby Rd.  
Durham N.C. 27707  
Phone (919) 493-6555  
sherrill@nc.rr.com

ACE JOB #  
01-060

SCALE:  
1"=4,000'

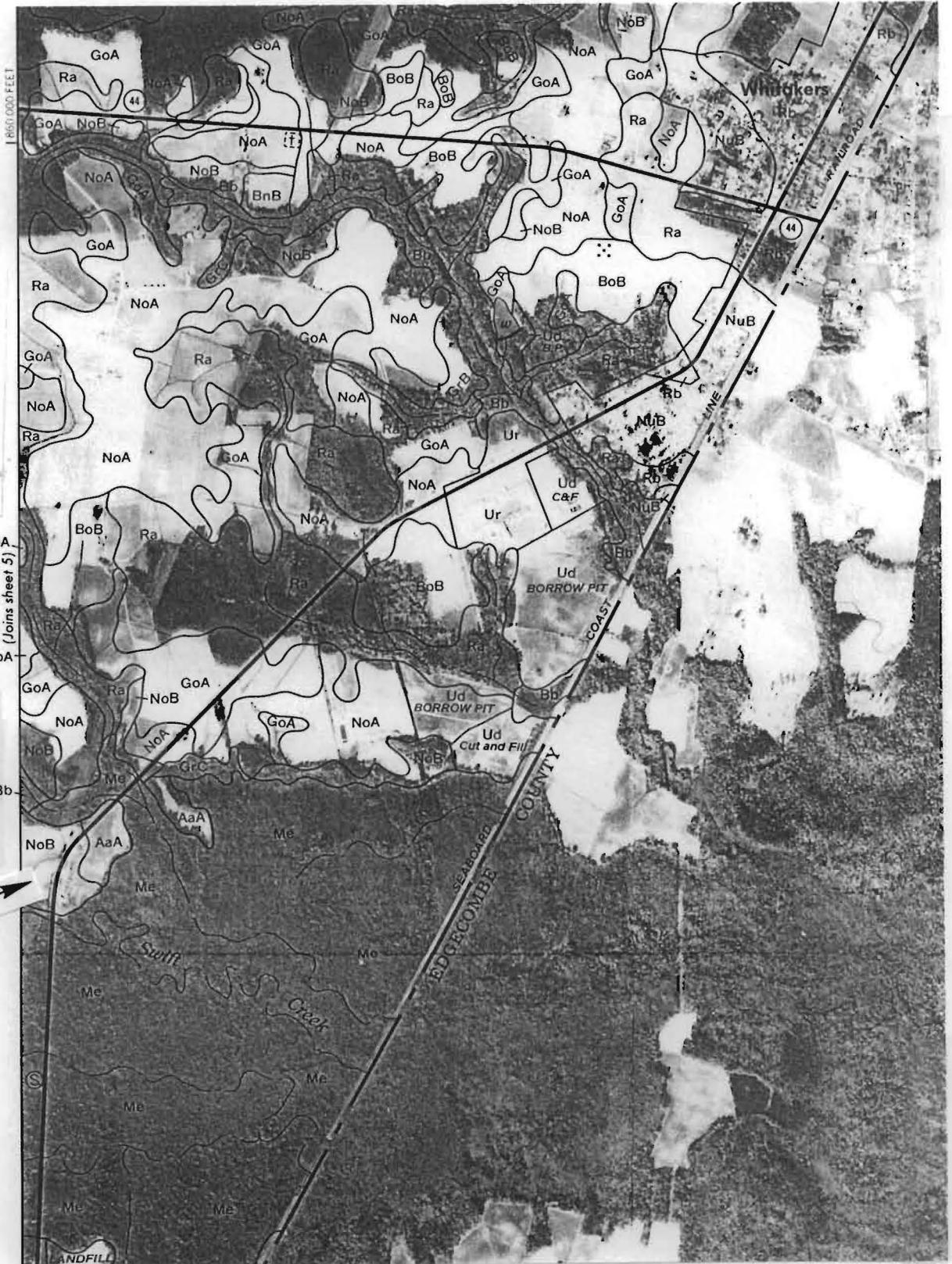


DATE:  
6-27-11

SHEET #:  
1 OF 4

**APPIAN CONSULTING ENGINEERS, P.A.**  
CIVIL, MUNICIPAL & STRUCTURAL ENGINEERS  
COMPREHENSIVE ENVIRONMENTAL SERVICES  
P.O. Box 7966 / Rocky Mount, N.C. 27804  
Phone: (252) 972-7703 / Fax: (252) 972-7638  
www.appianengineers.com





Site


 TRIANGLE ENVIRONMENTAL INC.  
 P.O. Box 41087  
 Raleigh, N.C. 27629  
 (919) 876-5115  
 (800) 849-5115  
 (919) 790-8273 fax

PROJECT : **ReUse- Swift Creek Project**  
**Soil Survey Map of Nash County, NC**

PROJ. # 461-0109  
 DRWN BY :  
 SCALE : 1" = 2000'

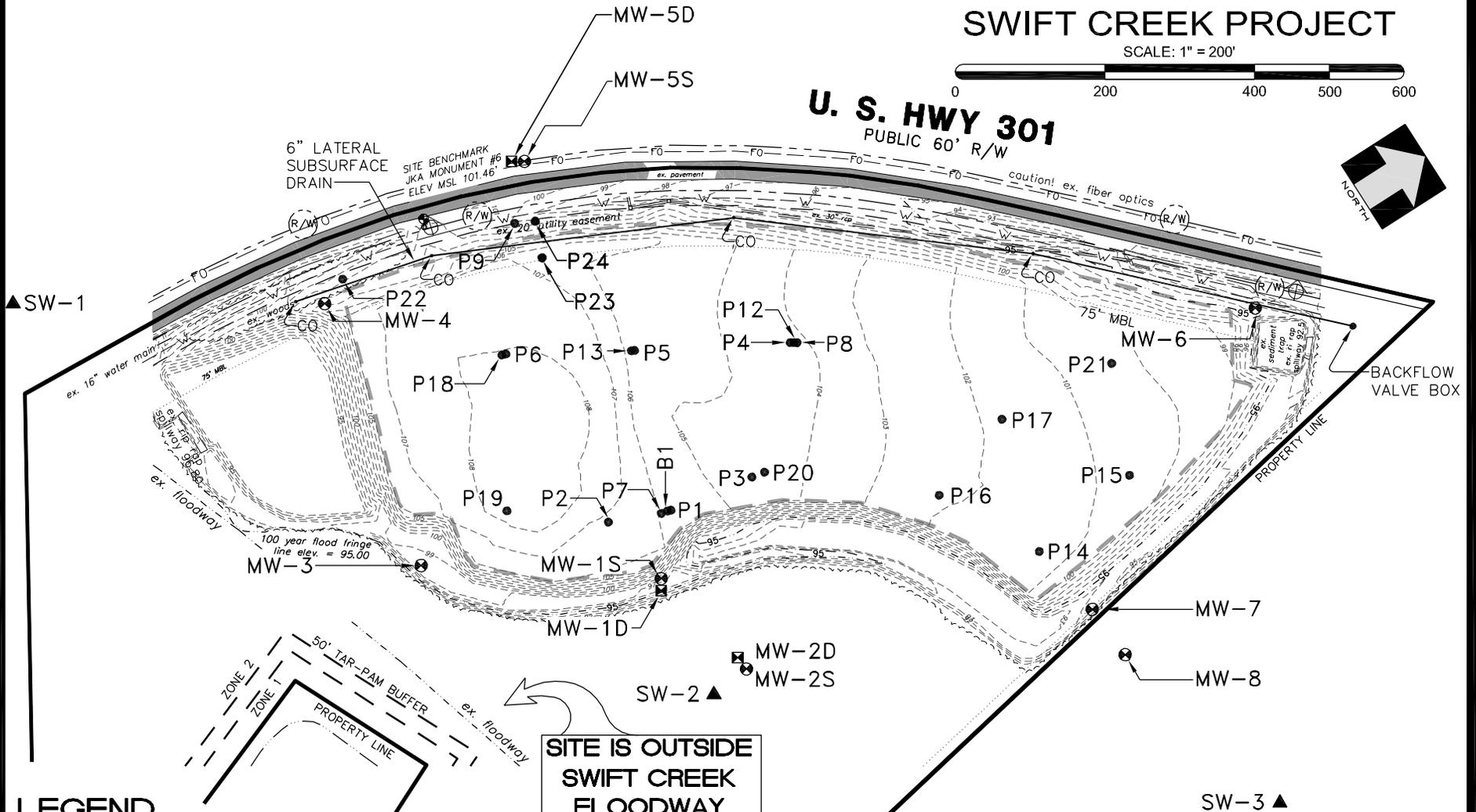
FIGURE : **FIGURE 1-2**

# REUSE TECHNOLOGY, INC. SWIFT CREEK PROJECT

SCALE: 1" = 200'



**U. S. HWY 301**  
PUBLIC 60' R/W



## LEGEND

- ⊗ SHALLOW MONITORING WELL (ALLUVIAL TERRACE)
- ⊠ DEEP MONITORING WELL (MARINE SEDIMENTS)
- PIEZOMETER
- ▲ SURFACE WATER LOCATION
- - - LIMITS OF ASH FILL PER PAUL ODEN WITH REUSE TECHNOLOGIES FEB. 21, 2003

**FIGURE 2  
SITE MAP**



3326 Rugby Rd.  
Durham N.C. 27707  
Phone (919) 493-6555  
sherrill@nc.rr.com

ACE JOB #: 01-060  
SCALE: 1"=200'

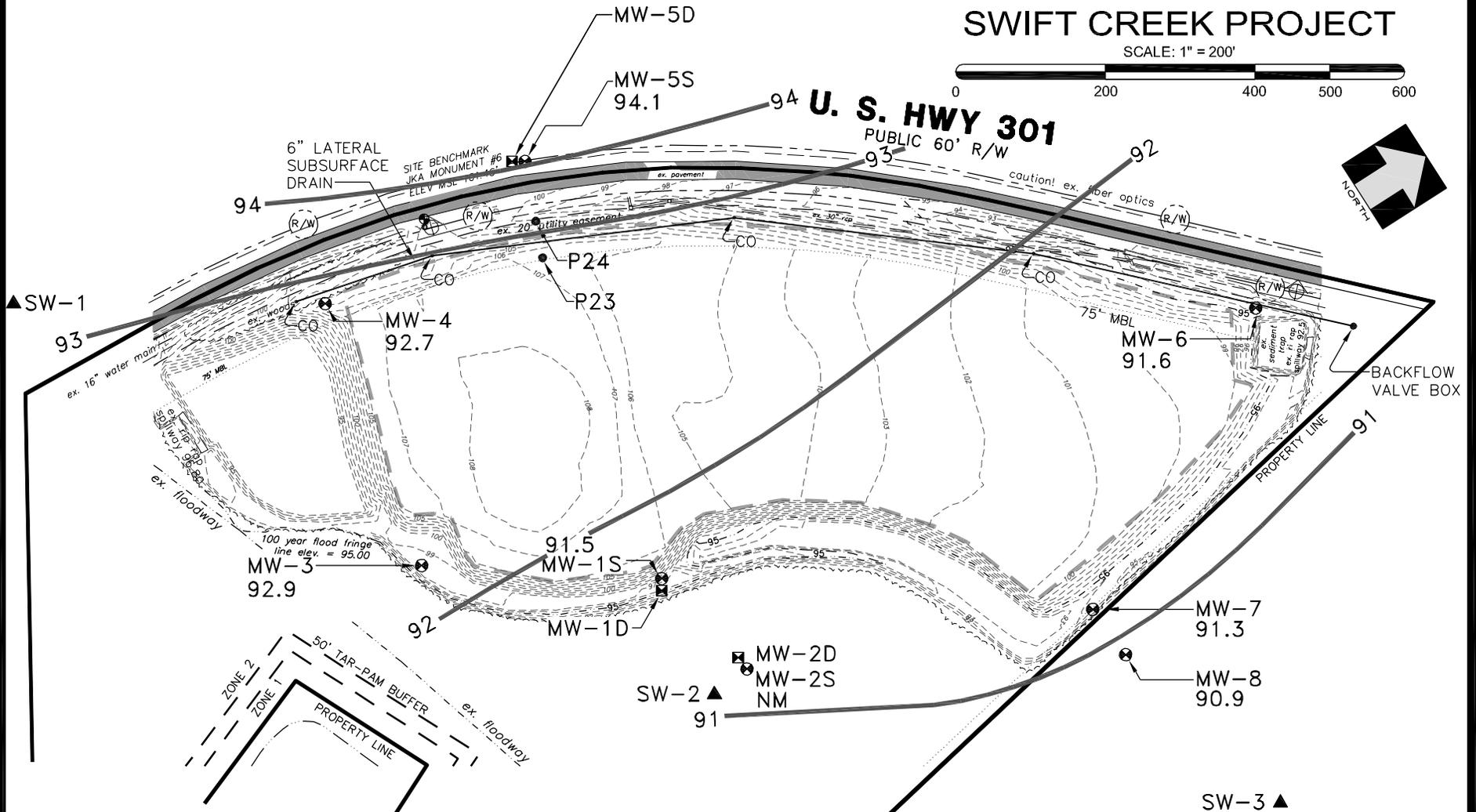


DATE: 6-27-11  
SHEET #: 2 OF 4

**APPIAN CONSULTING ENGINEERS, P.A.**  
CIVIL, MUNICIPAL & STRUCTURAL ENGINEERS  
COMPREHENSIVE ENVIRONMENTAL SERVICES  
P.O. Box 7966 / Rocky Mount, N.C. 27804  
Phone: (252) 972-7703 / Fax: (252) 972-7638  
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# REUSE TECHNOLOGY, INC. SWIFT CREEK PROJECT

SCALE: 1" = 200'



**FIGURE 3  
MAP OF  
GROUNDWATER TABLE  
12/18/12**



3326 Rugby Rd.  
Durham N.C. 27707  
Phone (919) 493-6555  
sherrill@nc.rr.com

ACE JOB #: 01-060  
SCALE: 1"=200'

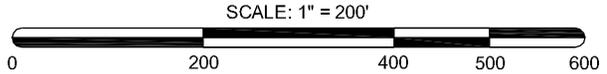


DATE: 6-29-12  
SHEET #: 3 OF 4

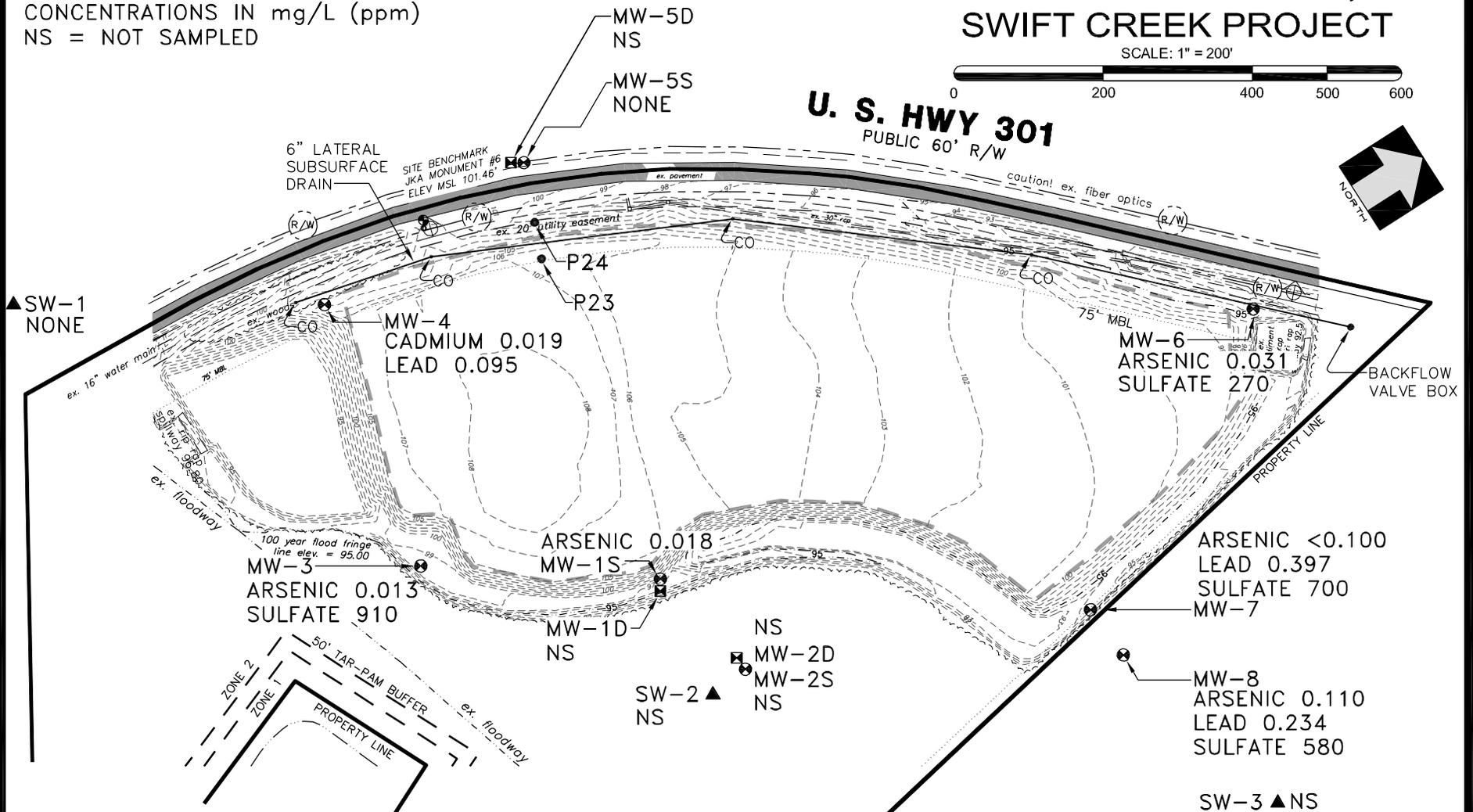
**APPIAN CONSULTING ENGINEERS, P.A.**  
CIVIL, MUNICIPAL & STRUCTURAL ENGINEERS  
COMPREHENSIVE ENVIRONMENTAL SERVICES  
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# REUSE TECHNOLOGY, INC. SWIFT CREEK PROJECT

**NOTE:**  
CONCENTRATIONS IN mg/L (ppm)  
NS = NOT SAMPLED



**U. S. HWY 301**  
PUBLIC 60' R/W



**FIGURE 4**  
**CONSTITUENTS**  
**EXCEEDING 2L**  
**GROUNDWATER**  
**STANDARDS 12/18/12**

 <p><b>SHERRILL</b> ENVIRONMENTAL, INC environmental &amp; geologic services</p>	<p>ACE JOB #: 01-060</p>		<p>DATE: 6-29-12</p>
	<p>SCALE: 1"=200'</p>		<p>SHEET #: 4 OF 4</p>
<p>3326 Rugby Rd. Durham N.C. 27707 Phone (919) 493-6555 sherrill@nc.rr.com</p>		<p><b>APPIAN CONSULTING ENGINEERS, P.A.</b> CIVIL, MUNICIPAL &amp; STRUCTURAL ENGINEERS COMPREHENSIVE ENVIRONMENTAL SERVICES P.O. Box 7966 / Rocky Mount, N.C. 27804 Phone: (252) 972-7703 / Fax: (252) 972-7638 www.appianengineers.com</p>	

# **APPENDIX**

**Environmental Conservation Laboratories, Inc.**

102-A Woodwinds Industrial Court

Cary NC, 27511

Phone: 919.467.3090 FAX: 919.467.3515



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Tuesday, January 15, 2013

Sherrill Environmental, Inc. (SH004)

Attn: Jack Sherrill

3326 Rugby Road

Durham, NC 27707

**RE: Laboratory Results for**

**Project Number: [none], Project Name/Desc: Swift Creek**

**ENCO Workorder(s): C214967**

Dear Jack Sherrill,

Enclosed is a copy of your laboratory report for test samples received by our laboratory on Tuesday, December 18, 2012.

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. Results for these procedures apply only to the samples as submitted.

The analytical results contained in this report are in compliance with NELAC standards, except as noted in the project narrative. This report shall not be reproduced except in full, without the written approval of the Laboratory.

This report contains only those analyses performed by Environmental Conservation Laboratories. Unless otherwise noted, all analyses were performed at ENCO Cary. Data from outside organizations will be reported under separate cover.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Stephanie Franz', written over a light blue rectangular background.

Stephanie Franz

Project Manager

Enclosure(s)



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## **PROJECT NARRATIVE**

Date: 15 January 2013  
Client: Sherrill Environmental, Inc. (SH004)  
Project: Swift Creek  
Lab ID: C14967

### Overview

This report is an amendment to the original report dated 10 January 2013 for this work order. This report was revised, at the client's request, to include reprep/reanalysis results for the RCRA metals (less Mercury).

This report is an amendment to the original report dated 24 December 2012 for this work order. This report was revised, at the client's request, to reprep and reanalyze specific samples for Arsenic.

Environmental Conservation Laboratories, Inc. (ENCO) analyzed all submitted samples in accordance with the methods referenced in the laboratory report. Any particular difficulties encountered during sample handling by ENCO are discussed in the QC Remarks section below.

### Quality Control Samples

No Comments

### Quality Control Remarks

No Comments

### Other Comments

At the client's request, samples MW-1S, MW-3, MW-4, MW-6, MW-7, and MW-8 were reprep and reanalyzed for the RCRA metals (less Mercury) due to unusual analyte concentrations. Because the reprep and reanalysis results are more consistent with historically detected concentrations, the client requested only the reanalysis results be included in the report.

The analytical data presented in this report are consistent with the methods as referenced in the analytical report. Any exceptions or deviations are noted in the QC remarks section of this narrative or in the Flags/Notes and Definitions section of the report.

Released By:  
Environmental Conservation Laboratories, Inc.

Stephanie Franz  
Project Manager



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### SAMPLE SUMMARY/LABORATORY CHRONICLE

<b>Client ID:</b> MW-1S	<b>Lab ID:</b> C214967-01	<b>Sampled:</b> 12/18/12 10:20	<b>Received:</b> 12/18/12 17:45
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/15/13	12/20/12 09:08	12/20/2012 12:32
EPA 7470A	01/15/13	12/19/12 10:52	12/19/2012 16:56

<b>Client ID:</b> MW-1S	<b>Lab ID:</b> C214967-01RE1	<b>Sampled:</b> 12/18/12 10:20	<b>Received:</b> 12/18/12 17:45
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 6010C	06/16/13	01/08/13 16:35	1/9/2013 14:26

<b>Client ID:</b> MW-3	<b>Lab ID:</b> C214967-02	<b>Sampled:</b> 12/18/12 10:16	<b>Received:</b> 12/18/12 17:45
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/15/13	12/20/12 09:08	12/20/2012 13:28
EPA 7470A	01/15/13	12/19/12 10:52	12/19/2012 17:03

<b>Client ID:</b> MW-3	<b>Lab ID:</b> C214967-02RE1	<b>Sampled:</b> 12/18/12 10:16	<b>Received:</b> 12/18/12 17:45
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 6010C	06/16/13	01/08/13 16:35	1/9/2013 14:29

<b>Client ID:</b> MW-4	<b>Lab ID:</b> C214967-03	<b>Sampled:</b> 12/18/12 10:10	<b>Received:</b> 12/18/12 17:45
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 7470A	01/15/13	12/19/12 10:52	12/19/2012 17:05

<b>Client ID:</b> MW-4	<b>Lab ID:</b> C214967-03RE1	<b>Sampled:</b> 12/18/12 10:10	<b>Received:</b> 12/18/12 17:45
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/15/13	12/20/12 09:08	12/20/2012 19:20
EPA 6010C	06/16/13	01/08/13 16:35	1/9/2013 14:34

<b>Client ID:</b> MW-5S	<b>Lab ID:</b> C214967-04	<b>Sampled:</b> 12/18/12 10:00	<b>Received:</b> 12/18/12 17:45
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/15/13	12/20/12 09:08	12/20/2012 14:05
EPA 6010C	06/16/13	12/19/12 10:00	12/20/2012 14:11
EPA 7470A	01/15/13	12/19/12 10:52	12/19/2012 17:07

<b>Client ID:</b> MW-6	<b>Lab ID:</b> C214967-05	<b>Sampled:</b> 12/18/12 10:50	<b>Received:</b> 12/18/12 17:45
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/15/13	12/20/12 09:08	12/20/2012 14:23
EPA 7470A	01/15/13	12/19/12 10:52	12/19/2012 17:09



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<b>Client ID:</b> MW-6	<b>Lab ID:</b> C214967-05RE1	<b>Sampled:</b> 12/18/12 10:50	<b>Received:</b> 12/18/12 17:45
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 6010C	06/16/13	01/08/13 16:35	1/9/2013 14:36

<b>Client ID:</b> MW-7	<b>Lab ID:</b> C214967-06	<b>Sampled:</b> 12/18/12 10:35	<b>Received:</b> 12/18/12 17:45
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/15/13	12/20/12 09:08	12/20/2012 14:42
EPA 7470A	01/15/13	12/19/12 10:52	12/19/2012 17:11

<b>Client ID:</b> MW-7	<b>Lab ID:</b> C214967-06RE2	<b>Sampled:</b> 12/18/12 10:35	<b>Received:</b> 12/18/12 17:45
------------------------	------------------------------	--------------------------------	---------------------------------

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 6010C	06/16/13	01/08/13 16:35	1/9/2013 14:39

<b>Client ID:</b> MW-8	<b>Lab ID:</b> C214967-07	<b>Sampled:</b> 12/18/12 10:30	<b>Received:</b> 12/18/12 17:45
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/15/13	12/20/12 09:08	12/20/2012 15:00
EPA 7470A	01/15/13	12/19/12 10:52	12/19/2012 17:13

<b>Client ID:</b> MW-8	<b>Lab ID:</b> C214967-07RE2	<b>Sampled:</b> 12/18/12 10:30	<b>Received:</b> 12/18/12 17:45
------------------------	------------------------------	--------------------------------	---------------------------------

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 6010C	06/16/13	01/08/13 16:35	1/9/2013 14:42

<b>Client ID:</b> SW-1	<b>Lab ID:</b> C214967-08	<b>Sampled:</b> 12/18/12 10:15	<b>Received:</b> 12/18/12 17:45
------------------------	---------------------------	--------------------------------	---------------------------------

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/15/13	12/20/12 09:08	12/20/2012 15:19
EPA 6010C	06/16/13	12/19/12 10:00	12/20/2012 14:26
EPA 7470A	01/15/13	12/19/12 10:52	12/19/2012 17:15

<b>Client ID:</b> SW-2	<b>Lab ID:</b> C214967-09	<b>Sampled:</b> 12/18/12 10:22	<b>Received:</b> 12/18/12 17:45
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/15/13	12/20/12 09:08	12/20/2012 15:37
EPA 6010C	06/16/13	12/19/12 10:00	12/20/2012 14:33
EPA 7470A	01/15/13	12/19/12 10:52	12/19/2012 17:18

<b>Client ID:</b> SW-3	<b>Lab ID:</b> C214967-10	<b>Sampled:</b> 12/18/12 10:40	<b>Received:</b> 12/18/12 17:45
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Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	01/15/13	12/20/12 09:08	12/20/2012 15:56
EPA 6010C	06/16/13	12/19/12 10:00	12/20/2012 14:35
EPA 7470A	01/15/13	12/19/12 10:52	12/19/2012 17:20



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### SAMPLE DETECTION SUMMARY

<b>Client ID:</b> MW-1S	<b>Lab ID:</b> C214967-01
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Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Sulfate as SO4	180000	D	390	50000	ug/L	EPA 300.0	

<b>Client ID:</b> MW-1S	<b>Lab ID:</b> C214967-01RE1
-------------------------	------------------------------

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Arsenic - Total	18.6		2.80	10.0	ug/L	EPA 6010C	
Barium - Total	567		1.00	10.0	ug/L	EPA 6010C	

<b>Client ID:</b> MW-3	<b>Lab ID:</b> C214967-02
------------------------	---------------------------

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Sulfate as SO4	910000	D	780	100000	ug/L	EPA 300.0	

<b>Client ID:</b> MW-3	<b>Lab ID:</b> C214967-02RE1
------------------------	------------------------------

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Arsenic - Total	13.0		2.80	10.0	ug/L	EPA 6010C	
Barium - Total	136		1.00	10.0	ug/L	EPA 6010C	
Selenium - Total	10.9		4.50	10.0	ug/L	EPA 6010C	

<b>Client ID:</b> MW-4	<b>Lab ID:</b> C214967-03RE1
------------------------	------------------------------

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Barium - Total	262		1.00	10.0	ug/L	EPA 6010C	
Cadmium - Total	18.5		0.360	1.00	ug/L	EPA 6010C	
Lead - Total	95.2		1.90	10.0	ug/L	EPA 6010C	
Sulfate as SO4	220000	D	200	25000	ug/L	EPA 300.0	

<b>Client ID:</b> MW-5S	<b>Lab ID:</b> C214967-04
-------------------------	---------------------------

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Barium - Total	131		1.00	10.0	ug/L	EPA 6010C	
Sulfate as SO4	25000		40	5000	ug/L	EPA 300.0	

<b>Client ID:</b> MW-6	<b>Lab ID:</b> C214967-05
------------------------	---------------------------

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Sulfate as SO4	270000	D	390	50000	ug/L	EPA 300.0	

<b>Client ID:</b> MW-6	<b>Lab ID:</b> C214967-05RE1
------------------------	------------------------------

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Arsenic - Total	30.9		2.80	10.0	ug/L	EPA 6010C	
Barium - Total	131		1.00	10.0	ug/L	EPA 6010C	
Selenium - Total	12.5		4.50	10.0	ug/L	EPA 6010C	

<b>Client ID:</b> MW-7	<b>Lab ID:</b> C214967-06
------------------------	---------------------------

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Sulfate as SO4	700000	D	390	50000	ug/L	EPA 300.0	

<b>Client ID:</b> MW-7	<b>Lab ID:</b> C214967-06RE2
------------------------	------------------------------

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Barium - Total	158	D	10.0	100	ug/L	EPA 6010C	
Lead - Total	397	D	19.0	100	ug/L	EPA 6010C	



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**Client ID: MW-8** **Lab ID: C214967-07**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Sulfate as SO4	580000	D	390	50000	ug/L	EPA 300.0	

**Client ID: MW-8** **Lab ID: C214967-07RE2**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Arsenic - Total	110	D	28.0	100	ug/L	EPA 6010C	
Barium - Total	168	D	10.0	100	ug/L	EPA 6010C	
Lead - Total	234	D	19.0	100	ug/L	EPA 6010C	

**Client ID: SW-1** **Lab ID: C214967-08**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Barium - Total	28.6		1.00	10.0	ug/L	EPA 6010C	

**Client ID: SW-2** **Lab ID: C214967-09**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Barium - Total	30.8		1.00	10.0	ug/L	EPA 6010C	

**Client ID: SW-3** **Lab ID: C214967-10**

Analyte	Results	Flag	MDL	PQL	Units	Method	Notes
Barium - Total	66.8		1.00	10.0	ug/L	EPA 6010C	
Sulfate as SO4	6500		40	5000	ug/L	EPA 300.0	



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**ANALYTICAL RESULTS**

**Description:** MW-1S  
**Matrix:** Ground Water  
**Project:** Swift Creek

**Lab Sample ID:** C214967-01  
**Sampled:** 12/18/12 10:20  
**Sampled By:** John Sherill

**Received:** 12/18/12 17:45  
**Work Order:** C214967

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**Metals by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	2L18022	EPA 7470A	12/19/12 16:56	T1D	



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Description: MW-1S

Lab Sample ID: C214967-01

Received: 12/18/12 17:45

Matrix: Ground Water

Sampled: 12/18/12 10:20

Work Order: C214967

Project: Swift Creek

Sampled By: John Sherill

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Arsenic [7440-38-2] ^	18.6		ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:26	JDH	
Barium [7440-39-3] ^	567		ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:26	JDH	
Cadmium [7440-43-9] ^	1.00	U	ug/L	1	1.00	3A08011	EPA 6010C	01/09/13 14:26	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:26	JDH	
Lead [7439-92-1] ^	10.0	U	ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:26	JDH	
Selenium [7782-49-2] ^	10.0	U	ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:26	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:26	JDH	



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**Description:** MW-1S  
**Matrix:** Ground Water  
**Project:** Swift Creek

**Lab Sample ID:** C214967-01  
**Sampled:** 12/18/12 10:20  
**Sampled By:** John Sherill

**Received:** 12/18/12 17:45  
**Work Order:** C214967

---

### Classical Chemistry Parameters

---

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	180000	D	ug/L	10	50000	2L20008	EPA 300.0	12/20/12 12:32	AJB	



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**Description:** MW-3

**Lab Sample ID:** C214967-02

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:16

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

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**Metals by EPA 6000/7000 Series Methods**

---

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	2L18022	EPA 7470A	12/19/12 17:03	T1D	



www.encolabs.com

Description: MW-3

Lab Sample ID: C214967-02

Received: 12/18/12 17:45

Matrix: Ground Water

Sampled: 12/18/12 10:16

Work Order: C214967

Project: Swift Creek

Sampled By: John Sherill

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Arsenic [7440-38-2] ^	13.0		ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:29	JDH	
Barium [7440-39-3] ^	136		ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:29	JDH	
Cadmium [7440-43-9] ^	1.00	U	ug/L	1	1.00	3A08011	EPA 6010C	01/09/13 14:29	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:29	JDH	
Lead [7439-92-1] ^	10.0	U	ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:29	JDH	
Selenium [7782-49-2] ^	10.9		ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:29	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:29	JDH	



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**Description:** MW-3

**Lab Sample ID:** C214967-02

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:16

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

---

### Classical Chemistry Parameters

---

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	910000	D	ug/L	20	100000	2L20008	EPA 300.0	12/20/12 13:28	AJB	



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**Description:** MW-4

**Lab Sample ID:** C214967-03

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:10

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

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**Metals by EPA 6000/7000 Series Methods**

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	2L18022	EPA 7470A	12/19/12 17:05	T1D	



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Description: MW-4

Lab Sample ID: C214967-03

Received: 12/18/12 17:45

Matrix: Ground Water

Sampled: 12/18/12 10:10

Work Order: C214967

Project: Swift Creek

Sampled By: John Sherill

**Metals (total recoverable) by EPA 6000/7000 Series Methods**

^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Arsenic [7440-38-2] ^	10.0	U	ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:34	JDH	
<b>Barium [7440-39-3] ^</b>	<b>262</b>		ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:34	JDH	
<b>Cadmium [7440-43-9] ^</b>	<b>18.5</b>		ug/L	1	1.00	3A08011	EPA 6010C	01/09/13 14:34	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:34	JDH	
<b>Lead [7439-92-1] ^</b>	<b>95.2</b>		ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:34	JDH	
Selenium [7782-49-2] ^	10.0	U	ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:34	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:34	JDH	



www.encolabs.com

**Description:** MW-4

**Lab Sample ID:** C214967-03

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:10

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

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### Classical Chemistry Parameters

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	220000	D	ug/L	5	25000	2L20008	EPA 300.0	12/20/12 19:20	AJB	



www.encolabs.com

**Description:** MW-5S  
**Matrix:** Ground Water  
**Project:** Swift Creek

**Lab Sample ID:** C214967-04  
**Sampled:** 12/18/12 10:00  
**Sampled By:** John Sherill

**Received:** 12/18/12 17:45  
**Work Order:** C214967

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**Metals by EPA 6000/7000 Series Methods**

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	2L18022	EPA 7470A	12/19/12 17:07	T1D	



www.encolabs.com

Description: MW-5S

Lab Sample ID: C214967-04

Received: 12/18/12 17:45

Matrix: Ground Water

Sampled: 12/18/12 10:00

Work Order: C214967

Project: Swift Creek

Sampled By: John Sherill

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Arsenic [7440-38-2] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:11	JDH	
Barium [7440-39-3] ^	131		ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:11	JDH	
Cadmium [7440-43-9] ^	1.00	U	ug/L	1	1.00	2L19014	EPA 6010C	12/20/12 14:11	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:11	JDH	
Lead [7439-92-1] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:11	JDH	J-01
Selenium [7782-49-2] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:11	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:11	JDH	



www.encolabs.com

**Description:** MW-5S  
**Matrix:** Ground Water  
**Project:** Swift Creek

**Lab Sample ID:** C214967-04  
**Sampled:** 12/18/12 10:00  
**Sampled By:** John Sherill

**Received:** 12/18/12 17:45  
**Work Order:** C214967

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### Classical Chemistry Parameters

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	25000		ug/L	1	5000	2L20008	EPA 300.0	12/20/12 14:05	AJB	



www.encolabs.com

**Description:** MW-6

**Lab Sample ID:** C214967-05

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:50

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

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**Metals by EPA 6000/7000 Series Methods**

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	2L18022	EPA 7470A	12/19/12 17:09	T1D	



www.encolabs.com

Description: MW-6

Lab Sample ID: C214967-05

Received: 12/18/12 17:45

Matrix: Ground Water

Sampled: 12/18/12 10:50

Work Order: C214967

Project: Swift Creek

Sampled By: John Sherill

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Arsenic [7440-38-2] ^	30.9		ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:36	JDH	
Barium [7440-39-3] ^	131		ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:36	JDH	
Cadmium [7440-43-9] ^	1.00	U	ug/L	1	1.00	3A08011	EPA 6010C	01/09/13 14:36	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:36	JDH	
Lead [7439-92-1] ^	10.0	U	ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:36	JDH	
Selenium [7782-49-2] ^	12.5		ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:36	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	3A08011	EPA 6010C	01/09/13 14:36	JDH	



www.encolabs.com

**Description:** MW-6

**Lab Sample ID:** C214967-05

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:50

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

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### Classical Chemistry Parameters

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	270000	D	ug/L	10	50000	2L20008	EPA 300.0	12/20/12 14:23	AJB	



www.encolabs.com

**Description:** MW-7

**Lab Sample ID:** C214967-06

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:35

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

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**Metals by EPA 6000/7000 Series Methods**

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	2L18022	EPA 7470A	12/19/12 17:11	T1D	



www.encolabs.com

Description: MW-7

Lab Sample ID: C214967-06

Received: 12/18/12 17:45

Matrix: Ground Water

Sampled: 12/18/12 10:35

Work Order: C214967

Project: Swift Creek

Sampled By: John Sherill

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Arsenic [7440-38-2] ^	100	UD	ug/L	10	100	3A08011	EPA 6010C	01/09/13 14:39	JDH	
<b>Barium [7440-39-3] ^</b>	<b>158</b>	D	ug/L	10	100	3A08011	EPA 6010C	01/09/13 14:39	JDH	
Cadmium [7440-43-9] ^	10.0	UD	ug/L	10	10.0	3A08011	EPA 6010C	01/09/13 14:39	JDH	
Chromium [7440-47-3] ^	100	UD	ug/L	10	100	3A08011	EPA 6010C	01/09/13 14:39	JDH	
<b>Lead [7439-92-1] ^</b>	<b>397</b>	D	ug/L	10	100	3A08011	EPA 6010C	01/09/13 14:39	JDH	
Selenium [7782-49-2] ^	100	UD	ug/L	10	100	3A08011	EPA 6010C	01/09/13 14:39	JDH	
Silver [7440-22-4] ^	100	UD	ug/L	10	100	3A08011	EPA 6010C	01/09/13 14:39	JDH	



www.encolabs.com

**Description:** MW-7

**Lab Sample ID:** C214967-06

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:35

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

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### Classical Chemistry Parameters

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	700000	D	ug/L	10	50000	2L20008	EPA 300.0	12/20/12 14:42	AJB	



www.encolabs.com

**Description:** MW-8

**Lab Sample ID:** C214967-07

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:30

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

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**Metals by EPA 6000/7000 Series Methods**

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	2L18022	EPA 7470A	12/19/12 17:13	T1D	



www.encolabs.com

Description: MW-8

Lab Sample ID: C214967-07

Received: 12/18/12 17:45

Matrix: Ground Water

Sampled: 12/18/12 10:30

Work Order: C214967

Project: Swift Creek

Sampled By: John Sherill

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Arsenic [7440-38-2] ^	110	D	ug/L	10	100	3A08011	EPA 6010C	01/09/13 14:42	JDH	
Barium [7440-39-3] ^	168	D	ug/L	10	100	3A08011	EPA 6010C	01/09/13 14:42	JDH	
Cadmium [7440-43-9] ^	10.0	UD	ug/L	10	10.0	3A08011	EPA 6010C	01/09/13 14:42	JDH	
Chromium [7440-47-3] ^	100	UD	ug/L	10	100	3A08011	EPA 6010C	01/09/13 14:42	JDH	
Lead [7439-92-1] ^	234	D	ug/L	10	100	3A08011	EPA 6010C	01/09/13 14:42	JDH	
Selenium [7782-49-2] ^	100	UD	ug/L	10	100	3A08011	EPA 6010C	01/09/13 14:42	JDH	
Silver [7440-22-4] ^	100	UD	ug/L	10	100	3A08011	EPA 6010C	01/09/13 14:42	JDH	



www.encolabs.com

**Description:** MW-8

**Lab Sample ID:** C214967-07

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:30

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

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### Classical Chemistry Parameters

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	580000	D	ug/L	10	50000	2L20008	EPA 300.0	12/20/12 15:00	AJB	



www.encolabs.com

**Description:** SW-1

**Lab Sample ID:** C214967-08

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:15

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

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**Metals by EPA 6000/7000 Series Methods**

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	2L18022	EPA 7470A	12/19/12 17:15	T1D	



www.encolabs.com

Description: SW-1

Lab Sample ID: C214967-08

Received: 12/18/12 17:45

Matrix: Ground Water

Sampled: 12/18/12 10:15

Work Order: C214967

Project: Swift Creek

Sampled By: John Sherill

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Arsenic [7440-38-2] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:26	JDH	
<b>Barium [7440-39-3] ^</b>	<b>28.6</b>		ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:26	JDH	
Cadmium [7440-43-9] ^	1.00	U	ug/L	1	1.00	2L19014	EPA 6010C	12/20/12 14:26	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:26	JDH	
Lead [7439-92-1] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:26	JDH	J-01
Selenium [7782-49-2] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:26	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:26	JDH	



www.encolabs.com

**Description:** SW-1

**Lab Sample ID:** C214967-08

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:15

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

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### Classical Chemistry Parameters

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	5000	U	ug/L	1	5000	2L20008	EPA 300.0	12/20/12 15:19	AJB	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.



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**Description:** SW-2

**Lab Sample ID:** C214967-09

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:22

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

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**Metals by EPA 6000/7000 Series Methods**

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	2L18022	EPA 7470A	12/19/12 17:18	T1D	



www.encolabs.com

Description: SW-2

Lab Sample ID: C214967-09

Received: 12/18/12 17:45

Matrix: Ground Water

Sampled: 12/18/12 10:22

Work Order: C214967

Project: Swift Creek

Sampled By: John Sherill

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Arsenic [7440-38-2] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:33	JDH	
Barium [7440-39-3] ^	30.8		ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:33	JDH	
Cadmium [7440-43-9] ^	1.00	U	ug/L	1	1.00	2L19014	EPA 6010C	12/20/12 14:33	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:33	JDH	
Lead [7439-92-1] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:33	JDH	J-01
Selenium [7782-49-2] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:33	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:33	JDH	



www.encolabs.com

**Description:** SW-2

**Lab Sample ID:** C214967-09

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:22

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

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### Classical Chemistry Parameters

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	5000	U	ug/L	1	5000	2L20008	EPA 300.0	12/20/12 15:37	AJB	

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.



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**Description:** SW-3

**Lab Sample ID:** C214967-10

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:40

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

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**Metals by EPA 6000/7000 Series Methods**

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Mercury [7439-97-6] ^	0.200	U	ug/L	1	0.200	2L18022	EPA 7470A	12/19/12 17:20	T1D	



www.encolabs.com

Description: SW-3

Lab Sample ID: C214967-10

Received: 12/18/12 17:45

Matrix: Ground Water

Sampled: 12/18/12 10:40

Work Order: C214967

Project: Swift Creek

Sampled By: John Sherill

Metals (total recoverable) by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MRL	Batch	Method	Analyzed	By	Notes
Arsenic [7440-38-2] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:35	JDH	
Barium [7440-39-3] ^	66.8		ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:35	JDH	
Cadmium [7440-43-9] ^	1.00	U	ug/L	1	1.00	2L19014	EPA 6010C	12/20/12 14:35	JDH	
Chromium [7440-47-3] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:35	JDH	
Lead [7439-92-1] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:35	JDH	
Selenium [7782-49-2] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:35	JDH	
Silver [7440-22-4] ^	10.0	U	ug/L	1	10.0	2L19014	EPA 6010C	12/20/12 14:35	JDH	



www.encolabs.com

**Description:** SW-3

**Lab Sample ID:** C214967-10

**Received:** 12/18/12 17:45

**Matrix:** Ground Water

**Sampled:** 12/18/12 10:40

**Work Order:** C214967

**Project:** Swift Creek

**Sampled By:** John Sherill

---

### Classical Chemistry Parameters

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^ - ENCO Cary certified analyte [NC 591]

<u>Analyte [CAS Number]</u>	<u>Results</u>	<u>Flag</u>	<u>Units</u>	<u>DF</u>	<u>MRL</u>	<u>Batch</u>	<u>Method</u>	<u>Analyzed</u>	<u>By</u>	<u>Notes</u>
Sulfate as SO4 [14808-79-8] ^	6500		ug/L	1	5000	2L20008	EPA 300.0	12/20/12 15:56	AJB	



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**QUALITY CONTROL**

**Metals by EPA 6000/7000 Series Methods - Quality Control**

Batch 2L18022 - EPA 7470A

**Blank (2L18022-BLK1)**

Prepared: 12/19/2012 10:12 Analyzed: 12/19/2012 16:37

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	0.200	U	0.200	ug/L							

**LCS (2L18022-BS1)**

Prepared: 12/19/2012 10:12 Analyzed: 12/19/2012 16:39

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	4.71		0.200	ug/L	5.00		94	80-120			

**Matrix Spike (2L18022-MS1)**

Prepared: 12/19/2012 10:12 Analyzed: 12/19/2012 16:43

Source: C215126-03

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	4.66		0.200	ug/L	5.00	0.200 U	93	75-125			

**Matrix Spike Dup (2L18022-MSD1)**

Prepared: 12/19/2012 10:12 Analyzed: 12/19/2012 16:46

Source: C215126-03

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	4.67		0.200	ug/L	5.00	0.200 U	93	75-125	0.2	25	

**Post Spike (2L18022-PS1)**

Prepared: 12/19/2012 10:12 Analyzed: 12/19/2012 16:48

Source: C215126-03

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	4.39		0.200	ug/L	5.00	-0.0710	89	75-125			

**Metals (total recoverable) by EPA 6000/7000 Series Methods - Quality Control**

Batch 2L19014 - EPA 3005A

**Blank (2L19014-BLK1)**

Prepared: 12/19/2012 10:00 Analyzed: 12/20/2012 13:23

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	10.0	U	10.0	ug/L							
Barium	10.0	U	10.0	ug/L							
Cadmium	1.00	U	1.00	ug/L							
Chromium	10.0	U	10.0	ug/L							
Lead	10.0	U	10.0	ug/L							
Selenium	10.0	U	10.0	ug/L							
Silver	10.0	U	10.0	ug/L							

**LCS (2L19014-BS1)**

Prepared: 12/19/2012 10:00 Analyzed: 12/20/2012 13:26

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	196		10.0	ug/L	200		98	80-120			
Barium	200		10.0	ug/L	200		100	80-120			
Cadmium	21.0		1.00	ug/L	20.0		105	80-120			
Chromium	196		10.0	ug/L	200		98	80-120			



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**QUALITY CONTROL**

**Metals (total recoverable) by EPA 6000/7000 Series Methods - Quality Control**

Batch 2L19014 - EPA 3005A

**LCS (2L19014-BS1) Continued**

Prepared: 12/19/2012 10:00 Analyzed: 12/20/2012 13:26

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Lead	200		10.0	ug/L	200		100	80-120			
Selenium	194		10.0	ug/L	200		97	80-120			
Silver	201		10.0	ug/L	200		100	80-120			

**Matrix Spike (2L19014-MS1)**

Prepared: 12/19/2012 10:00 Analyzed: 12/20/2012 13:33

Source: C214967-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	253		10.0	ug/L	200	52.1	100	75-125			
Barium	816		10.0	ug/L	200	603	107	75-125			
Cadmium	20.5		1.00	ug/L	20.0	1.00 U	103	75-125			
Chromium	201		10.0	ug/L	200	10.0 U	101	75-125			
Lead	195		10.0	ug/L	200	10.0 U	97	75-125			
Selenium	220		10.0	ug/L	200	10.0 U	110	75-125			
Silver	229		10.0	ug/L	200	4.67	112	75-125			

**Matrix Spike Dup (2L19014-MSD1)**

Prepared: 12/19/2012 10:00 Analyzed: 12/20/2012 13:36

Source: C214967-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	262		10.0	ug/L	200	52.1	105	75-125	3	20	
Barium	812		10.0	ug/L	200	603	104	75-125	0.6	20	
Cadmium	20.8		1.00	ug/L	20.0	1.00 U	104	75-125	1	20	
Chromium	201		10.0	ug/L	200	10.0 U	100	75-125	0.3	20	
Lead	195		10.0	ug/L	200	10.0 U	98	75-125	0.1	20	
Selenium	223		10.0	ug/L	200	10.0 U	112	75-125	2	20	
Silver	229		10.0	ug/L	200	4.67	112	75-125	0.2	20	

**Post Spike (2L19014-PS1)**

Prepared: 12/19/2012 10:00 Analyzed: 12/20/2012 13:38

Source: C214967-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	0.261		0.0100	mg/L	0.200	0.0521	105	80-120			
Barium	0.797		0.0100	mg/L	0.200	0.603	97	80-120			
Cadmium	0.0200		0.00100	mg/L	0.0200	7.99E-6	100	80-120			
Chromium	0.195		0.0100	mg/L	0.200	0.000943	97	80-120			
Lead	0.189		0.0100	mg/L	0.200	-0.00581	98	80-120			
Selenium	0.209		0.0100	mg/L	0.200	0.00293	103	80-120			
Silver	0.227		0.0100	mg/L	0.200	0.00467	111	80-120			

Batch 3A08011 - EPA 3005A

**Blank (3A08011-BLK1)**

Prepared: 01/08/2013 09:35 Analyzed: 01/09/2013 13:29

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	10.0	U	10.0	ug/L							
Barium	10.0	U	10.0	ug/L							



**QUALITY CONTROL**

**Metals (total recoverable) by EPA 6000/7000 Series Methods - Quality Control**

Batch 3A08011 - EPA 3005A

**Blank (3A08011-BLK1) Continued**

Prepared: 01/08/2013 09:35 Analyzed: 01/09/2013 13:29

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Cadmium	1.00	U	1.00	ug/L							
Chromium	10.0	U	10.0	ug/L							
Lead	10.0	U	10.0	ug/L							
Selenium	10.0	U	10.0	ug/L							
Silver	10.0	U	10.0	ug/L							

**LCS (3A08011-BS1)**

Prepared: 01/08/2013 09:35 Analyzed: 01/09/2013 13:32

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	207		10.0	ug/L	200		103	80-120			
Barium	210		10.0	ug/L	200		105	80-120			
Cadmium	20.5		1.00	ug/L	20.0		103	80-120			
Chromium	207		10.0	ug/L	200		103	80-120			
Lead	209		10.0	ug/L	200		105	80-120			
Selenium	212		10.0	ug/L	200		106	80-120			
Silver	212		10.0	ug/L	200		106	80-120			

**Matrix Spike (3A08011-MS1)**

Prepared: 01/08/2013 09:35 Analyzed: 01/09/2013 13:37

Source: C215562-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	198		10.0	ug/L	200	10.0 U	99	75-125			
Barium	218		10.0	ug/L	200	10.3	104	75-125			
Cadmium	20.2		1.00	ug/L	20.0	1.00 U	101	75-125			
Chromium	205		10.0	ug/L	200	10.0 U	103	75-125			
Lead	204		10.0	ug/L	200	10.0 U	102	75-125			
Selenium	205		10.0	ug/L	200	10.0 U	102	75-125			
Silver	210		10.0	ug/L	200	10.0 U	105	75-125			

**Matrix Spike Dup (3A08011-MSD1)**

Prepared: 01/08/2013 09:35 Analyzed: 01/09/2013 13:46

Source: C215562-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	211		10.0	ug/L	200	10.0 U	105	75-125	6	20	
Barium	224		10.0	ug/L	200	10.3	107	75-125	3	20	
Cadmium	20.9		1.00	ug/L	20.0	1.00 U	105	75-125	3	20	
Chromium	213		10.0	ug/L	200	10.0 U	106	75-125	4	20	
Lead	213		10.0	ug/L	200	10.0 U	107	75-125	5	20	
Selenium	216		10.0	ug/L	200	10.0 U	108	75-125	5	20	
Silver	218		10.0	ug/L	200	10.0 U	109	75-125	4	20	

**Post Spike (3A08011-PS1)**

Prepared: 01/08/2013 09:35 Analyzed: 01/09/2013 13:49

Source: C215562-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	0.196		0.0100	mg/L	0.200	-0.000821	98	80-120			
Barium	0.214		0.0100	mg/L	0.200	0.0103	102	80-120			



**QUALITY CONTROL**

**Metals (total recoverable) by EPA 6000/7000 Series Methods - Quality Control**

Batch 3A08011 - EPA 3005A

Post Spike (3A08011-PS1) Continued

Prepared: 01/08/2013 09:35 Analyzed: 01/09/2013 13:49

Source: C215562-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Cadmium	0.0208		0.00100	mg/L	0.0200	2.41E-5	104	80-120			
Chromium	0.203		0.0100	mg/L	0.200	0.000392	101	80-120			
Lead	0.202		0.0100	mg/L	0.200	0.00154	100	80-120			
Selenium	0.197		0.0100	mg/L	0.200	-0.00120	99	80-120			
Silver	0.207		0.0100	mg/L	0.200	0.000561	103	80-120			

**Classical Chemistry Parameters - Quality Control**

Batch 2L20008 - NO PREP

Blank (2L20008-BLK1)

Prepared: 12/20/2012 09:08 Analyzed: 12/20/2012 09:27

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sulfate as SO4	5000	U	5000	ug/L							

LCS (2L20008-BS1)

Prepared: 12/20/2012 09:08 Analyzed: 12/20/2012 09:09

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sulfate as SO4	45000		5000	ug/L	50000		90	90-110			

Matrix Spike (2L20008-MS1)

Prepared: 12/20/2012 09:08 Analyzed: 12/20/2012 16:15

Source: C213620-01RE1

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sulfate as SO4	330000		20000	ug/L	80000	240000	111	90-110			QM-05

Matrix Spike Dup (2L20008-MSD1)

Prepared: 12/20/2012 09:08 Analyzed: 12/20/2012 17:10

Source: C213620-01RE1

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Sulfate as SO4	330000		20000	ug/L	80000	240000	110	90-110	0.4	10	

**FLAGS/NOTES AND DEFINITIONS**

B	The analyte was detected in the associated method blank.
D	The sample was analyzed at dilution.
J	The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable.
U	The analyte was analyzed for but not detected to the level shown, adjusted for actual sample preparation data and moisture content, where applicable.
E	The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.
MRL	Method Reporting Limit. The MRL is roughly equivalent to the practical quantitation limit (PQL) and is based on the low point of the calibration curve, when applicable, sample preparation factor, dilution factor, and, in the case of soil samples, moisture content.
J-01	Result is estimated due to positive results in the associated method blank.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.



**ENVIRONMENTAL CONSERVATION LABORATORIES CHAIN-OF-CUSTODY RECORD**  
 10775 Central Post Dr  
 Orlando, FL 32824  
 (407) 826-5314 Fax (407) 850-6945

102-A Woodwinds Industrial Ct.  
 Cary, NC 27511  
 (919) 467-3090 Fax (919) 467-3515

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Client Name Sherrill Environmental, Inc. (SH004)	Project Number [none]
Address 3325 Rugby Road	Project Name/Disc Swift Creek
City/ST/Zip Durham, NC 27707	PO # / Billing Info
Tel (919) 493-6555	Reporting Contact Jack Sherrill
Fax (919) 493-6554	Billing Contact Accounts Payable
Sampler(s) Name, Affiliation (Print) John Sherrill	Site Location / Time Zone
Sampler(s) Signature <i>John Sherrill</i>	

Item #	Sample ID (Field Identification)	Collection Date	Collection Time	Comp / Grab	Matrix (see codes)	Total # of Containers	Preservation (See Codes) (Combine as necessary)		Requested Turnaround Times
							Ag,As,Ba,Cd,Cr,Pb,Se	Sulfate 300	
MW-1S		12/18/12	1020		GW	2	X	X	
MW-2S					GW	2	X	X	
MW-3			1016		GW	2	X	X	
MW-4			1010		GW	2	X	X	
MW-5S			1000		GW	2	X	X	
MW-6			1050		GW	2	X	X	
MW-7			1035		GW	2	X	X	
MW-8			1030		GW	2	X	X	
SVI-1			1015		GW	2	X	X	
SVI-2			1022		GW	2	X	X	
SW-3			1040		GW	2	X	X	

Sample Kit Prepared By	Date/Time	Relinquished By <i>John Sherrill</i>	Received By WJL	Date/Time 12/18/12 1330	Date/Time 12/18/12 1541
Comments/Special Reporting Requirements		Relinquished By WJL	Received By Sep 2012	Date/Time 12/18/12 1745	Date/Time 12/18/12 1745
		Relinquished By	Received By	Date/Time	Date/Time
Cooler #'s & Temps on Receipt C-1004 1.1°C			Condition Upon Receipt ✓ Acceptable		Unacceptable

Matrix : GW-Groundwater SO-Sol DW-Drinking Water SE-Sediment SW-Surface Water WW-Wastewater A-Air O-Other (detail in comments) Preservation: H-HCl M-HNO3 S-H2SO4 NO-NaOH O-Other (detail in comments)

Note : All samples submitted to ENCO labs are in accordance with the terms and conditions listed on the reverse of this form, unless prior written agreements exist.



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## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	MW-1S & 1D
LOCATION:	BATTLEBORO, NC	SHEET:	2 of 2
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	6/2/04
DRILLING FIRM:	J&L Drilling, Inc.	DATE FINISHED:	6/2/04
DRILLER:	Lee Charbonneau	GROUND ELEV.:	97.0
DRILL RIG:	CME-75	LOGGED BY:	J Sherrill, L.G.
		COORDINATES:	0
		NORTHING:	0.0 ft
		EASTING:	0.0 ft
		TOTAL DEPTH:	33.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN	RECOVERY	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
32	66.0 64.0	1 5	5	SS-7				SM	13.0-33.0 ft: Medium gray Silty very fine Sand, very Shelly	
34									33.0 End of Boring	
36	62.0 60.0								MW-1S Set screen at 3.0-13.0 ft, sand from 2.5 to 13.0 ft, bentonite from 2.0 to 2.5 ft	
38	58.0									
40	56.0								MW-1D Set screen at 23.0-33.0 ft, sand from 21.0 to 33.0 ft, bentonite from 19.0 to 21.0 ft	
42	54.0									
44	52.0									
46	50.0									
48	48.0									
50	46.0									
52	44.0									
54	42.0									
56	40.0									
58	38.0									
60										

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	MW-2S & 2D
LOCATION:	BATTLEBORO, NC	STATION: x	x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	6/22/04
DRILLING FIRM:	J&L Drilling, Inc.	DATE FINISHED:	6/22/04
DRILLER:	Lee Charbonneau	GROUND ELEV.:	92.0
DRILL RIG:	CME-75	LOGGED BY: J Sherrill, L.G.	TOTAL DEPTH: 36.0
		COORDINATES:	
		NORTHING:	ft
		EASTING:	ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFICATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
2	91.0							SC	0.0-4.0 ft: FILL, yellowish brown clayey SAND	
4	89.0	3	2	SS-1				CL	4.0-7.0 ft: Mottled yellowish gray and yellowish brown, sandy CLAY	
6		1								
8		1							7.0-9.0 ft: Mottled yellowish gray and yellowish brown, clayey SAND	
10	83.0	2	8	SS-2				SC		
12	81.0	5						SP	9.0-13.5 ft: Light brownish gray fine to medium SAND	
14	79.0	6								
16	77.0	2	7	SS-3						
18	75.0	3								
20	73.0	3	6	SS-4					13.5-33.0 ft: Greenish-gray clayey, silty very fine SAND, very shelly	
22	71.0	4								
24	69.0	2						SM		
26	67.0	2	4	SS-5						
28	65.0	2								
30	63.0	4	9	SS-6						
		5								
		6								

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	MW-2S & 2D
LOCATION:	BATTLEBORO, NC	SHEET:	2 of 2
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	6/22/04
DRILLING FIRM:	J&L Drilling, Inc.	DATE FINISHED:	6/22/04
DRILLER:	Lee Charbonneau	GROUND ELEV.:	92.0
DRILL RIG:	CME-75	LOGGED BY:	J Sherrill, L.G.
		COORDINATES:	0
		NORTHING:	0.0 ft
		EASTING:	0.0 ft
		TOTAL DEPTH:	36.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN	RECOVERY	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
32	61.0									
34	59.0	10 16 24 32	40	SS-7				SM	33.0-36.0 ft: Medium gray Silty very fine Sand, Shelly, dense, little moisture	
36	57.0									
36	55.0								36.0 End of Boring	
38	53.0								MW-2S Set screen at 6.0-16.0 ft, sand from 5 to 16.0 ft, bentonite from 3 to 5 ft	
40	51.0								MW-2D Set screen at 26.0-36.0 ft, sand from 25.0 to 36.0 ft, bentonite from 23.0 to 25.0 ft	
42	49.0									
44	47.0									
46	45.0									
48	43.0									
50	41.0									
52	39.0									
54	37.0									
56	35.0									
58	33.0									
60										

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>MW-3</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u>	SHEET: <u>1 of 1</u>
TYPE OF BORING:	<u>Hollow Stem Auger</u>	DATE STARTED: <u>11/16/05</u>	COORDINATES:
DRILLING FIRM:	<u>J&amp;L Drilling, Inc.</u>	DATE FINISHED: <u>11/16/05</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Lee Charbonneau</u>	GROUND ELEV.: <u>99.2</u>	EASTING: <u>ft</u>
DRILL RIG:	<u>CME-75</u>	LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>19.0</u> ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
2	98.2								0.0-5.0 ft: FILL, yellowish medium gray silty fine SAND	
4	96.2	4 5 5 6	10					SM		
6	94.2									
8	92.2									
10	90.2	7 6 9 7	15					SM	8.0-10.0 ft: Reddish-yellow silty SAND	
12	88.2	3 3 7 10	10					SM	10.0-12.0 ft: Reddish-brown silty SAND	
14	86.2	13 14 19 16	33					SM	12.0-14.0 ft: Reddish-brown silty SAND	
16	84.2	2 3 5 6	8					SM	14.0-16.0 ft: Yellowish-gray clayey silty fine SAND, poor recovery	
18	82.2									
18	80.2	3 4 2 3	6					SM	17.0-18.0 ft: Yellowish-gray silty fine SAND 19.0 ft: Greenish-gray clayey silty fine SAND, very shelly, marine	
20									19.0 ft End of Boring	
22									Screen set at 7.0 to 17.0 ft	
24	78.2									
26	76.2									
28	74.2									
30	72.2									
	70.2									

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>MW-4</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u>	SHEET: <u>1 of 1</u>
TYPE OF BORING:	<u>Hollow Stem Auger</u>	DATE STARTED: <u>11/16/05</u>	COORDINATES:
DRILLING FIRM:	<u>J&amp;L Drilling, Inc.</u>	DATE FINISHED: <u>11/16/05</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Lee Charbonneau</u>	GROUND ELEV.: <u>104.1</u>	EASTING: <u>ft</u>
DRILL RIG:	<u>CME-75</u>	LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>20.0</u> ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFICATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
2	103.1									
4	101.1	11 19 41 43	60					SM	3.0-5.0 ft: Yellowish-gray silty fine SAND, alluvial	
6	99.1									
8	97.1									
10	95.1	13 18 21 18	39					SM	8.0-10.0 ft: Reddish-yellow and yellowish-gray, layered, silty fine to medium SAND	
12	93.1									
14	91.1	6 7 9 8	16					SC	13.0-15.0 ft: Poor recovery, wet clayey fine SAND	
16	89.1	W O R	1						15.0-17.0 ft: Soft, no recovery	
18	87.1							SM		
20	85.1	1 2 3 4	5						18.0-20.0 ft: Greenish-medium gray clayey silty fine SAND, very shelly, marine	
22	83.1								20.0 ft End of Boring	
24	81.1								Screen set at 8 0 to 18 0 ft	
26	79.1									
28	77.1									
30	75.1									

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>MW-5 S&amp;D</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u>	SHEET: <u>1 of 2</u>
TYPE OF BORING:	<u>Hollow Stem Auger</u>	DATE STARTED: <u>11/17/05</u>	COORDINATES:
DRILLING FIRM:	<u>J&amp;L Drilling, Inc.</u>	DATE FINISHED: <u>11/17/05</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Lee Charbonneau</u>	GROUND ELEV.: <u>99.7</u>	EASTING: <u>ft</u>
DRILL RIG:	<u>CME-75</u>	LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>35.0</u> ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
2	98.7									
4	96.7	3 4 7	11					SM	3.0-5.0 ft: Light gray and brownish-yellow, mottled, clayey, fine SAND, alluvial	
6	94.7	7								
8	92.7									
10	90.7	10 12 15 13	27					SP	8.0-10.0 ft: Light yellowish-gray, medium to coarse SAND with gravel, grades from medium to coarse downward	
12	88.7	4 8 3 3	11						10.0-11.5 ft: Coarse SAND and gravel	
14	86.7	1 1 1 1	2					SM	11.5-13.5 ft: Oxidized marine sediments, light yellowish-brown, clayey, silty, fine SAND	
16	84.7							SM	13.5-35.0 ft: Greenish-medium gray clayey silty fine SAND, very shelly, marine	
18	82.7									
20	80.7									
22	78.7									
24	76.7									
26	74.7									
28	72.7									
30	70.7									

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	MW-5 S&D
LOCATION:	BATTLEBORO, NC	SHEET:	2 of 2
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	11/17/05
DRILLING FIRM:	J&L Drilling, Inc.	DATE FINISHED:	11/17/05
DRILLER:	Lee Charbonneau	GROUND ELEV.:	99.7
DRILL RIG:	CME-75	LOGGED BY:	J Sherrill, L.G.
		COORDINATES:	0
		NORTHING:	0.0 ft
		EASTING:	0.0 ft
		TOTAL DEPTH:	35.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE # CORE RUN	RECOVERY	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
32	68.7							SM	13.5-35.0 ft: Greenish-medium gray clayey silty fine SAND, very shelly, marine	
34	66.7									
36	64.7								35.0 ft End of Boring	
38	62.7								MW-5S Screen set at 6.0 to 16 ft	
40	60.7								MW-5D Screen set at 25.0 to 35.0 ft	
42	58.7									
44	56.7									
46	54.7									
48	52.7									
50	50.7									
52	48.7									
54	46.7									
56	44.7									
58	42.7									
60	40.7									

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>MW-6</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u> <u>x</u>	SHEET: <u>1 of 1</u>
TYPE OF BORING:	<u>Hollow Stem Auger</u>	DATE STARTED: <u>11/17/05</u>	COORDINATES:
DRILLING FIRM:	<u>J&amp;L Drilling, Inc.</u>	DATE FINISHED: <u>11/17/05</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Lee Charbonneau</u>	GROUND ELEV.: <u>95.0</u>	EASTING: <u>ft</u>
DRILL RIG:	<u>CME-75</u>	LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>18.0</u> <u>ft</u>

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFICATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
2	94.0									
4	92.0	1 1 2 2	3					SM	0.0-5.0 ft: FILL, yellowish light gray silty fine SAND	
6	90.0									
8	88.0									
10	86.0	12 13 10 7	23					SP	8.0-9.5 ft: Light brownish-gray medium to coarse SAND	
10	84.0	2 1 2 4	3					SC SP	9.5-10.5 ft: Light yellowish-gray sandy CLAY 10.5-11.0 ft: Quartz SAND medium	
12	82.0	3 5 5 6	10					SC SP	11.0-12.0 ft: Brownish-gray clayey SAND	
14	80.0	12 23 10 3						SM SP	12.0-13.0 ft: Quartz SAND, medium 13.0-14.0 ft: Silty, clayey, fine SAND	
16	78.0	2 2 3 4	5					SM	14.0-16.0 ft: Medium SAND grading to coarse with depth and quartz pebbles 16.0-18.0 ft: Greenish-medium gray silty, clayey fine SAND with organic material and few quartz pebbles	
20	76.0								18.0 ft End of Boring	
22	74.0								Screen set at 6.0 to 16 ft	
24	72.0									
26	70.0									
28	68.0									
30	66.0									

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>MW-7</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u>	SHEET: <u>1 of 1</u>
TYPE OF BORING:	<u>Hollow Stem Auger</u>	DATE STARTED: <u>11/17/05</u>	COORDINATES:
DRILLING FIRM:	<u>J&amp;L Drilling, Inc.</u>	DATE FINISHED: <u>11/17/05</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Lee Charbonneau</u>	GROUND ELEV.: <u>95.1</u>	EASTING: <u>ft</u>
DRILL RIG:	<u>CME-75</u>	LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>18.0</u> ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFICATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
2	94.1							SM	0.0-5.0 ft: FILL, yellowish light gray silty fine SAND	
4	92.1	7 7 7	14							
	90.1	9								
6	88.1									
8	86.1	6 9	20					SP	8.0-10.0 ft: Light yellowish-gray medium to coarse SAND	
10	84.1	11 11								
	84.1	4 7 9	16					SP	10.0-12.0 ft: Light yellowish-gray medium to coarse SAND	
12	82.1	10								
	82.1	3 7 10	17					SP	12.0-14.0 ft: Light yellowish-gray medium to coarse SAND, some small gravel	
14	80.1	6								
	80.1	1 1 1	2					SC	14.0-16.0 ft: Yellowish-gray clayey fine SAND, poor recovery	
16	78.1	1 1 2	3					SM	16.0-18.0 ft: Greenish-medium gray clayey silty fine SAND, very shelly, marine	
18	76.1									
20	74.1								18.0 ft End of Boring	
22	72.1								Screen set at 6.0 to 16 ft	
24	70.1									
26	68.1									
28	66.1									
30										

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>MW-8</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u>	SHEET: <u>1 of 1</u>
TYPE OF BORING:	<u>Hollow Stem Auger</u>	DATE STARTED: <u>3/28/07</u>	COORDINATES:
DRILLING FIRM:	<u>J&amp;L Drilling, Inc.</u>	DATE FINISHED: <u>3/28/07</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Lee Charbonneau</u>	GROUND ELEV.: <u>92.4</u>	EASTING: <u>ft</u>
DRILL RIG:	<u>CME-75</u>	LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>16.0</u> ft

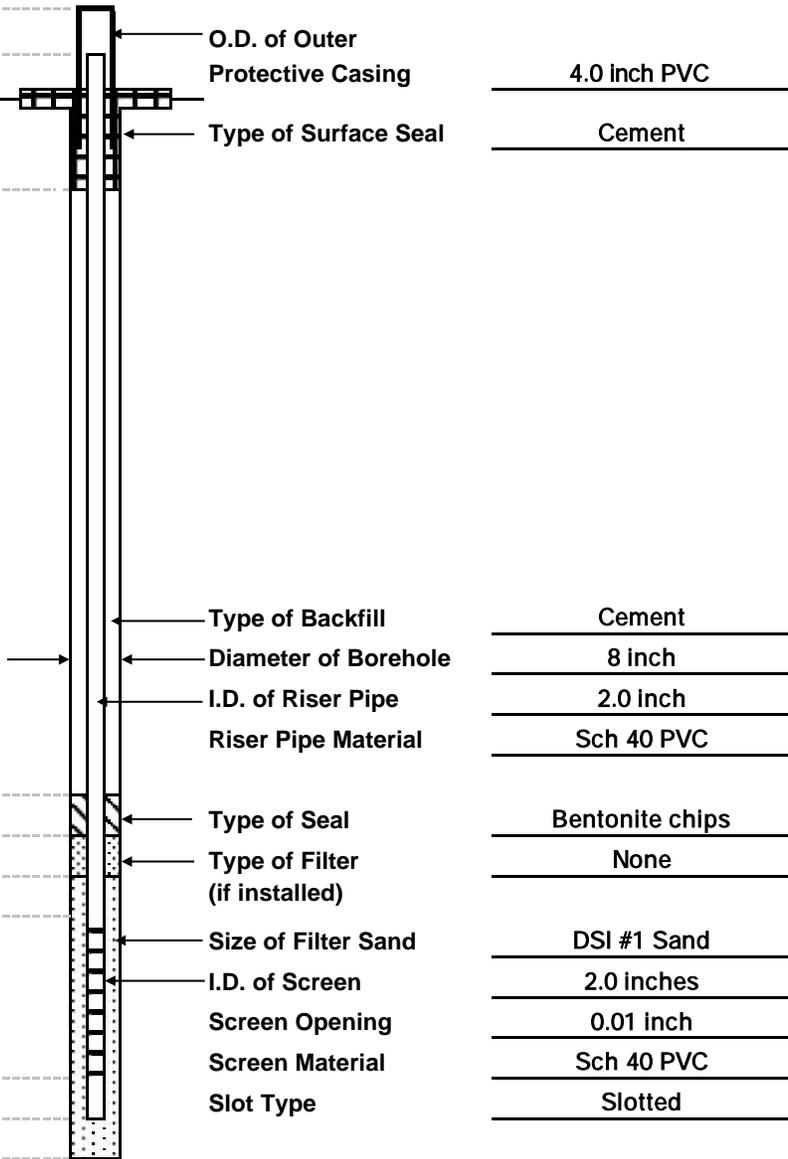
DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
2	91.4							SM		
4	89.4	5	14					SM	3.0-5.0 ft: No Recovery	
6	87.4	6						SM	5.0-7.0 ft: Light gray clayey fine SAND	
8	85.4	7						SM		
10	83.4	8	11					SP	8.0-10.0 ft: Light yellowish-gray medium to coarse SAND	
12	81.4	3	12					SP		
14	79.4	2	3					SP	12.0-14.0 ft: No Recovery	
16	77.4	1	4					SM	14.0-16.0 ft: Greenish-medium gray clayey silty fine SAND, very shelly, marine	
18	75.4								16.0 ft End of Boring	
20	73.4								Screen set at 6.0 to 16 ft	
22	71.4									
24	69.4									
26	67.4									
28	65.4									
30	63.4									

# MONITORING WELL INSTALLATION SKETCH

Project: SWIFT CREEK Monitoring Well Number: MW-1S  
 Drilling Firm: J & L Drilling, Inc. Date of Well Installation: 6/2/2004  
 Elevation of Top of Open Riser Pipe (Reference El. for Water Level Measurements,ft): 99.54  
 Depth to Bottom of Well from Top of Open Riser Pipe (ft): -15.70  
 Horizontal Location (ft): Northing: \_\_\_\_\_ Easting: \_\_\_\_\_

Elevation (ft, M.S.L.)	Distance (ft) from:	
	Top of Open Riser	Ground Surface

-	-	
99.5	0.0	2.7
96.8	-2.7	0.0
-	-	
94.8	-4.7	-2.0
94.3	-5.2	-2.5
94.3	-5.2	-2.5
93.8	-5.7	-3.0
83.8	-15.7	-13.0
83.8	-15.7	-13.0
83.8	-15.7	-13.0



*Diagram Not to Scale*

NOTES:

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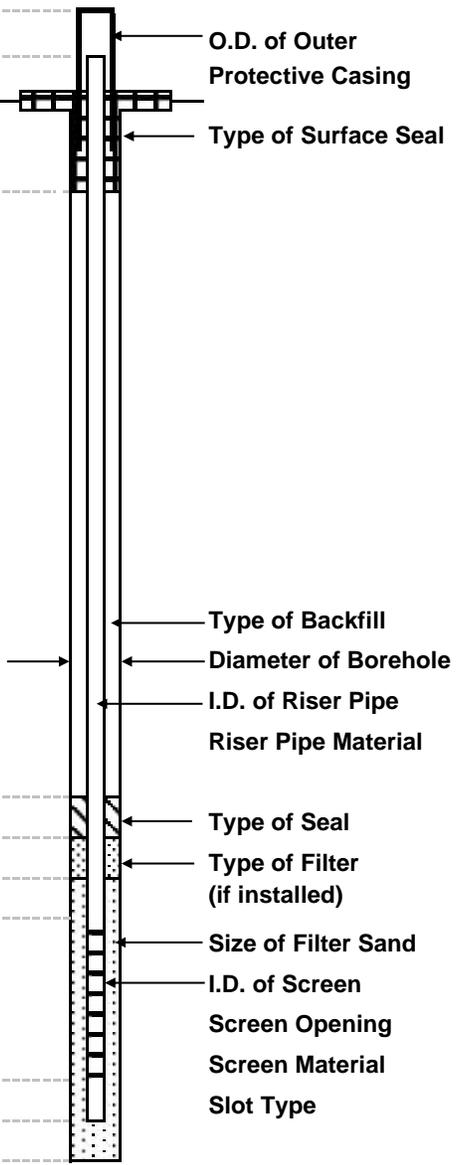


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# MONITORING WELL INSTALLATION SKETCH

Project: SWIFT CREEK Monitoring Well Number: MW-1D  
 Drilling Firm: J & L Drilling, Inc. Date of Well Installation: 6/2/2004  
 Elevation of Top of Open Riser Pipe (Reference El. for Water Level Measurements,ft): 99.90  
 Depth to Bottom of Well from Top of Open Riser Pipe (ft): -35.70  
 Horizontal Location (ft): Northing: \_\_\_\_\_ Easting: \_\_\_\_\_

Elevation (ft, M.S.L.)	Distance (ft) from:	
	Top of Open Riser	Ground Surface
-	-	-
99.9	0.0	2.7
97.1	-2.7	0.0
-	-	-



O.D. of Outer Protective Casing	<u>4.0 inch PVC</u>
Type of Surface Seal	<u>Cement</u>
Type of Backfill	<u>Cement</u>
Diameter of Borehole	<u>8 inch</u>
I.D. of Riser Pipe	<u>2.0 inch</u>
Riser Pipe Material	<u>Sch 40 PVC</u>
Type of Seal	<u>Bentonite chips</u>
Type of Filter (if installed)	<u>None</u>
Size of Filter Sand	<u>DSI #1 Sand</u>
I.D. of Screen	<u>2.0 inches</u>
Screen Opening	<u>0.01 inch</u>
Screen Material	<u>Sch 40 PVC</u>
Slot Type	<u>Slotted</u>

*Diagram Not to Scale*

NOTES:

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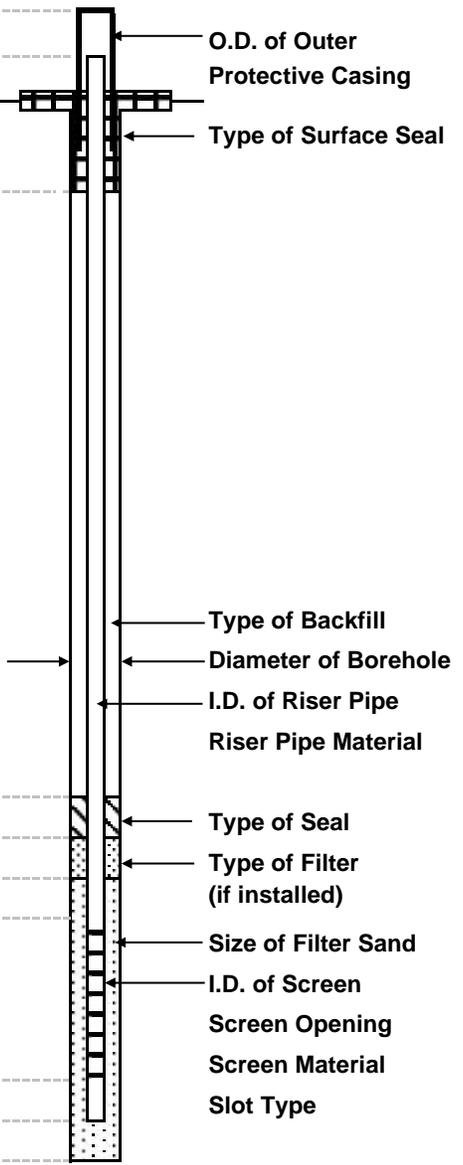


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# MONITORING WELL INSTALLATION SKETCH

Project: SWIFT CREEK Monitoring Well Number: MW-2S  
 Drilling Firm: J & L Drilling, Inc. Date of Well Installation: 6/18/2004  
 Elevation of Top of Open Riser Pipe (Reference El. for Water Level Measurements,ft): 94.87  
 Depth to Bottom of Well from Top of Open Riser Pipe (ft): -18.70  
 Horizontal Location (ft): Northing: \_\_\_\_\_ Easting: \_\_\_\_\_

Elevation (ft, M.S.L.)	Distance (ft) from:	
	Top of Open Riser	Ground Surface
-	-	
94.9	0.0	2.7
92.1	-2.7	0.0
-	-	
89.1	-5.7	-3.0
87.1	-7.7	-5.0
87.1	-7.7	-5.0
86.1	-8.7	-6.0
-	-	
76.1	-18.7	-16.0
76.1	-18.7	-16.0



O.D. of Outer Protective Casing 4.0 inch PVC  
 Type of Surface Seal Cement  
 Type of Backfill Cement  
 Diameter of Borehole 8 inch  
 I.D. of Riser Pipe 2.0 inch  
 Riser Pipe Material Sch 40 PVC  
 Type of Seal Bentonite chips  
 Type of Filter (if installed) None  
 Size of Filter Sand DSI #1 Sand  
 I.D. of Screen 2.0 inches  
 Screen Opening 0.01 inch  
 Screen Material Sch 40 PVC  
 Slot Type Slotted

*Diagram Not to Scale*

NOTES:

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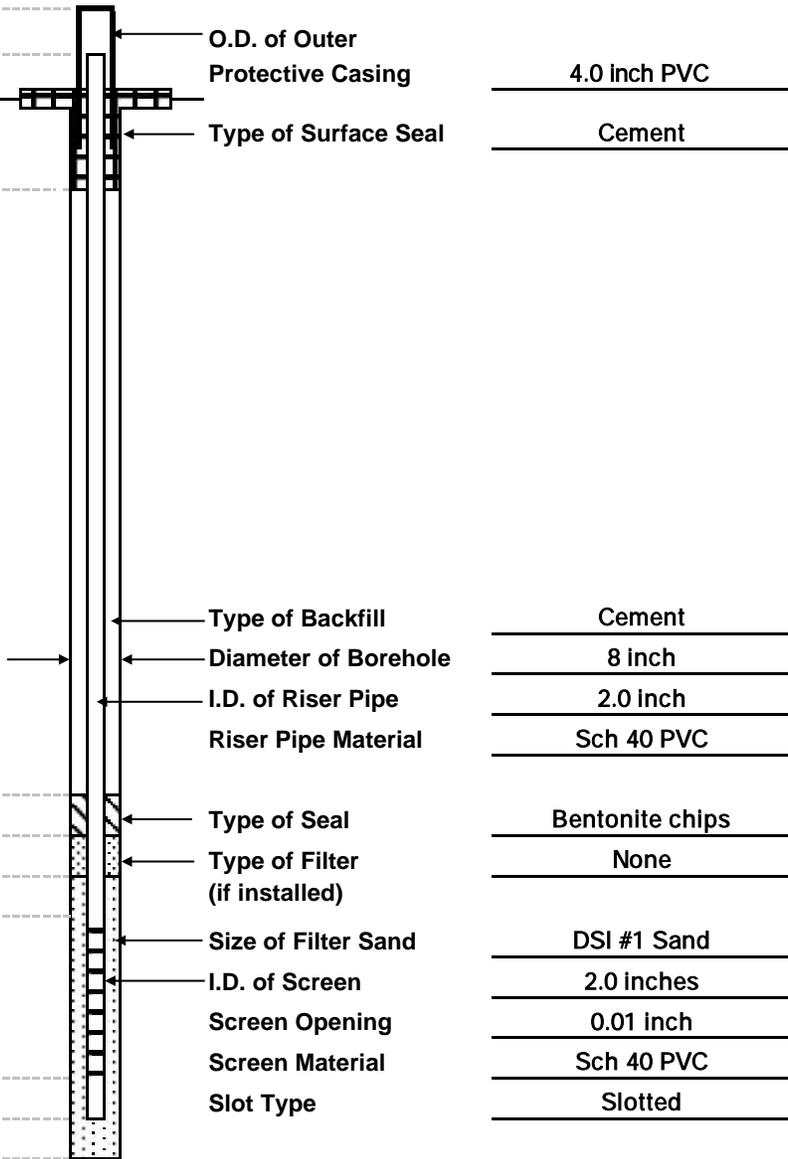
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# MONITORING WELL INSTALLATION SKETCH

Project: SWIFT CREEK Monitoring Well Number: MW-2D  
 Drilling Firm: J & L Drilling, Inc. Date of Well Installation: 6/18/2004  
 Elevation of Top of Open Riser Pipe (Reference El. for Water Level Measurements,ft): 95.22  
 Depth to Bottom of Well from Top of Open Riser Pipe (ft): -39.10  
 Horizontal Location (ft): Northing: \_\_\_\_\_ Easting: \_\_\_\_\_

Elevation (ft, M.S.L.)	Distance (ft) from:	
	Top of Open Riser	Ground Surface

-	-	
95.2	0.0	3.1
92.2	-3.1	0.0
-	-	
69.2	-26.1	-23.0
67.2	-28.1	-25.0
67.2	-28.1	-25.0
66.2	-29.1	-26.0
56.2	-39.1	-36.0
56.2	-39.1	-36.0
56.2	-39.1	-36.0



*Diagram Not to Scale*

NOTES:

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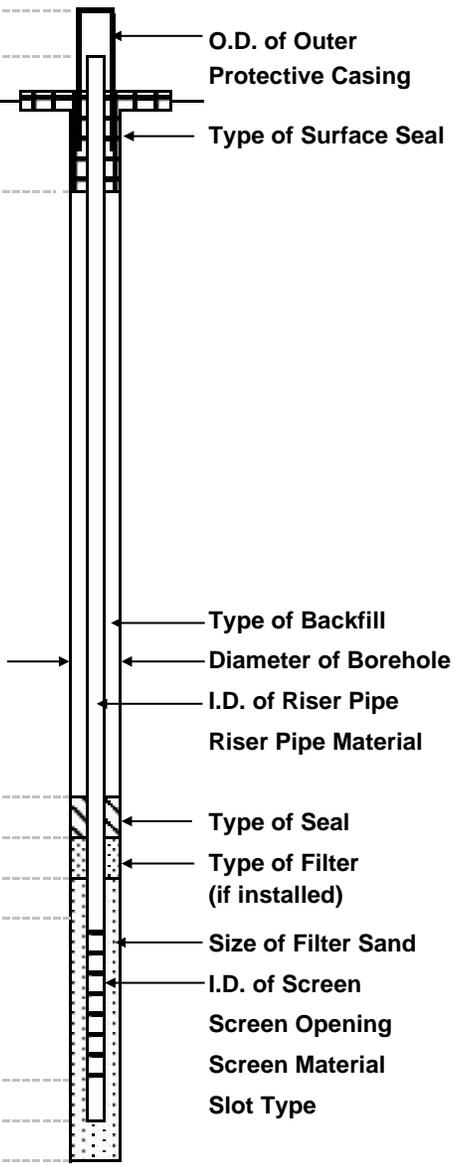


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# MONITORING WELL INSTALLATION SKETCH

Project: SWIFT CREEK Monitoring Well Number: MW-3  
 Drilling Firm: J & L Drilling, Inc. Date of Well Installation: 11/16/2005  
 Elevation of Top of Open Riser Pipe (Reference El. for Water Level Measurements,ft): 102.15  
 Depth to Bottom of Well from Top of Open Riser Pipe (ft): -19.75  
 Horizontal Location (ft): Northing: \_\_\_\_\_ Easting: \_\_\_\_\_

Elevation (ft, M.S.L.)	Distance (ft) from:	
	Top of Open Riser	Ground Surface
-	-	-
102.2	0.0	3.0
99.2	-3.0	0.0
-	-	-



O.D. of Outer Protective Casing	4.0 inch PVC
Type of Surface Seal	Cement
Type of Backfill	Cement
Diameter of Borehole	8 inch
I.D. of Riser Pipe	2.0 inch
Riser Pipe Material	Sch 40 PVC
Type of Seal	Bentonite chips
Type of Filter (if installed)	None
Size of Filter Sand	DSI #2 Sand
I.D. of Screen	2.0 inches
Screen Opening	0.01 inch
Screen Material	Sch 40 PVC
Slot Type	Slotted

*Diagram Not to Scale*

**NOTES:**

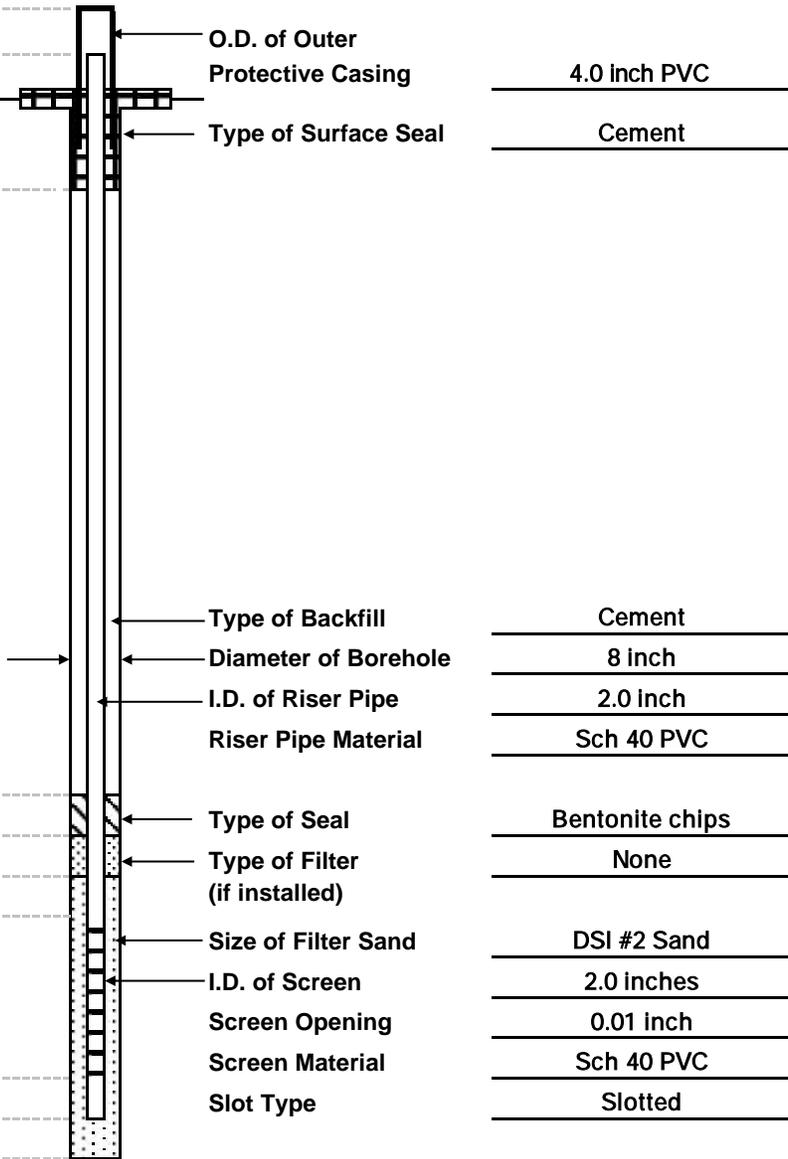
Depth to water 11/30/05 = 9.65 ft from TOC

# MONITORING WELL INSTALLATION SKETCH

Project: SWIFT CREEK Monitoring Well Number: MW-4  
 Drilling Firm: J & L Drilling, Inc. Date of Well Installation: 11/16/2005  
 Elevation of Top of Open Riser Pipe (Reference El. for Water Level Measurements,ft): 106.06  
 Depth to Bottom of Well from Top of Open Riser Pipe (ft): -19.98  
 Horizontal Location (ft): Northing: \_\_\_\_\_ Easting: \_\_\_\_\_

Elevation (ft, M.S.L.)	Distance (ft) from:	
	Top of Open Riser	Ground Surface

-	-	-
106.1	0.0	2.0
104.1	-2.0	0.0
-	-	-
100.1	-6.0	-4.0
98.1	-8.0	-6.0
98.1	-8.0	-6.0
96.1	-10.0	-8.0
-	-	-
86.1	-20.0	-18.0
86.1	-20.0	-18.0



*Diagram Not to Scale*

**NOTES:**

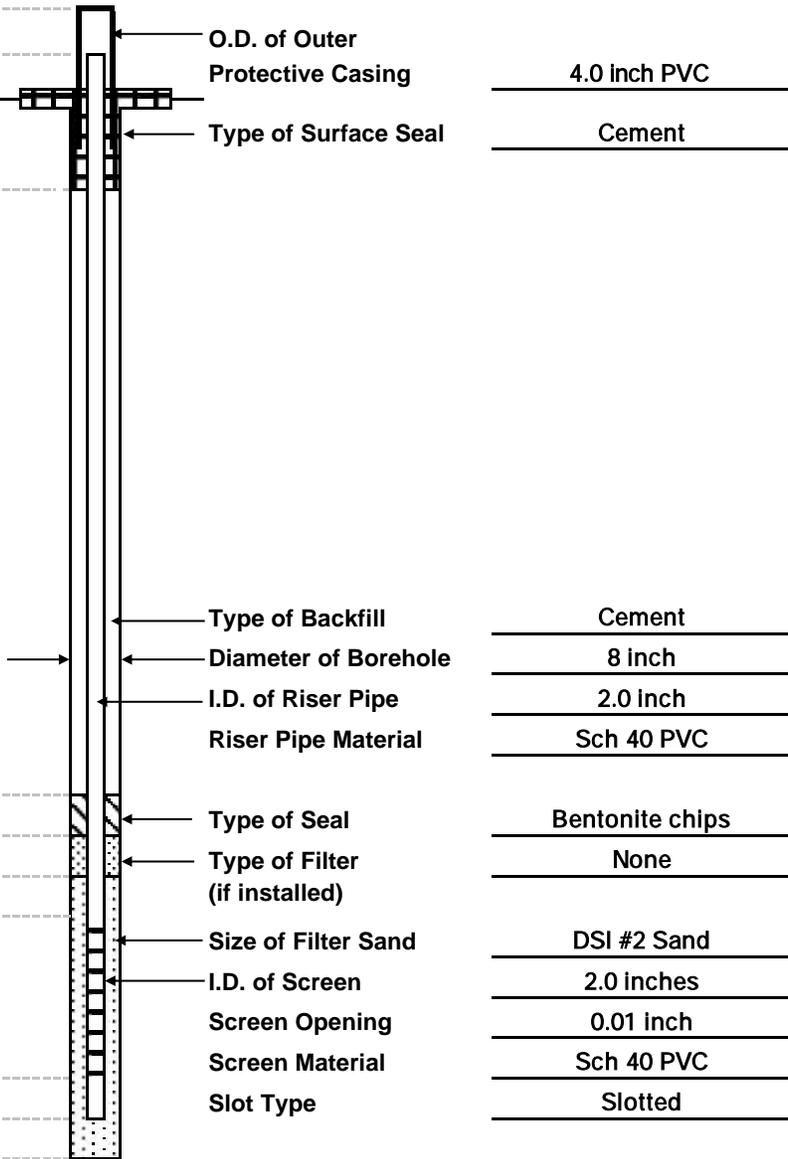
Depth to water 11/30/05 = 11.24 ft from TOC

# MONITORING WELL INSTALLATION SKETCH

Project: SWIFT CREEK Monitoring Well Number: MW-5S  
 Drilling Firm: J & L Drilling, Inc. Date of Well Installation: 11/17/2005  
 Elevation of Top of Open Riser Pipe (Reference El. for Water Level Measurements,ft): 102.68  
 Depth to Bottom of Well from Top of Open Riser Pipe (ft): -16.75  
 Horizontal Location (ft): Northing: \_\_\_\_\_ Easting: \_\_\_\_\_

Elevation (ft, M.S.L.)	Distance (ft) from:	
	Top of Open Riser	Ground Surface

-	-	
102.7	0.0	3.0
99.7	-3.0	0.0
-	-	
97.7	-5.0	-2.0
96.7	-6.0	-3.0
96.7	-6.0	-3.0
95.7	-7.0	-4.0
-	-	
85.7	-17.0	-14.0
85.7	-17.0	-14.0



*Diagram Not to Scale*

**NOTES:**

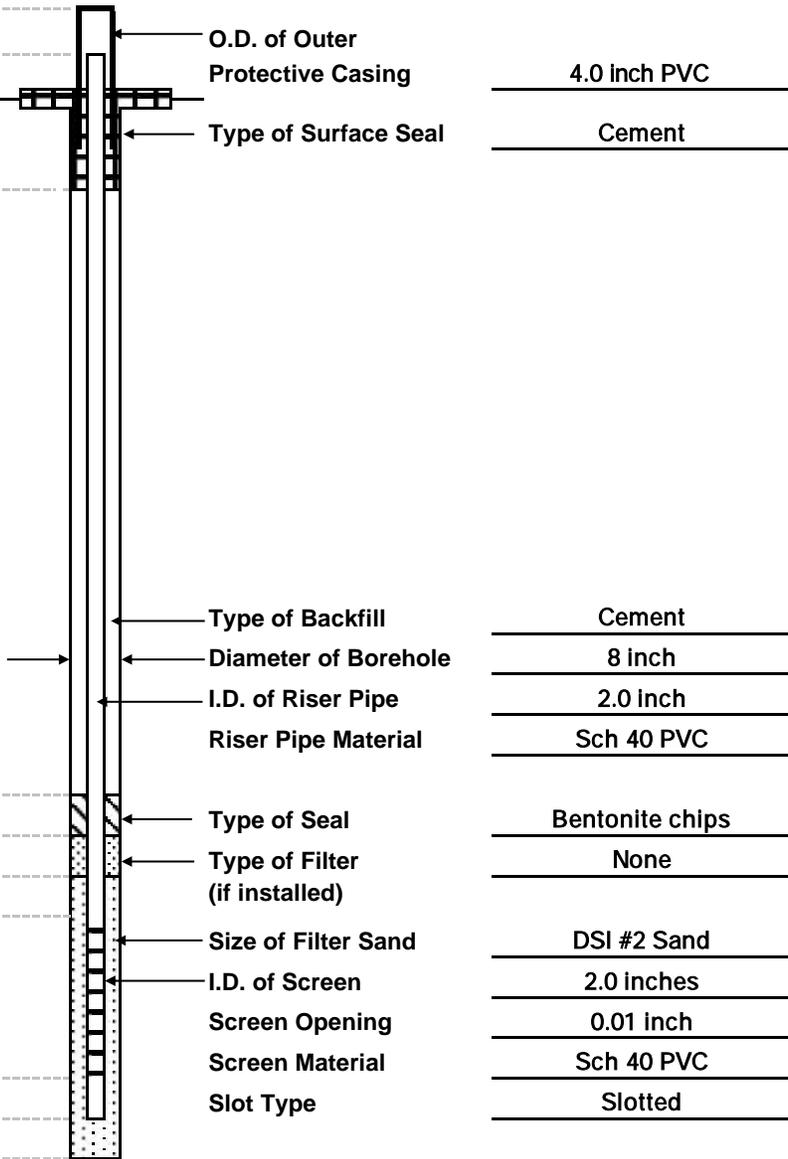
Depth to water 11/30/05 = 6.01 ft from TOC

# MONITORING WELL INSTALLATION SKETCH

Project: SWIFT CREEK Monitoring Well Number: MW-5D  
 Drilling Firm: J & L Drilling, Inc. Date of Well Installation: 11/18/2005  
 Elevation of Top of Open Riser Pipe (Reference El. for Water Level Measurements,ft): 102.67  
 Depth to Bottom of Well from Top of Open Riser Pipe (ft): -38.46  
 Horizontal Location (ft): Northing: \_\_\_\_\_ Easting: \_\_\_\_\_

Elevation (ft, M.S.L.)	Distance (ft) from:	
	Top of Open Riser	Ground Surface

-	-	
102.7	0.0	2.9
99.8	-2.9	0.0
-	-	
81.8	-20.9	-18.0
76.8	-25.9	-23.0
76.8	-25.9	-23.0
74.8	-27.9	-25.0
-	-	
64.8	-37.9	-35.0
64.8	-37.9	-35.0



*Diagram Not to Scale*

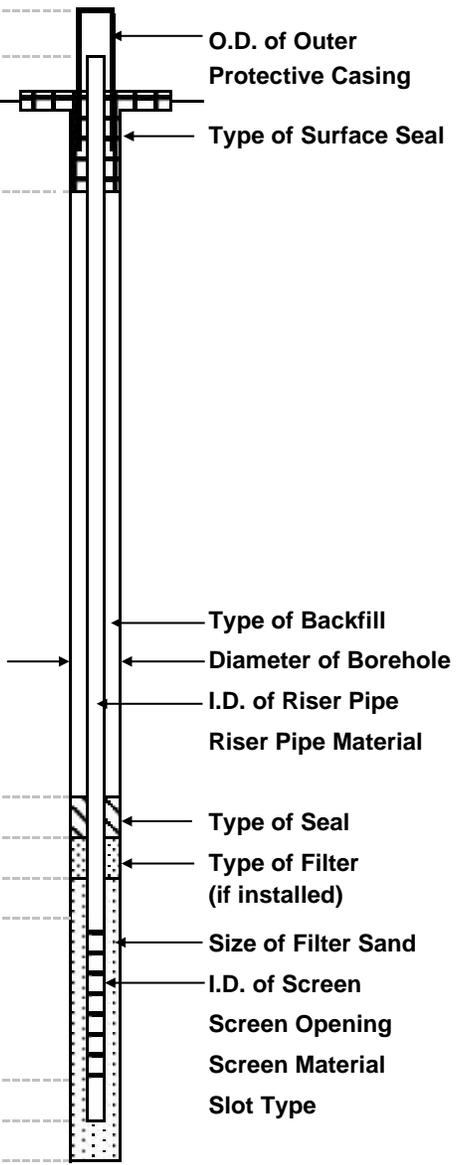
**NOTES:**

Depth to water 11/30/05 = 6.40 ft from TOC

# MONITORING WELL INSTALLATION SKETCH

Project: SWIFT CREEK Monitoring Well Number: MW-6  
 Drilling Firm: J & L Drilling, Inc. Date of Well Installation: 11/17/2005  
 Elevation of Top of Open Riser Pipe (Reference El. for Water Level Measurements,ft): 98.41  
 Depth to Bottom of Well from Top of Open Riser Pipe (ft): -19.25  
 Horizontal Location (ft): Northing: \_\_\_\_\_ Easting: \_\_\_\_\_

Elevation (ft, M.S.L.)	Distance (ft) from:	
	Top of Open Riser	Ground Surface
-	-	
98.4	0.0	3.4
95.0	-3.4	0.0
-	-	



O.D. of Outer Protective Casing	4.0 inch PVC
Type of Surface Seal	Cement
Type of Backfill	Cement
Diameter of Borehole	8 inch
I.D. of Riser Pipe	2.0 inch
Riser Pipe Material	Sch 40 PVC
Type of Seal	Bentonite chips
Type of Filter (if installed)	None
Size of Filter Sand	DSI #2 Sand
I.D. of Screen	2.0 inches
Screen Opening	0.01 inch
Screen Material	Sch 40 PVC
Slot Type	Slotted

*Diagram Not to Scale*

**NOTES:**

Depth to water 11/30/05 = 7.17 ft from TOC  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

# MONITORING WELL INSTALLATION SKETCH

Project: SWIFT CREEK Monitoring Well Number: MW-7  
 Drilling Firm: J & L Drilling, Inc. Date of Well Installation: 11/17/2005  
 Elevation of Top of Open Riser Pipe (Reference El. for Water Level Measurements,ft): 98.63  
 Depth to Bottom of Well from Top of Open Riser Pipe (ft): -22.10  
 Horizontal Location (ft): Northing: \_\_\_\_\_ Easting: \_\_\_\_\_

Elevation (ft, M.S.L.)	Distance (ft) from:			
	Top of Open Riser	Ground Surface		
-	-	-		
98.6	0.0	3.5		
95.1	-3.5	0.0	←	O.D. of Outer Protective Casing <u>4.0 inch PVC</u>
-	-	-	←	Type of Surface Seal <u>Cement</u>
-	-	-		
-	-	-	←	Type of Backfill <u>Cement</u>
-	-	-	←	Diameter of Borehole <u>8 inch</u>
-	-	-	←	I.D. of Riser Pipe <u>2.0 inch</u>
-	-	-		Riser Pipe Material <u>Sch 40 PVC</u>
93.1	-5.5	-2.0		
91.1	-7.5	-4.0	←	Type of Seal <u>Bentonite chips</u>
91.1	-7.5	-4.0	←	Type of Filter (if installed) <u>None</u>
89.1	-9.5	-6.0		
-	-	-	←	Size of Filter Sand <u>DSI #2 Sand</u>
-	-	-	←	I.D. of Screen <u>2.0 inches</u>
-	-	-		Screen Opening <u>0.01 inch</u>
-	-	-		Screen Material <u>Sch 40 PVC</u>
79.1	-19.5	-16.0		
79.1	-19.5	-16.0		Slot Type <u>Slotted</u>

*Diagram Not to Scale*

**NOTES:**

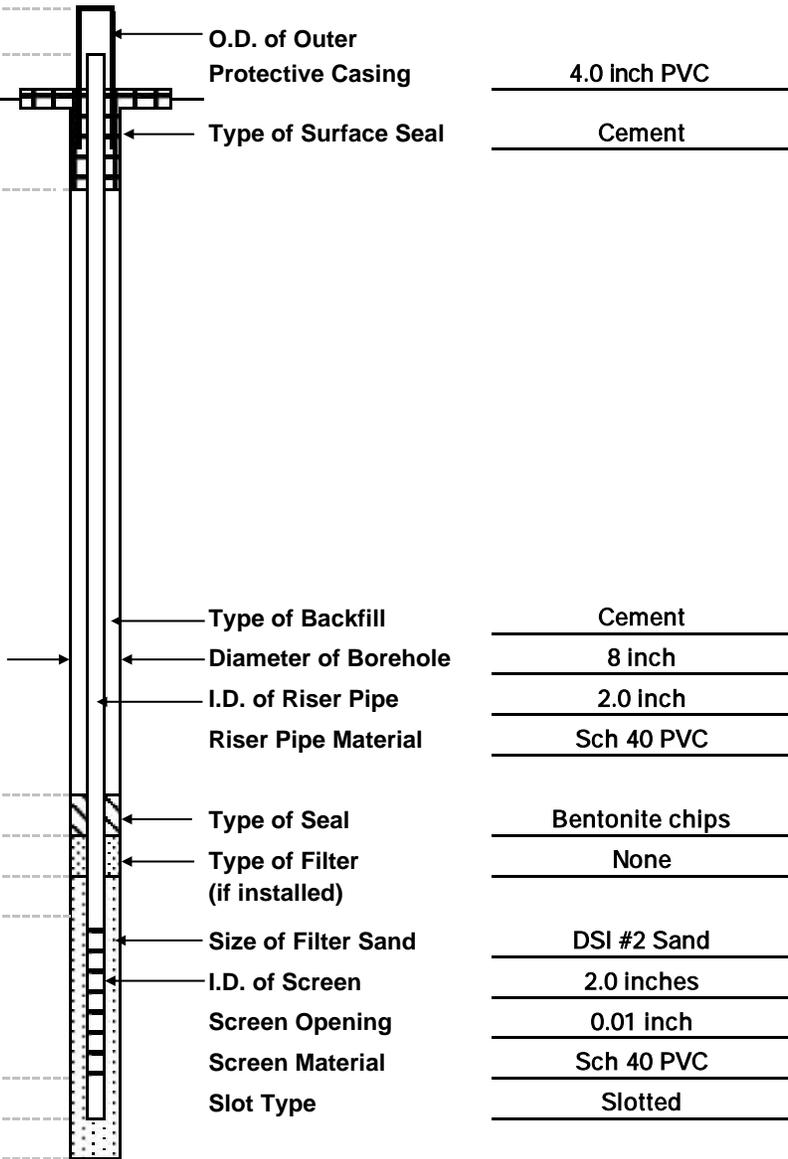
Depth to water 11/30/05 = 7.63 ft from TOC

# MONITORING WELL INSTALLATION SKETCH

Project: SWIFT CREEK Monitoring Well Number: MW-8  
 Drilling Firm: J & L Drilling, Inc. Date of Well Installation: 3/28/2007  
 Elevation of Top of Open Riser Pipe (Reference El. for Water Level Measurements,ft): 95.42  
 Depth to Bottom of Well from Top of Open Riser Pipe (ft): -18.82  
 Horizontal Location (ft): Northing: \_\_\_\_\_ Easting: \_\_\_\_\_

Elevation (ft, M.S.L.)	Distance (ft) from:	
	Top of Open Riser	Ground Surface

-	-	-
95.4	0.0	3.0
92.4	-3.0	0.0
-	-	-
89.4	-6.0	-3.0
87.4	-8.0	-5.0
87.4	-8.0	-5.0
86.4	-9.0	-6.0
-	-	-
76.4	-19.0	-16.0
76.4	-19.0	-16.0



*Diagram Not to Scale*

**NOTES:**

Depth to water 4/4/07 = 4.84 ft from TOC

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>B-1</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u>	SHEET: <u>1 of 1</u>
TYPE OF BORING:	<u>Geoprobe</u>	DATE STARTED: <u>9/12/02</u>	COORDINATES:
DRILLING FIRM:	<u>Regional Probing</u>	DATE FINISHED: <u>9/12/02</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Stuart Outten</u>	GROUND ELEV.: <u>105.7</u>	EASTING: <u>ft</u>
DRILL RIG:		LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>19.0</u> ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #.	CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFICATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
	104.7							FILL	FILL	0-1.5 ft: Soil Cover, Silty SAND (SM), light brownish-gray	
2	102.7							COAL ASH	COAL ASH	1.5-13.5 ft: Coal Ash	
4	100.7										
6	98.7										
8	96.7										
10	94.7										
12	92.7										
14	90.7							CL	CL	13.5- 16.8 ft: fine sandy CLAY (CL) mottled yellowish-brown and light gray	
16	88.7							SC	SC	16.8-19.0 ft: clayey fine SAND (SC), shelly, mottled yellowish-brown and gray	
18	86.7										
20	84.7									19.0 End of Boring Screen set at 14-19 ft	
22	82.7										
24	80.7										
26	78.7										
28	76.7										
30											

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	B-2
LOCATION:	BATTLEBORO, NC	STATION:	x x
TYPE OF BORING:	Geoprobe	DATE STARTED:	9/12/02
DRILLING FIRM:	Regional Probing Service	DATE FINISHED:	9/12/02
DRILLER:	Stuart Outten	GROUND ELEV.:	105.4
DRILL RIG:		LOGGED BY:	J Sherrill, L.G.
		SHEET:	1 of 1
		COORDINATES:	
		NORTHING:	ft
		EASTING:	ft
		TOTAL DEPTH:	13.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFICATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
	104.4							SM	0-1.5 ft: Soil Cover, Silty SAND (SM), light brownish-gray	
2	102.4								1.5-10.2 ft: Coal Ash dense	
4	100.4									
6	98.4							Coal Ash		
8	96.4									
10	94.4							CL	10.2-11.6 ft: fine sandv Clay (CL) fill	
12	92.4							Coal Ash	11.6-13.0 ft: Coal Ash coarse sandv	
14	90.4								13.0 ft End of Boring on Refusal	Refusal on concrete pipe
16	88.4								Top of concrete pipe = 92.4 ft	
18	86.4									
20	84.4									
22	82.4									
24	80.4									
26	78.4									
28	76.4									
30										

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>B-3</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u>	SHEET: <u>1 of 1</u>
TYPE OF BORING:	<u>Geoprobe</u>	DATE STARTED: <u>9/12/02</u>	COORDINATES:
DRILLING FIRM:	<u>Regional Probing Service</u>	DATE FINISHED: <u>9/12/02</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Stuart Outten</u>	GROUND ELEV.: <u>105.4</u>	EASTING: <u>ft</u>
DRILL RIG:		LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>19.5</u> ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
	104.4							SM	0-1.5 ft: Soil Cover, Silty SAND (SM), light brownish-gray	
2	102.4							Coal Ash	1.5-10.4 ft: Coal Ash	
4	100.4							Coal Ash		
6	98.4							Coal Ash		
8	96.4							Coal Ash		
10	94.4							SC	10.4-11.4 ft: Clayey fine SAND (SC) fill	
12	92.4							Coal Ash	11.4-14.2 ft: Coal Ash, coarse, sandy	
14	90.4							SC	14.2- 15.0 ft: Clayey fine SAND (SC) fill	
16	88.4							Coal	15.0-15.8 ft: Coal Ash, coarse, sandy	
18	86.4							CL	15.8- 19.5 ft: fine sandy Clay (CL), in place soil, mottled yellowish-brown and gray	
20	84.4								19.5 ft: End of Boring	
22	82.4									
24	80.4									
26	78.4									
28	76.4									
30										

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-1
LOCATION:	BATTLEBORO, NC	STATION: x	x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	9/20/02
DRILLING FIRM:	J & L Drilling, Inc.	DATE FINISHED:	9/20/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	105.6
DRILL RIG:	CME-450	LOGGED BY:	J Sherrill, L.G.
		COORDINATES:	
		NORTHING:	ft
		EASTING:	ft
		TOTAL DEPTH:	30.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
0	104.6							SM	0-1.5 ft: Soil Cover, Silty Sand (SM), light brownish-gray	
2	102.6								1.5-14.4 ft: Coal Ash	
4	100.6									
6	98.6									
8	96.6							Coal Ash		
10	94.6									
12	92.6									
14		11 7 7 5	14	SS-1					14.4-15.0 ft: Fine sand & CLAY (CL)	
16	88.6									
18	86.6								No samples collected from 15.0 to 30.0 ft.	
20	84.6									
22	82.6									
24	80.6									
26	78.6								30.0 ft: End of Boring, Set screen at 20.0-30.0 ft, sand from 20.0 to 30.0 ft, bentonite from 15.0 to 19.0 ft	
28	76.6									
30										

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-2
LOCATION:	BATTLEBORO, NC	STATION: x	x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	9/20/02
DRILLING FIRM:	J & L Drilling, Inc.	DATE FINISHED:	9/20/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	106.7
DRILL RIG:	CME-450	LOGGED BY: J Sherrill, L.G.	TOTAL DEPTH: 30.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFICATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
	105.7							SM	0-1.5 ft: Soil Cover, Silty SAND (SM), light brownish gray	
2	103.7							Coal Ash	1.5- 16.1 ft: Coal Ash	
4	101.7									
6	99.7									
8	97.7									
10	95.7	55	11	SS-1						
12	93.7	58	25	SS-2						
14	91.7	17	46	SS-3						
16	89.7	12	33	SS-4				CL	16.1- 18.0 ft: fine sandv CLAY (CL). mottled	
18	87.7	19								
20	85.7									No samples collected from 18.0 to 30.0 ft.
22	83.7									
24	81.7									
26	79.7									
28	77.7									
30										30.0 ft: End of Boring, Set screen at 20.0-30.0 ft, sand from 20.0 to 30.0 ft, bentonite from 15.0 to 19.0 ft

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-3
LOCATION:	BATTLEBORO, NC	STATION:	x x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	9/20/02
DRILLING FIRM:	J & L Drilling, Inc.	DATE FINISHED:	9/20/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	104.4
DRILL RIG:	CME-450	LOGGED BY:	J Sherrill, L.G.
		COORDINATES:	
		NORTHING:	ft
		EASTING:	ft
		TOTAL DEPTH:	28.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
	103.4							SM	0-1.5 ft: Soil Cover, Silty SAND (SM), light brownish gray	
2	101.4							Coal Ash	1.5-12.5 ft: Coal Ash	
4	99.4									
6	97.4									
8	95.4									
10	93.4	4 5 32 46	37	SS-1						
12		5 6 12 16	18	SS-2				CL	12.5-14.0 ft: Mottled brownish-yellow and gray Sandy CLAY, very stiff	
14	89.4									
16	87.4								No samples collected from 14.0 to 28.0 ft.	
18	85.4									
20	83.4									
22	81.4									
24	79.4									
26	77.4									
28	75.4								28.0 ft: End of Boring, Set screen at 18.0-28.0 ft, sand from 17.0 to 28.0 ft, bentonite from 17.0 to 12.0 ft	
30										

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-4
LOCATION:	BATTLEBORO, NC	STATION: x	x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	9/20/02
DRILLING FIRM:	J & L Drilling, Inc.	DATE FINISHED:	9/20/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	104.0
DRILL RIG:	CME-75	LOGGED BY: J Sherrill, L.G.	TOTAL DEPTH: 30.0
		COORDINATES:	
		NORTHING:	ft
		EASTING:	ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
	103.0							SM	0-1.5 ft: Soil Cover, Silty SAND (SM), light brownish gray	
2	101.0								1.5-14.0 ft: Coal Ash	
4	99.0									
6	97.0									
8	95.0									
10	93.0									
12	91.0									
14		6 8 11 12	19	SS-1				CL	14.0-15.0 ft: Mottled brownish-yellow and gray Sandy CLAY, very stiff	
16	87.0									
18	85.0									
20	83.0									
22	81.0									
24	79.0									
26	77.0									
28	75.0									
30									30.0 ft: End of Boring, Set screen at 20.0-30.0 ft, sand from 19.0 to 30.0 ft, bentonite from 14.0 to 19.0 ft	

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-5
LOCATION:	BATTLEBORO, NC	STATION: x	x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	9/24/02
DRILLING FIRM:	J & L Drilling, Inc.	DATE FINISHED:	9/24/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	105.9
DRILL RIG:	CME-75	LOGGED BY:	J Sherrill, L.G.
		COORDINATES:	
		NORTHING:	ft
		EASTING:	ft
		TOTAL DEPTH:	30.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
	104.9							SM	0-1.5 ft: Soil Cover, Silty SAND (SM), light brownish gray	
2	102.9								1.5-13.0 ft; Coal Ash	
4	100.9									
6	98.9									
8	96.9									
10	94.9	7 45 38 20	83	SS-1						
12	92.9	7 10 10 10	20	SS-2						
14	90.9	3 6 7 10	13	SS-3				CL	13.0-16.0 ft: Mottled brownish-yellow and gray Sandy CLAY, stiff	
16	88.9									
18	86.9									
20	84.9									No samples collected from 16.0 to 30.0 ft.
22	82.9									
24	80.9									
26	78.9									
28	76.9									
30										30.0 ft: End of Boring, Set screen at 20.0-30.0 ft, sand from 19.0 to 30.0 ft, bentonite from 14.0 to 19.0 ft

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-6
LOCATION:	BATTLEBORO, NC	STATION: x	x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	9/24/02
DRILLING FIRM:	J & L Drilling, Inc.	DATE FINISHED:	9/24/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	107.5
DRILL RIG:	CME-75	LOGGED BY: J Sherrill, L.G.	TOTAL DEPTH: 30.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
0	106.5							SM	0-1.5 ft: Soil Cover, Silty SAND (SM), light brownish gray	
2	104.5							Coal Ash	1.5-13.5 ft: Coal Ash	
4	102.5									
6	100.5									
8	98.5									
10	96.5									
12	94.5							SC	13.5-15.0 ft: Mottled yellowish-brown and gray Clayey fine to medium SAND	
14	92.5	3 10 13 14	23	SS-1					No samples collected from 15.0 to 30.0 ft.	
16	90.5									
18	88.5									
20	86.5									
22	84.5									
24	82.5									
26	80.5									
28	78.5							30.0 ft: End of Boring, Set screen at 20.0-30.0 ft, sand from 19.0 to 30.0 ft, bentonite from 14.0 to 19.0 ft		
30										

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-7
LOCATION:	BATTLEBORO, NC	STATION: x	x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	10/6/02
DRILLING FIRM:	J & L Drilling, Inc.	DATE FINISHED:	10/6/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	105.9
DRILL RIG:	CME-75	LOGGED BY:	J Sherrill, L.G.
		COORDINATES:	
		NORTHING:	ft
		EASTING:	ft
		TOTAL DEPTH:	40.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFICATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
	104.9							SM	0-1.5 ft: Soil Cover, Silty SAND (SM), light brownish gray	
2	102.9								1.5-14.3 ft: Coal Ash	
4	100.9									
6	98.9									
8	96.9									
10	94.9									
12	92.9									
14	90.9	3 8 10	11	SS-1				CL	14.3-15.0 ft: Mottled yellowish-brown and gray Sandy CLAY, stiff	
16	88.9									
18	86.9	8 13 19 24	32	SS-2				SC	18.0-20.0 ft: Mottled brownish-yellow and gray Clayey, fine to coarse SAND, very stiff	
20	84.9									
22	82.9									
24	80.9	1 1 3 4	4	SS-3				SM	23.0-24.0 ft: Medium gray Silty fine SAND, 24.0-25.0 ft: Medium gray Silty very fine SAND, very Shelly, loose	
26	78.9									
28	76.9	2 2 3 3	5	SS-4					28.0-30.0 ft: Medium gray Silty very fine SAND, very Shelly, loose	
30										

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-7
LOCATION:	BATTLEBORO, NC	SHEET:	2 of 2
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	10/6/02
DRILLING FIRM:	J & L Drilling, Inc.	DATE FINISHED:	10/6/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	105.9
DRILL RIG:	CME-75	LOGGED BY:	J Sherrill, L.G.
		COORDINATES:	0
		NORTHING:	0.0 ft
		EASTING:	0.0 ft
		TOTAL DEPTH:	40.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE # CORE RUN	RECOVERY	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
32	74.9									
34	72.9	2 3 3 5	6	SS-5				SM	33.0-35.0 ft: Medium gray Silty very fine SAND, very shelly, loose	
36	70.9									
38	68.9									
40	66.9	2 4 4 5	8	SS-6					38.0-40.0 ft: Medium gray Silty very fine SAND, very shelly, loose	
40	64.9								40 ft End of Boring	
42	62.9								Set screen at 30.0-40.0 ft, sand from 29.0 to 40.0 ft, bentonite from 14.0 to 29.0 ft	
44	60.9									
46	58.9									
48	56.9									
50	54.9									
52	52.9									
54	50.9									
56	48.9									
58	46.9									
60										

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>P-8</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u>	SHEET: <u>1 of 2</u>
TYPE OF BORING:	<u>Hollow Stem Auger</u>	DATE STARTED: <u>10/6/02</u>	COORDINATES:
DRILLING FIRM:	<u>J &amp; L Drilling, Inc.</u>	DATE FINISHED: <u>10/6/02</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Lee Charbonneau</u>	GROUND ELEV.: <u>103.9</u>	EASTING: <u>ft</u>
DRILL RIG:	<u>CME-75</u>	LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>40.0</u> ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFICATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
	102.9							SM	0-1.5 ft: Soil Cover, Silty SAND (SM), light brownish gray	
2	100.9								1.5-13.3 ft: Coal Ash	
4	98.9									
6	96.9									
8	94.9									
10	92.9									
12	90.9									
14		4 6 7 9	13	SS-1				CL	13.3-15.0 ft: Mottled yellowish -brown and gray Sandy CLAY, stiff	
16	86.9									
18	84.9	7 10 18 21	28	SS-2				SC	18.0-19.5 ft: Light gray Clayey SAND, stiff	
20	82.9							SM	19.5-20.0 ft: Yellowish-brown Silty SAND, compact	
22	80.9									
24	78.9	1 2 3 3	5	SS-3				SM	23.0-25.0 ft: Medium gray Silty very fine SAND, very Shelly, loose	
26	76.9									
28	74.9	2 2 3 4	5	SS-4				SM	28.0-30.0 ft: Medium gray Silty very fine SAND, very Shelly, loose	
30										

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-8
LOCATION:	BATTLEBORO, NC	SHEET:	2 of 2
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	10/6/02
DRILLING FIRM:	J & L Drilling, Inc.	DATE FINISHED:	10/6/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	103.9
DRILL RIG:	CME-75	LOGGED BY:	J Sherrill, L.G.
		COORDINATES:	0
		NORTHING:	0.0 ft
		EASTING:	0.0 ft
		TOTAL DEPTH:	40.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE # CORE RUN	RECOVERY	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
32	72.9									
34	70.9	2 2 2 4	4	SS-5				SM	33.0-35.0 ft: Medium gray Silty very fine Sand, very Shelly, loose	
36	68.9									
38	66.9									
40	64.9	2 3 4 4	7	SS-6					38.0-40.0 ft: Greenish-gray Silty very fine SAND, very Shelly, loose	
40	62.9								40 ft End of Boring	
42	60.9								Set screen at 30.0-40.0 ft, sand from 29.0 to 40.0 ft, bentonite from 14.0 to 29.0 ft	
44	58.9									
46	56.9									
48	54.9									
50	52.9									
52	50.9									
54	48.9									
56	46.9									
58	44.9									
60										

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-9
LOCATION:	BATTLEBORO, NC	STATION: x	x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	10/6/02
DRILLING FIRM:	J & L Drilling, Inc.	DATE FINISHED:	10/6/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	100.9
DRILL RIG:	CME-75	LOGGED BY: J Sherrill, L.G.	TOTAL DEPTH: 30.0
		COORDINATES:	
		NORTHING:	ft
		EASTING:	ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFICATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
2	99.9							SM	3.0-4.5 ft: Mottled brownish-yellow and brownish red Silty Clayey medium to coarse SAND, firm	
4	97.9	6	11	SS-1				SM	4.5-5.0 ft: Mottled brownish-yellow, red and gray, Clayey fine to medium SAND	
6	95.9	8						SC	8.0-9.6 ft: Brownish-red, Silty SAND with gravel	
8	93.9							SC	9.6-10 ft: Dark brown Silty fine SAND	
10	91.9	9	32	SS-2				SM	13.0-14.0 ft: Light brownish-gray Clayey fine SAND	
12	89.9							SC	14.0-15.0 ft: Yellowish gray fine SAND, very Shelly, loose	
14	87.9	2	6	SS-3				SC	18.0-20.0 ft: Greenish-gray Silty very fine SAND, very Shelly, loose	
16	85.9	2						SM	23.0-25.0 ft: Greenish-gray Silty very fine SAND, very Shelly, firm	
18	83.9	2	4	SS-4				SM	28.0-30.0 ft: Greenish-gray Silty very fine SAND, very Shelly, loose	
20	81.9	2						SM	30.0 ft: End of Boring	
22	79.9							SM		Set Screen 20.0 to 30 ft., sand from 19.0 to 30 ft., bentonite from 14.0 to 19.0 ft.
24	77.9	3	12	SS-5				SM		
26	75.9	5						SM		
28	73.9	7						SM		
30	71.9	8	4	SS-6				SM		

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-10
LOCATION:	BATTLEBORO, NC	STATION: x	x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	10/7/02
DRILLING FIRM:	J&L Drilling, Inc.	DATE FINISHED:	10/7/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	106.1
DRILL RIG:	CME-75	LOGGED BY:	J Sherrill, L.G.
		SHEET:	1 of 1
		COORDINATES:	
		NORTHING:	ft
		EASTING:	ft
		TOTAL DEPTH:	30.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFICATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
2	105.1									
4	103.1	9 12 13 15	25	SS-1				SM	3.0-5.0 ft: Yellowish-brown Silty Clayey SAND, Firm	
8	99.1									
10	97.1	6 8 7 10	15	SS-2					8.0-10.0 ft: Yellowish-brown Silty Clayey medium to coarse SAND, firm	
12	95.1									
14	93.1	4 3 2 2	5	SS-3					13.0-14.5 ft: Yellowish-brown Silty medium to coarse SAND with gravel at base	
16	91.1							CL	14.5-15.0 ft: Yellowish-brown fine Sandy CLAY	
18	89.1									
20	87.1	2 2 4 4	6	SS-4					18.0-20.0 ft: Medium gray Silty very fine SAND, very shelly, loose	
22	85.1									
24	83.1	1 2 3 3	5	SS-5				SM	23.0-25.0 ft: Greenish-gray Silty very fine SAND, very shelly, loose	
26	79.1									Screen 20.0 to 30.0 ft, sand from 19.0 to 30 ft, bentonite from 10.0 to 19.0 ft
30	77.1	3 3 4 5	7	SS-6					28.0-30.0 ft: Greenish-gray Silty very fine SAND, very shelly, loose 30.0 End of Boring	

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-11
LOCATION:	BATTLEBORO, NC	STATION: x	x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	10/7/02
DRILLING FIRM:	J&L Drilling, Inc.	DATE FINISHED:	10/7/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	99.2
DRILL RIG:	CME-75	LOGGED BY:	J Sherrill, L.G.
		COORDINATES:	
		NORTHING:	ft
		EASTING:	ft
		TOTAL DEPTH:	23.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFICATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
2	98.2							SM		
4	96.2	5	19	SS-1				SM	3.0-5.0 ft: Reddish-yellow Silty medium to coarse SAND	
	94.2	10								
6		9								
8		7						CL	8.0-10.0 ft: Mottled yellowish-brown and gray fine Sandy CLAY	
10		3	12	SS-2						
		6								
12	86.2									
14	84.2	1	2	SS-3					13.0-15.0 ft: Light yellowish-brown Silty fine SAND, very loose	
		1								
16	82.2							SM		
18	80.2	1	5	SS-4					18.0-20.0 ft: Greenish-gray Silty fine SAND	
20		2								
	78.2	3								
22										
	76.2									
24									23.0 ft: End of Boring	
26	74.2								Screen 13 to 23 ft Sand from 12 to 23 ft Bentonite from 2 to 12 Soil Cuttings from 0 to 2 ft	
28	72.2									
30	70.2									

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>P-12</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u>	SHEET: <u>1 of 1</u>
TYPE OF BORING:	<u>Hollow Stem Auger</u>	DATE STARTED: <u>12/23/02</u>	COORDINATES:
DRILLING FIRM:	<u>J&amp;L Drilling, Inc.</u>	DATE FINISHED: <u>12/23/02</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Lee Charbonneau</u>	GROUND ELEV.: <u>104.0</u>	EASTING: <u>ft</u>
DRILL RIG:	<u>CME-75</u>	LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>16.0</u> ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
	103.0							SM	0-1.5 ft: Soil Cover, Silty SAND, light brownish-gray	
2	101.0								1.5-13.8 ft: Coal Ash	3.7-4.3 ft: Permeability Test Coal Ash Undisturbed K = 8E-04 cm/sec
4	99.0									
6	97.0									
8	95.0									
10	93.0									
12	91.0	4 3 5 9	8	SS-1						
14								CL	13.8-16.1 ft: Light gray and yellow fine Sandy Silty CLAY	
16	87.0								16.0 ft: End of Boring	15.5-16.1 ft: Permeability Test Sandv. Silty CLAY Undisturbed K = 7E-08 cm/sec
18	85.0								Screen from 6 to 16 ft Sand from 5 to 16 ft Bentonite from 2.5 to 5 ft Soil Cuttings from 0 to 2.5 ft	
20	83.0									
22	81.0									
24	79.0									
26	77.0									
28	75.0									
30										

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-13
LOCATION:	BATTLEBORO, NC	STATION: x	x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	12/23/02
DRILLING FIRM:	J&L Drilling, Inc.	DATE FINISHED:	12/23/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	105.9
DRILL RIG:	CME-75	LOGGED BY:	J Sherrill, L.G.
		COORDINATES:	
		NORTHING:	ft
		EASTING:	ft
		TOTAL DEPTH:	16.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFICATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
0	104.9							SM	0-1.5 ft: Soil Cover, Silty SAND, Light brownish-gray	
2	102.9							Coal Ash	1.5-13.2 ft: Coal Ash	
4	100.9							Coal Ash		
6	98.9							Coal Ash		
8	96.9							Coal Ash		
10	94.9							Coal Ash		
12	92.9	3 3 4 7	7	SS-1				CL	13.2-14.0 ft: Yellowish-gray Sandv CLAY. stiff	
14								CL		
16	88.9								16.0 ft: End of Boring	
18	86.9								Screen from 6 to 16 Sand from 5 to 16 Bentonite from 2.5 to 5 ft Soil Cuttings from 0 to 2.5 ft	
20	84.9									
22	82.9									
24	80.9									
26	78.9									
28	76.9									
30										

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>P-14</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u>	SHEET: <u>1 of 1</u>
TYPE OF BORING:	<u>Hollow Stem Auger</u>	DATE STARTED: <u>12/23/02</u>	COORDINATES:
DRILLING FIRM:	<u>J&amp;L Drilling, Inc.</u>	DATE FINISHED: <u>12/23/02</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Lee Charbonneau</u>	GROUND ELEV.: <u>101.0</u>	EASTING: <u>ft</u>
DRILL RIG:	<u>CME-75</u>	LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>14.0</u> ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
100.0								SM	0-1.5 ft: Soil Cover, Silty SAND, light brownish gray	
2	98.0							Coal Ash	1.5 - 11.5 ft: Coal Ash	
4	96.0							Coal Ash		
6	94.0	30 60	90	SS-1				Coal Ash		
8	92.0	8 17 19 19	36	SS-2				Coal Ash		
10	90.0	13 17 8 7	25	SS-3				Coal Ash		
12	88.0							CL	11.5-12.0 ft: Grayish-yellow Sandy CLAY, stiff	
14	86.0								14.0 ft: End of Boring	
16	84.0								Screen from 4 to 14 ft Sand from 3 to 14 ft Bentonite from 1 to 3 ft Soil Cuttings from 0 to 1 ft	
18	82.0									
20	80.0									
22	78.0									
24	76.0									
26	74.0									
28	72.0									
30										

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>P-15</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u>	SHEET: <u>1 of 1</u>
TYPE OF BORING:	<u>Hollow Stem Auger</u>	DATE STARTED: <u>12/23/02</u>	COORDINATES:
DRILLING FIRM:	<u>J&amp;L Drilling, Inc.</u>	DATE FINISHED: <u>12/23/02</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Lee Charbonneau</u>	GROUND ELEV.: <u>101.0</u>	EASTING: <u>ft</u>
DRILL RIG:	<u>CME-75</u>	LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>14.0</u> ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
100.0								SM	0-1.5 ft: Soil Cover, Silty SAND, light brownish gray	
2	98.0							Coal Ash	1.5-11.1 ft: Coal Ash	
4	96.0									
6	94.0									
8	92.0									
10	90.0	15 21 14 19	35	SS-1				CL	11.1-12.0 ft: Yellowish-gray Sandy CLAY, very stiff	
12										
14	86.0								14.0 ft: End of Boring	
16	84.0								Screen from 4 to 14 ft Sand from 3 to 14 ft Bentonite from 1 to 3 ft Soil Cuttings from 0 to 1 ft	
18	82.0									
20	80.0									
22	78.0									
24	76.0									
26	74.0									
28	72.0									
30										

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>P-16</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u> <u>x</u>	SHEET: <u>1 of 1</u>
TYPE OF BORING:	<u>Hollow Stem Auger</u>	DATE STARTED: <u>12/23/02</u>	COORDINATES:
DRILLING FIRM:	<u>J&amp;L Drilling, Inc.</u>	DATE FINISHED: <u>12/23/02</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Lee Charbonneau</u>	GROUND ELEV.: <u>102.1</u>	EASTING: <u>ft</u>
DRILL RIG:	<u>CME-75</u>	LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>14.0</u> <u>ft</u>

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
	101.1							SM	0-1.5 ft: Soil Cover, Silty SAND, light brownish gray	
2	99.1							Coal Ash	1.5-11.5 ft: Coal Ash	
4	97.1									
6	95.1									
8	93.1									
10	91.1	9 11 14	16	SS-1						
12		4 5 12	13	SS-2				CL	11.5-14.0 ft Light grayish-yellow fine Sandy Silty CLAY	
14	87.1								14.0 End of Boring	
16	85.1								Screen from 4 to 14 ft Sand from 3 to 14 ft Bentonite from 1 to 3 ft Soil Cuttings from 0 to 1 ft	
18	83.1									
20	81.1									
22	79.1									
24	77.1									
26	75.1									
28	73.1									
30										

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>P-17</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u>	SHEET: <u>1 of 1</u>
TYPE OF BORING:	<u>Hollow Stem Auger</u>	DATE STARTED: <u>12/24/02</u>	COORDINATES:
DRILLING FIRM:	<u>J&amp;L Drilling, Inc.</u>	DATE FINISHED: <u>12/24/02</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Lee Charbonneau</u>	GROUND ELEV.: <u>101.8</u>	EASTING: <u>ft</u>
DRILL RIG:	<u>CME-75</u>	LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>14.0</u> ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
100.8								SM	0-1.5 ft: Soil Cover, Silty SAND, light brownish gray	
2	98.8								1.5-11.5 ft: Coal Ash	
4	96.8									
6	94.8									
8	92.8									
10	90.8	13 12 6 8	18	SS-1						
12								CL	11.5-12.0 ft: Yellowish-gray Sandy, Silty CLAY, stiff	
14	86.8								14.0 ft : End of Boring	
16	84.8								Screen from 4 to 14 ft Sand from 3 to 14 ft Bentonite from 1 to 3 ft Soil Cuttings from 0 to 1 ft	
18	82.8									
20	80.8									
22	78.8									
24	76.8									
26	74.8									
28	72.8									
30										

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-18
LOCATION:	BATTLEBORO, NC	STATION: x	x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	12/24/02
DRILLING FIRM:	J&L Drilling, Inc.	DATE FINISHED:	12/24/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	107.5
DRILL RIG:	CME-75	LOGGED BY:	J Sherrill, L.G.
		COORDINATES:	
		NORTHING:	ft
		EASTING:	ft
		TOTAL DEPTH:	15.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
	106.5							SM	0-1.5 ft: Soil Cover, Silty SAND, light brownish gray	
2	104.5								1.5-11.7 ft: Coal Ash	
4	102.5									
6	100.5									
8	98.5									
10	96.5	4 7 11 14	18	SS-1						
12	94.5	Push		SS-2				CL	11.7- 13.5 ft: Fill Sandv Siltv CLAY	
14	92.5							CL	13.5- 15.0 ft: Yellowish-gray fine Sandv CLAY	
16	90.5								15.0 ft: End of Boring	
18	88.5								Screen from 5 to 15 ft Sand from 4 to 15 ft Bentonite from 2 to 4 ft Soil Cuttings from 0 to 2 ft	
20	86.5									
22	84.5									
24	82.5									
26	80.5									
28	78.5									
30										

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-19
LOCATION:	BATTLEBORO, NC	STATION: x	x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	12/24/02
DRILLING FIRM:	J&L Drilling, Inc.	DATE FINISHED:	12/24/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	108.3
DRILL RIG:	CME-75	LOGGED BY: J Sherrill, L.G.	TOTAL DEPTH: 17.0
		COORDINATES:	
		NORTHING:	ft
		EASTING:	ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
	107.3							SM	0-1.5 ft: Soil Cover, Silty SAND, light brownish gray	
2	105.3							Coal Ash	1.5-15.2 ft: Coal Ash	
4	103.3									
6	101.3									
8	99.3	2 3 4 4	7	SS-1						
10	97.3	1 2 12 13	14	SS-2						
12	95.3	2 4 7 14	11	SS-3						
14	93.3	3 4 7 13	11	SS-4				CL	15.2-16.0 ft: Yellowish-gray fine Sandy CLAY, very stiff	
16	91.3								16.0 ft: End of Boring	
18	89.3								Screen from 7 to 17 ft Sand from 6 to 17 ft Bentonite from 4 to 6 ft Soil Cuttings from 0 to 4 ft	
20	87.3									
22	85.3									
24	83.3									
26	81.3									
28	79.3									
30										

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-20
LOCATION:	BATTLEBORO, NC	STATION: x	x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	12/26/02
DRILLING FIRM:	J&L Drilling, Inc.	DATE FINISHED:	12/26/02
DRILLER:	Lee Charbonneau	GROUND ELEV.:	104.2
DRILL RIG:	CME-75	LOGGED BY: J Sherrill, L.G.	TOTAL DEPTH: 17.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
	103.2							SM	0-1.5 ft: Soil Cover, Silty SAND, light brownish gray	
2	101.2							Coal Ash	1.5- 15.0 ft: Coal Ash	
4	99.2									
6	97.2									
8	95.2									
10	93.2	3 12 37 46	49	SS-1						
12	91.2	4 10 12 8	22	SS-2						
14	89.2	6 11 15 23	26	SS-3						
16								CL	15.0-16.0 ft: Yellowish-gray fine Sandy CLAY, very stiff	
18									17.0 ft: End of Boring	
20	85.2								Screen from 7 to 17 ft Sand from 6 to 17 ft Bentonite from 4 to 6 ft Soil Cuttings from 0 to 4 ft	
22	83.2									
24	81.2									
26	79.2									
28	77.2									
30	75.2									

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>P-21</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u>	SHEET: <u>1 of 1</u>
TYPE OF BORING:	<u>Hollow Stem Auger</u>	DATE STARTED: <u>12/26/02</u>	COORDINATES:
DRILLING FIRM:	<u>J&amp;L Drilling, Inc.</u>	DATE FINISHED: <u>12/26/02</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Lee Charbonneau</u>	GROUND ELEV.: <u>99.5</u>	EASTING: <u>ft</u>
DRILL RIG:	<u>CME-75</u>	LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>11.5</u> ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
2	98.5								0-9.5 ft: Coal Ash	
4	96.5									
6	94.5									
		11 20 28 50 50/1	48	SS-1				Coal Ash		
8	92.5			SS-2						
		2 5 6 10	11	SS-3				CL	9.5-11.0 ft: Mottled gray and yellowish-brown fine Sandy CLAY, stiff	
10	90.5									
12									11.5 ft: End of Boring	
14	86.5								Screen from 4.5 to 11.5 ft Sand from 3.5 to 11.5 ft Bentonite from 1.5 to 3.5 ft Soil Cuttings from 0 to 1.5 ft	
16	84.5									
18	82.5									
20	80.5									
22	78.5									
24	76.5									
26	74.5									
28	72.5									
30	70.5									

## FIELD BOREHOLE LOG

PROJECT:	SWIFT CREEK, HWY 301	BORING NO.:	P-22
LOCATION:	BATTLEBORO, NC	STATION: x	x
TYPE OF BORING:	Hollow Stem Auger	DATE STARTED:	2/25/03
DRILLING FIRM:	J&L Drilling, Inc.	DATE FINISHED:	2/25/03
DRILLER:	Lee Charbonneau	GROUND ELEV.:	101.8
DRILL RIG:	CME-75	LOGGED BY:	J Sherrill, L.G.
		SHEET:	1 of 1
		COORDINATES:	
		NORTHING:	ft
		EASTING:	ft
		TOTAL DEPTH:	27.0 ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFICATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
100.8										
2	98.8	6						SM	3.0-5.0 ft: Brownish-yellow Silty SAND, firm	
4	96.8	11	22	SS-1						
		11								
		12								
6										
8	92.8	2	7	SS-2				CL	6-8.2 ft: Mottled gray and red Sandy CLAY	
		3							8.2-10.0 ft: Mottled yellow and gray Clayey Silty fine SAND, medium stiff	
		4								
		5								
10	90.8							SC		
12	88.8									
14	86.8	2	4	SS-3				CL	13.0-14.5 ft: Mottled yellowish-gray and red Sandy CLAY, soft	
		3							14.5-14.9 ft: Yellowish-gray Silty fine SAND	
		1						SM	14.9-15.0 ft: Brownish-gray Silty fine SAND, very shelly, loose	
16	84.8									
18	82.8	3	5	SS-4					18.0-20.0 ft: Medium gray Silty very fine SAND, very shelly, loose	
		2								
		3								
		5								
20	80.8							SM		
22	78.8									
24	76.8									
26	74.8									
28	72.8								27.0 ft: End of Boring	
30									Screen from 17 to 27 ft Sand from 16 to 27 ft Bentonite from 10 to 16 ft Soil Cuttings from 0 to 10 ft	

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>P-23</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u>	SHEET: <u>1 of 1</u>
TYPE OF BORING:	<u>Hollow Stem Auger</u>	DATE STARTED: <u>1/31/08</u>	COORDINATES:
DRILLING FIRM:	<u>J&amp;L Drilling, Inc.</u>	DATE FINISHED: <u>1/31/08</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Lee Charbonneau</u>	GROUND ELEV.: <u>107.1</u>	EASTING: <u>ft</u>
DRILL RIG:	<u>CME-75</u>	LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>19.0</u> ft

DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
2	106.1								0-1.5 ft: Soil Cover, Silty SAND, Light brownish-gray	
4	104.1	5 7 11 12	18	SS-1					3.0-5.0 ft: Coal Ash, dry, sandy	
6	102.1									
8	100.1									
10	98.1	3 2 2 2	4	SS-2					8.0-10.0 ft: Coal Ash, wet, sandy	
12	96.1									
14	94.1									
16	92.1	6 15 14 13	29	SS-3					13.0-15.0 ft: Brownish yellow, fine to coarse, SAND, some quartz pebbles	
18	90.1									
20	88.1	3 5 4 5	9	SS-4					17.0-19.0 ft: Brownish yellow, fine sandy CLAY	
22	86.1								19.0 ft: End of Boring	
24	84.1									
26	82.1									
28	80.1									
30	78.1									

## FIELD BOREHOLE LOG

PROJECT:	<u>SWIFT CREEK, HWY 301</u>	BORING NO.:	<u>P-24</u>
LOCATION:	<u>BATTLEBORO, NC</u>	STATION: <u>x</u>	SHEET: <u>1 of 1</u>
TYPE OF BORING:	<u>Hollow Stem Auger</u>	DATE STARTED: <u>1/31/08</u>	COORDINATES:
DRILLING FIRM:	<u>J&amp;L Drilling, Inc.</u>	DATE FINISHED: <u>1/31/08</u>	NORTHING: <u>ft</u>
DRILLER:	<u>Lee Charbonneau</u>	GROUND ELEV.: <u>101.1</u>	EASTING: <u>ft</u>
DRILL RIG:	<u>CME-75</u>	LOGGED BY: <u>J Sherrill, L.G.</u>	TOTAL DEPTH: <u>13.0</u> ft

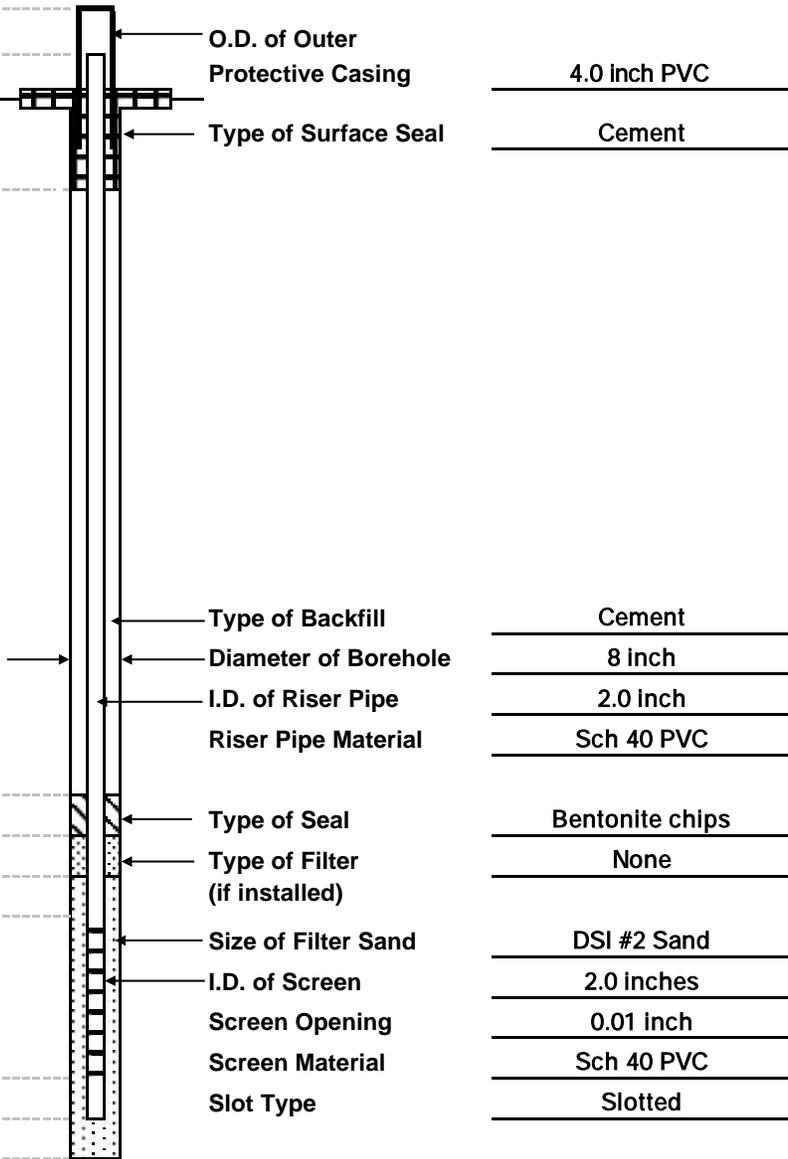
DEPTH (ft)	ELEV. (ft)	BLOWS/6"	N-VALUE	SAMPLE #. CORE RUN #	RECOVERY (%)	RQD (%)	STRATUM	CLASSIFI- CATION	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
100.1										
2	98.1									
4	96.1	3 6 10 14	16	SS-1					3.0-5.0 ft: Brownish-yellow, fine to medium SAND	
6	94.1									
8	92.1	9 11 8 8	19	SS-2					8.0-10.0 ft: Brownish-yellow, medium to coarse, SAND with quartz pebbles	
10	90.1									
12	88.1	1 2 2 3	4	SS-3					11.0-13.0 ft: Mottled gray and yellowish-brownish, clayey, fine SAND	
14	86.1								13.0 ft: End of Boring	
16	84.1									
18	82.1									
20	80.1									
22	78.1									
24	76.1									
26	74.1									
28	72.1									
30										

# MONITORING WELL INSTALLATION SKETCH

Project: SWIFT CREEK Monitoring Well Number: P-23  
 Drilling Firm: J & L Drilling, Inc. Date of Well Installation: 1/31/2008  
 Elevation of Top of Open Riser Pipe (Reference El. for Water Level Measurements,ft): 109.75  
 Depth to Bottom of Well from Top of Open Riser Pipe (ft): -21.82  
 Horizontal Location (ft): Northing: \_\_\_\_\_ Easting: \_\_\_\_\_

Elevation (ft, M.S.L.)	Distance (ft) from:	
	Top of Open Riser	Ground Surface

-	-	
109.8	0.0	2.7
107.1	-2.7	0.0
-	-	
102.1	-7.7	-5.0
100.1	-9.7	-7.0
100.1	-9.7	-7.0
98.0	-11.8	-9.1
-	-	
88.0	-21.8	-19.1
88.0	-21.8	-19.1



*Diagram Not to Scale*

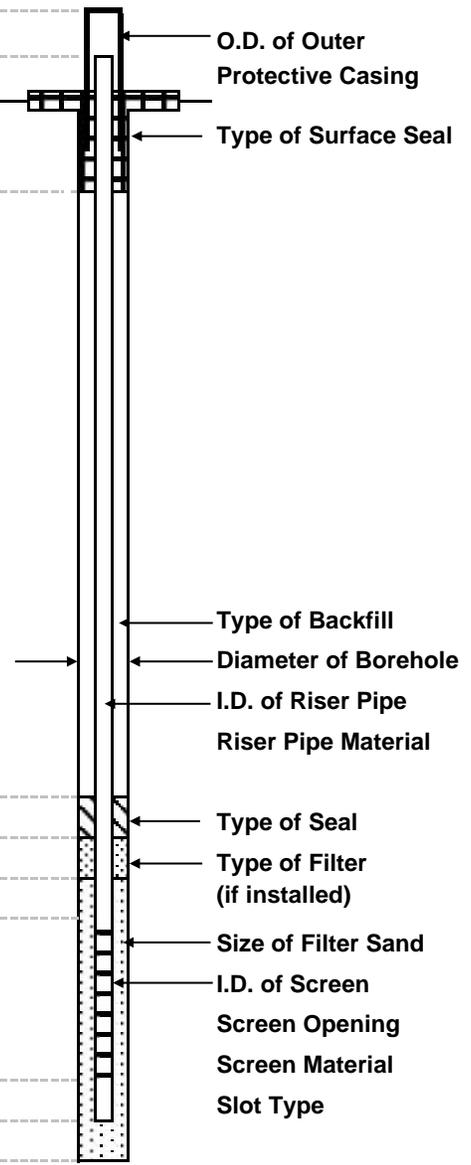
**NOTES:**

Depth to water 2/4/08 = 17.71 ft from TOC

# MONITORING WELL INSTALLATION SKETCH

Project: SWIFT CREEK Monitoring Well Number: P-24  
 Drilling Firm: J & L Drilling, Inc. Date of Well Installation: 1/31/2008  
 Elevation of Top of Open Riser Pipe (Reference El. for Water Level Measurements,ft): 103.17  
 Depth to Bottom of Well from Top of Open Riser Pipe (ft): -15.25  
 Horizontal Location (ft): Northing: \_\_\_\_\_ Easting: \_\_\_\_\_

Elevation (ft, M.S.L.)	Distance (ft) from:	
	Top of Open Riser	Ground Surface
-	-	-
103.2	0.0	2.1
101.1	-2.1	0.0



O.D. of Outer Protective Casing	<u>4.0 inch PVC</u>
Type of Surface Seal	<u>Cement</u>
Type of Backfill	<u>Cement</u>
Diameter of Borehole	<u>8 inch</u>
I.D. of Riser Pipe	<u>2.0 inch</u>
Riser Pipe Material	<u>Sch 40 PVC</u>
Type of Seal	<u>Bentonite chips</u>
Type of Filter (if installed)	<u>None</u>
Size of Filter Sand	<u>DSI #2 Sand</u>
I.D. of Screen	<u>2.0 inches</u>
Screen Opening	<u>0.01 inch</u>
Screen Material	<u>Sch 40 PVC</u>
Slot Type	<u>Slotted</u>

-	-	-
99.1	-4.1	-2.0
98.6	-4.6	-2.5
98.6	-4.6	-2.5
98.0	-5.2	-3.1
-	-	-
88.0	-15.2	-13.1
88.0	-15.2	-13.1

*Diagram Not to Scale*

**NOTES:**

Depth to water 2/4/08 = 8.24 ft from TOC