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CNC CHARLESTON
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REPORT FOR GROUNDWATER SAMPLING ACTIVITIES AT FACILITIES 1279 AND 236 CNC
CHARLESTON SC
1/1/2006
ADVENT ENVIRONMENTAL INC

**REPORT FOR GROUND-WATER SAMPLING ACTIVITIES
AT FACILITIES 1279 AND 236**

**CHARLESTON NAVAL COMPLEX (CNC)
NORTH CHARLESTON, SOUTH CAROLINA**

Presented to



**Naval Facilities Engineering Command – Southern Division
North Charleston, South Carolina**

Contract Number

N62467-05-C-0186

Prepared by:



ADVENT Environmental, Inc.
498 Wando Park Blvd.
Suite-500
Mt. Pleasant, South Carolina

A handwritten signature in black ink, appearing to read "BR C".

Brian R. Crawford, R.E.M.
Project Manager

A handwritten signature in black ink, appearing to read "Jeffrey C Smoak".

Jeffrey C. Smoak, P.E.
Principal

ADVENT Job Number 05-526
January 2006

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	FACILITY DESCRIPTION	1
1.2	HISTORICAL SUMMARY	1
2.0	GROUND-WATER SAMPLING.....	2
2.1	SAMPLE COLLECTION.....	2
2.2	ANALYTICAL RESULTS.....	2
3.0	CONCLUSIONS AND RECOMMENDATIONS.....	3

TABLES

- Table 1 Ground-water Analytical Results (Bldg 1279 11/04/05)
- Table 2 Ground-water Analytical Results (Bldg 1279 11/11/04)
- Table 3 Ground-water Analytical Results (Bldg 236 11/04/05)
- Table 4 Ground-water Analytical Results (Bldg 236 11/11/04)

FIGURES

- Figure 1 Site Location Map
- Figure 2 Site Map/Concentration Map (Bldg 236)
- Figure 3 Site Map/Concentration Map (Bldg 1279)
- Figure 4 Potentiometric Map (Bldg 236)
- Figure 5 Potentiometric Map (Bldg 1279)

APPENDICES

- Appendix A Ground-Water Sampling Sheets
- Appendix B Laboratory Analytical Report

1.0 INTRODUCTION

ADVENT Environmental (ADVENT) was retained by the Naval Facilities Engineering Command – Engineering Field Division South (NAVFAC) to conduct ground-water sampling activities at Facilities 1279 and 236 at the Charleston Naval Complex (CNC) in North Charleston, South Carolina. A Work Plan for *Monitored Natural Attenuation*, a the *Charleston Naval Complex* was submitted to NAVFAC and approved in October, 2005.

1.1 FACILITY DESCRIPTION

The CNC is located in North Charleston, South Carolina. Facility 1279 is used for short term storage of bulk wood products (Neal Brothers, Inc.). Facility 236 is used as a maintenance building (Detyens Shipyard). A Site location map is included as Figure-1.

1.2 HISTORICAL SUMMARY

Monitoring wells at Facilities 1279 and 236 were installed by ADVENT in November, 2004, using a South Carolina Certified Well Driller, as part of an Initial Ground-Water Assessment (IGWA) (Bldg -236, Figure-2) and a Tier-I investigation (Bldg-1279, Figure-3). The wells at both locations were developed and initially sampled on November 11, 2004. For more details on the IGWA and Tier I reports see the *Building 236 Initial Ground-Water Assessment Report* dated January 2005 and the *Building 1279 Tier I Assessment Report* dated June 2005.

Contaminants of Concern (CoCs) were detected above Risk Based Screening Levels (RBSLs) during these initial sampling events. Sample 1279MW002 exceeded the RBSL for Naphthalene (25 µg/L) with a concentration of 57 µg/L. Sample 1279MW003 exceeded the RBSL for Benzene (5µg/L) with a concentration of 10 µg/L (Table-2). Sample 236MW-001 exceeded the RBSL for Naphthalene with a concentration of 75 µg/L (Table-4). All other constituents reported concentrations below the RBSLs or below detection limits (BDL).

2.0 GROUND-WATER SAMPLING

As part of the Monitoring Natural Attenuation program, six monitoring wells (1279MW001 thru 1279MW003 and 236MW001 thru 236MW003) were sampled on November 4, 2005 at Facilities 1279 and 236.

2.1 SAMPLE COLLECTION

Ground-water monitoring wells were sampled in accordance with methods defined in the *South Carolina Well Standards(R.61-71)* guidance issued by the South Carolina Department of Health and Environmental Control (SCDHEC) dated April 26, 2002. The monitoring wells were purged a minimum of three (3) well volumes with a dedicated disposable polyethylene bailer. Ground-water samples were collected with a disposable bailer, preserved on ice, and submitted to Pace Analytical for the analysis of benzene, toluene, ethyl-benzene, and xylenes (BTEX), and naphthalene by EPA Method 8260. Ground-water field sampling sheets are included as Appendix-A and laboratory results are included as Appendix-B.

2.2 ANALYTICAL RESULTS

Concentrations of BTEX and naphthalene were reported below detection limits (BDL) or below the risk based screening level (RBSL) in all monitoring wells except two (2). 1279GW003 exceeded the RBSL for benzene and naphthalene, and 236GW001 exceeded the RBSL for naphthalene. Ground-water analytical results are summarized in Tables 1 and 3, and included on constituent concentration maps (Figures 2 and 3). The laboratory analytical report for the November 2005 sampling event is included as Appendix-B. Potentiometric Maps are included as Figures 4 and 5.

3.0 CONCLUSIONS AND RECOMMENDATIONS

On November 4, 2004 monitoring well 1279GW003 indicated elevated levels of benzene above the established RBSLs. Groundwater sampling conducted on November 14, 2005 indicated continued elevated levels of benzene and naphthalene in monitoring well 1270GW003 and naphthalene in monitoring well 236GW001. Because there are only two rounds of sampling, it is recommended that continued monitoring natural attenuation (MNA) be conducted at both sites. Sampling should be conducted on a semi-annual basis and analyzed for BTEX and naphthalene using EPA Method 8260B.

TABLES

**Table 1: Summary of Ground-water Analytical Data (Collected 11/04/2005)
Charleston Naval Complex Building 1279**

Ground-water Results

Constituents	1279GW001 11/4/2005		1279GW002 11/4/2005		1279GW003 11/4/2005	
	Result	<i>RBSL</i> <i>Ground-water</i>	Result	<i>RBSL</i> <i>Ground-water</i>	Result	<i>RBSL</i> <i>Ground-water</i>
Volatile Organic Compounds						
Method 8260	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Benzene	ND	5	ND	5	28	5
Toluene	ND	1,000	ND	1,000	ND	1,000
Ethylbenzene	ND	700	1.5	700	11	700
Xylenes	ND	10000	ND	10000	ND	10000
Naphthalene	ND	25	ND	25	100	25

ND = Constituent Not
Detected

**Table 2: Summary of Ground-water Analytical Data (Collected 11/11/2004)
Charleston Naval Complex Building 1279**

Ground-water Results

Constituents	1279GW001 11/11/2004		1279GW002 11/11/2004		1279GW003 11/11/2004	
	Result	<i>RBSL</i> <i>Ground-water</i>	Result	<i>RBSL</i> <i>Ground-water</i>	Result	<i>RBSL</i> <i>Ground-water</i>
Volatile Organic Compounds						
Method 8260	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Benzene	ND	5	3.5	5	10	5
Toluene	ND	1,000	ND	1,000	ND	1,000
Ethylbenzene	ND	700	76	700	16	700
Xylenes	ND	10000	ND	10000	ND	10000
Naphthalene	ND	25	57	25	22	25

ND = Constituent Not
Detected

**Table 3: Summary of Ground-water Analytical Data (Collected 11/04/2005)
Charleston Naval Complex Building 236**

Ground-water Results

Constituents	236GW001 11/4/2005		236GW002 11/4/2005		236GW003 11/4/2005	
	Result	<i>RBSL</i> <i>Ground-water</i>	Result	<i>RBSL</i> <i>Ground-water</i>	Result	<i>RBSL</i> <i>Ground-water</i>
Volatile Organic Compounds						
Method 8260	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Benzene	ND	5	ND	5	ND	5
Toluene	ND	1,000	ND	1,000	ND	1,000
Ethylbenzene	ND	700	ND	700	ND	700
Xylenes	ND	10000	ND	10000	ND	10000
Naphthalene	210	25	ND	25	ND	25

ND = Constituent Not
Detected

**Table 4: Summary of Ground-water Analytical Data (Collected 11/04/2004)
Charleston Naval Complex Building 236**

Ground-water Results

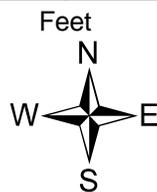
Constituents	236GW001 11/11/2004		236GW002 11/11/2004		236GW003 11/11/2004	
	Result	<i>RBSL</i> <i>Ground-water</i>	Result	<i>RBSL</i> <i>Ground-water</i>	Result	<i>RBSL</i> <i>Ground-water</i>
Volatile Organic Compounds						
Method 8260	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Benzene	ND	5	ND	5	ND	5
Toluene	ND	1,000	ND	1,000	ND	1,000
Ethylbenzene	ND	700	ND	700	ND	700
Xylenes	ND	10000	ND	10000	ND	10000
Naphthalene	75	25	2.1	25	2	25

ND = Constituent Not
Detected

FIGURES



0 212.5 425 850 1,275 1,700



Projection: Clarke 1866 UTM Zone 17N
Map Scale: 1:7,500
Created by: JWW, 12/19/05

Figure-1
Site Location Map
Former CNC
Charleston, South Carolina



236GW001 11/4/2005		
Constituents	Result	RBSL Ground-water
Volatile Organic Compounds		
Method 8260	(ug/L)	(ug/L)
Benzene	ND	5
Toluene	ND	1,000
Ethylbenzene	ND	700
Xylenes	ND	10000
Naphthalene	210	25

236GW002 11/4/2005		
Constituents	Result	RBSL Ground-water
Volatile Organic Compounds		
Method 8260	(ug/L)	(ug/L)
Benzene	ND	5
Toluene	ND	1,000
Ethylbenzene	ND	700
Xylenes	ND	10000
Naphthalene	ND	25

236GW003 11/4/2005		
Constituents	Result	RBSL Ground-water
Volatile Organic Compounds		
Method 8260	(ug/L)	(ug/L)
Benzene	ND	5
Toluene	ND	1,000
Ethylbenzene	ND	700
Xylenes	ND	10000
Naphthalene	ND	25

- Legend**
-  cnc_bldgs
 -  wells_236
 -  roads

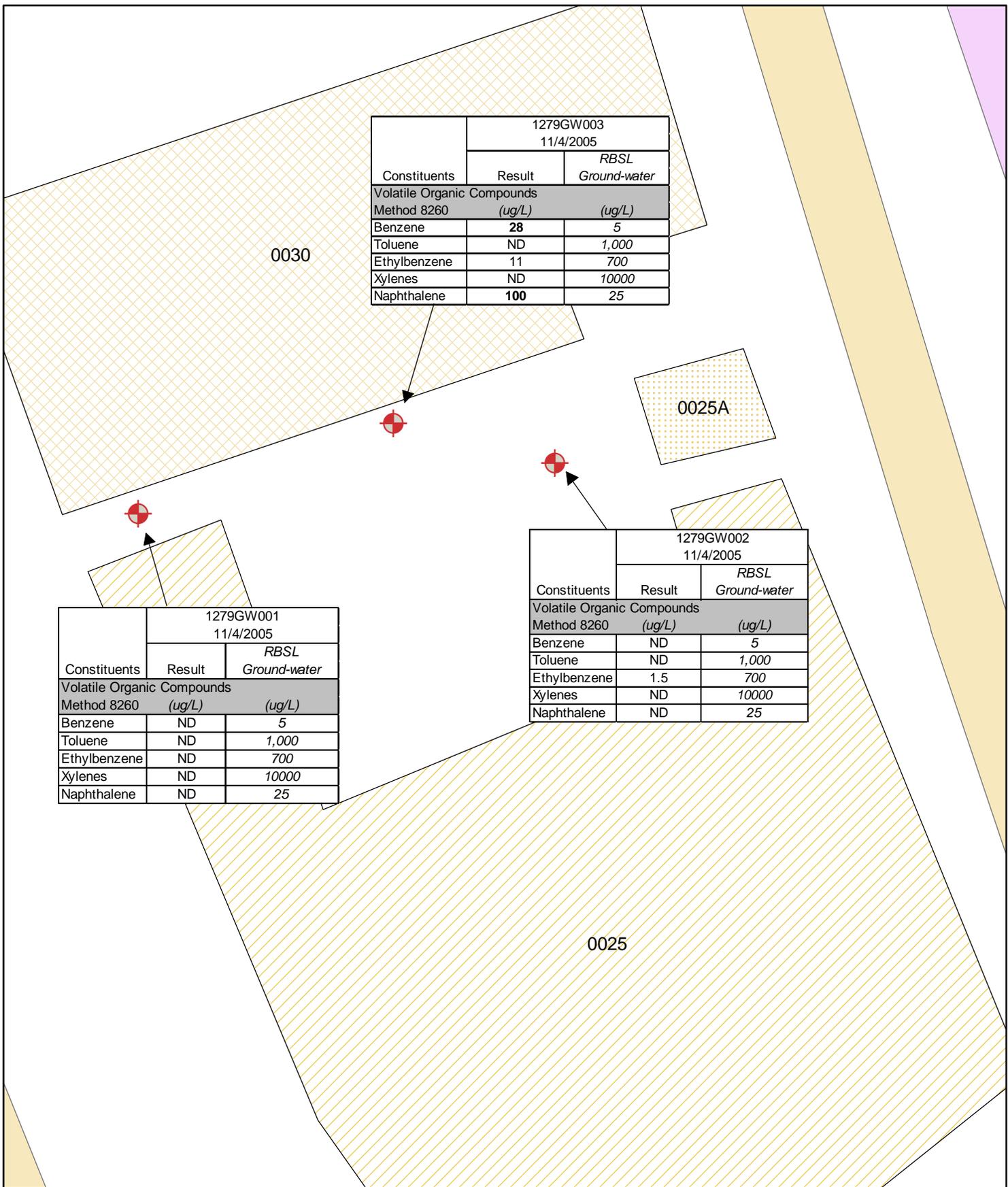
0 15 30 60 90 120



Figure-2
Site Map/Concentration Map Bldg-236
Former CNC
Charleston, South Carolina



Projection: Clarke 1866 UTM Zone 17N
 Map Scale: 1:530
 Created by: JWW, 12/19/05



Constituents	1279GW003 11/4/2005	
	Result	RBSL Ground-water
Volatile Organic Compounds Method 8260 (ug/L) (ug/L)		
Benzene	28	5
Toluene	ND	1,000
Ethylbenzene	11	700
Xylenes	ND	10000
Naphthalene	100	25

Constituents	1279GW002 11/4/2005	
	Result	RBSL Ground-water
Volatile Organic Compounds Method 8260 (ug/L) (ug/L)		
Benzene	ND	5
Toluene	ND	1,000
Ethylbenzene	1.5	700
Xylenes	ND	10000
Naphthalene	ND	25

Constituents	1279GW001 11/4/2005	
	Result	RBSL Ground-water
Volatile Organic Compounds Method 8260 (ug/L) (ug/L)		
Benzene	ND	5
Toluene	ND	1,000
Ethylbenzene	ND	700
Xylenes	ND	10000
Naphthalene	ND	25

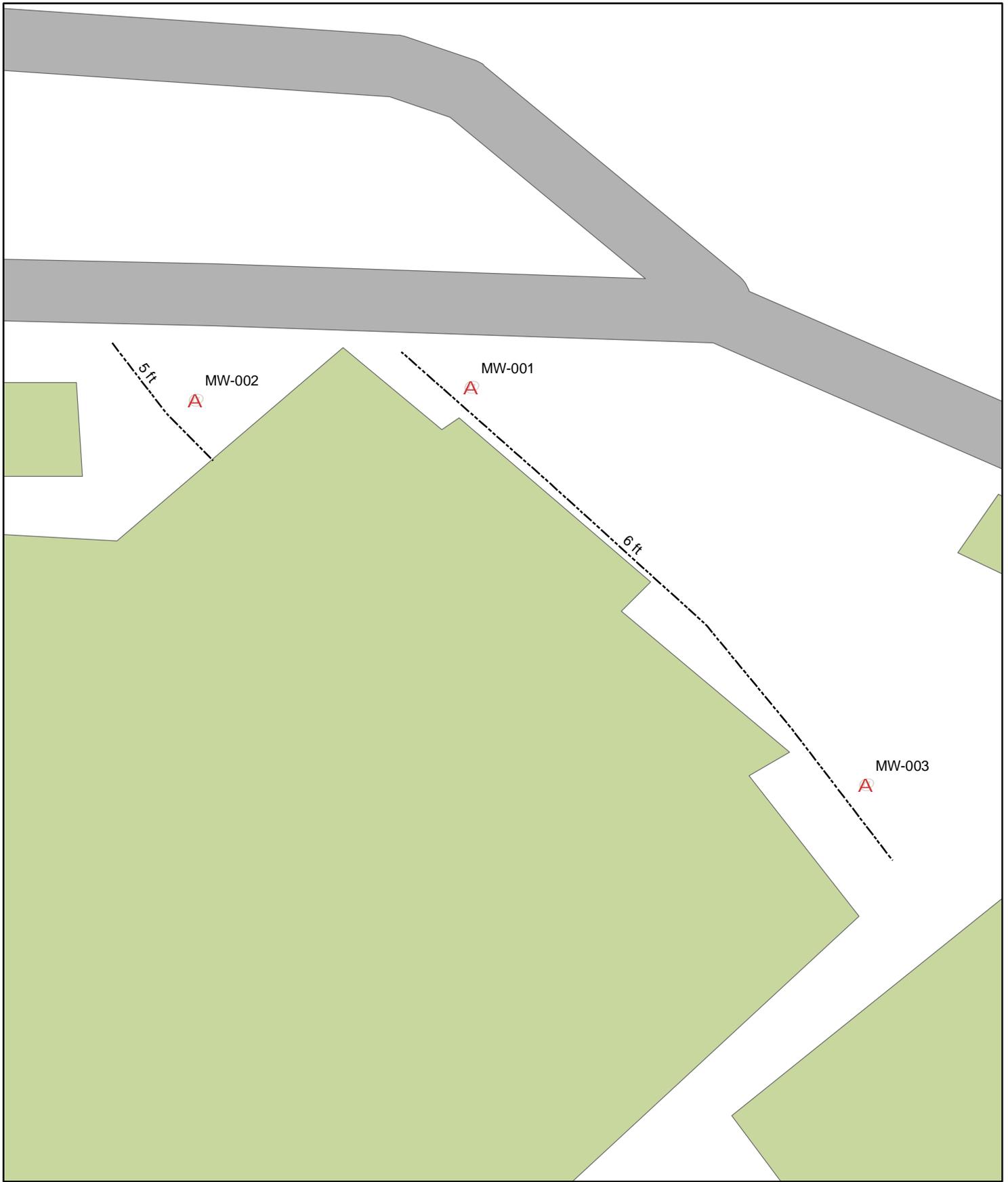
- Legend**
- wells_1279
 - 0025
 - 0025A
 - 0030



Figure-3
Site Map/Concentration Map Bldg-1279
Former CNC
Charleston, South Carolina

Projection: Clarke 1866 UTM Zone 17N
 Map Scale: 1:530
 Created by: JWW, 12/19/05





Legend

- Wells
- Potentiometric Lines
- Bldgs
- Roads

0 12.5 25 50 75 100



Feet



Projection: Clarke 1866 UTM Zone 17N

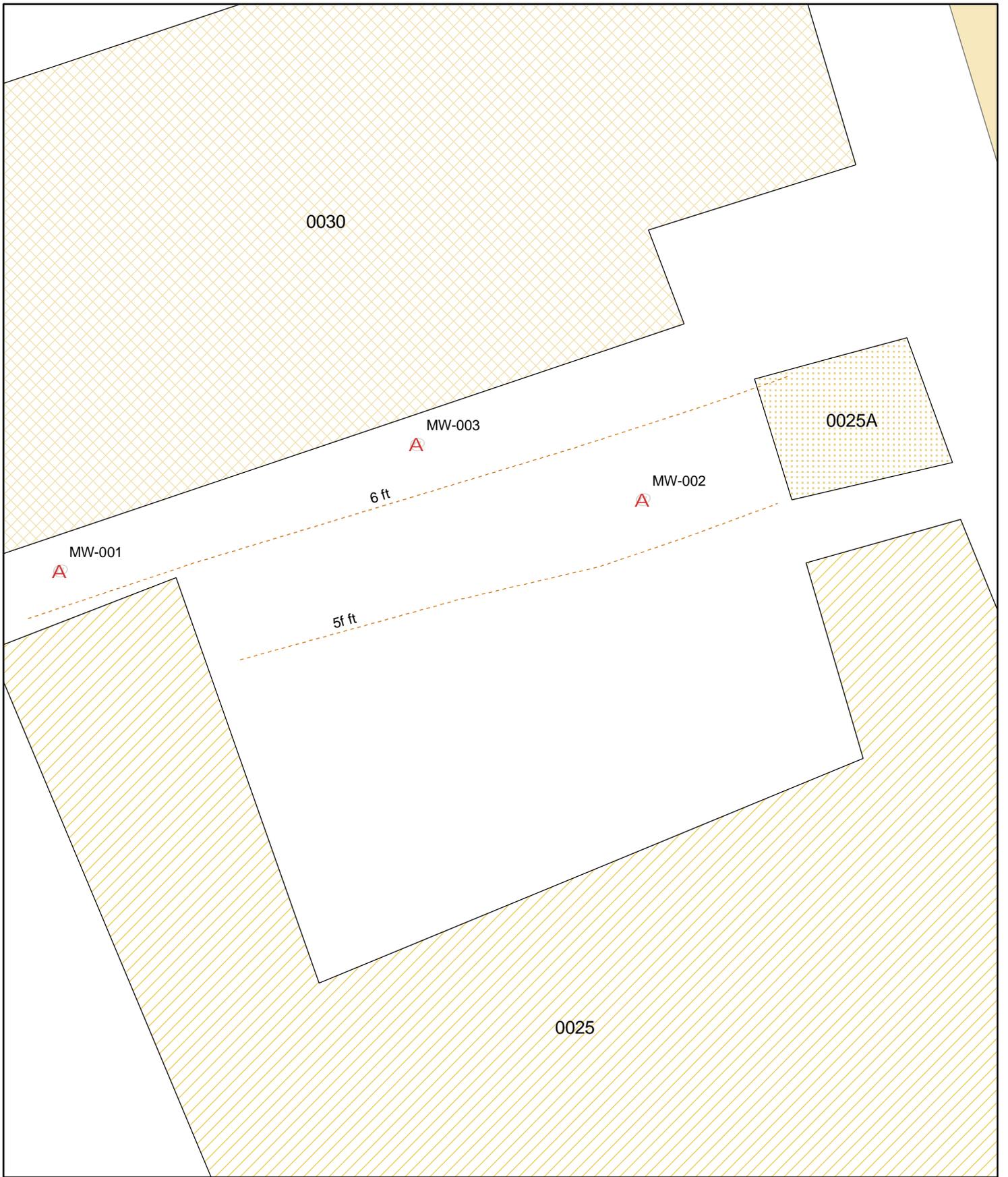
Map Scale: 1:530

Created by: JWW, 12/19/05

Figure-4
Potentiometric Map Bldg-236
Former CNC
Charleston, South Carolina



ADVENT
 Environmental Consulting and Design



Legend

-  wells_1279
-  0025
-  0025A
-  0030
-  potent_lines1279

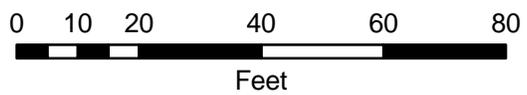


Figure-5
Potentiometric Map Bldg-1279
Former CNC
Charleston, South Carolina

Projection: Clarke 1866 UTM Zone 17N
 Map Scale: 1:375
 Created by: JWW, 02/06/06



APPENDIX A

Ground-water Sampling Sheets



GROUNDWATER SAMPLING FORMS

LOCATION: CNC North Charleston, South Carolina	DATE: 11-04-2005
JOB No: 05-526	WELL No: 1279GW001

PROJECT NAME: CNC - Building 1279
 WEATHER CONDITIONS: Sunny/ high 72
 REVIEWED BY: SCM

PURGING DEVICE TYPE DEVICE: 36" Bailer WHICH WELL WAS PREVIOUSLY PURGED? N/A	SAMPLING DEVICE TYPE DEVICE: U-10 Horiba
---	--

INITIAL WELL VOLUME WELL DIAMETER: 2 inch TYPE: PVC DEPTH TO BOTTOM OF WELL (ft): 15.21 DEPTH TO WATER SURFACE (ft): 3.39 LENGTH OF WATER (ft): 11.82 <i>2-in well</i> <i>0.163</i> VOLUME OF WATER (gallons): 1.93 3 VOLUMES OF WATER (gallons): 5.78	PURGING START: 2:30 STOP: 3:00 VOLUME PURGED: 5.78 COMMENTS: COMPLETION: yes TIME SAMPLE COLLECTED: 3:20
--	---

IN SUTU TESTING

WELL VOLUME PURGED	1	2	3				
pH	7.09	7.08	6.98				
COND. (mS/cm)	0.220	0.218	0.249				
Turbidity	166	63	142				
DO (mg/L)	8.46	8.55	8.59				
Temp (Celsius)	25.5	25.1	25.3				
Salinity (%)	0	0	0				

Notes:
 Water was brown in color, and no odor was present.



GROUNDWATER SAMPLING FORMS

LOCATION: CNC North Charleston, South Carolina				DATE: 11-04-2005			
JOB No: 05-526				WELL No: 1279GW002			
PROJECT NAME: CNC - Building 1279							
WEATHER CONDITIONS: Sunny/ high 72							
REVIEWED BY: SCM							
PURGING DEVICE				SAMPLING DEVICE			
TYPE DEVICE: 36" Bailer				TYPE DEVICE: U-10 Horiba			
WHICH WELL WAS PREVIOUSLY PURGED? N/A							
INITIAL WELL VOLUME				PURGING			
WELL DIAMETER: 2 inch				START: 3:00			
TYPE: PVC				STOP: 3:30			
DEPTH TO BOTTOM OF WELL (ft):		12.4		VOLUME PURGED: 3.98			
DEPTH TO WATER SURFACE (ft):		4.26		COMMENTS:			
LENGTH OF WATER (ft):		8.14		<i>2-in well</i>		0.163	
VOLUME OF WATER (gallons):		1.33		COMPLETION: yes			
3 VOLUMES OF WATER (gallons):		3.98		TIME SAMPLE COLLECTED: 3:50			
IN SUTU TESTING							
WELL VOLUME PURGED	1	2	3				
pH	6.61	6.56	6.56				
COND. (mS/cm)	0.362	0.340	0.349				
Turbidity	999	999	999				
DO (mg/L)	7.61	7.67	7.80				
Temp (Celsius)	27.7	27.9	27.8				
Salinity (%)	0.01	0.01	0.01				
Notes:							
Water was clear in color, and a strong petroleum odor was present.							



GROUNDWATER SAMPLING FORMS

LOCATION: CNC North Charleston, South Carolina					DATE: 11-04-2005		
JOB No: 05-526					WELL No: 1279GW003		
PROJECT NAME: CNC - Building 1279							
WEATHER CONDITIONS: Sunny/ high 72							
REVIEWED BY: SCM							
PURGING DEVICE					SAMPLING DEVICE		
TYPE DEVICE: 36" Bailer					TYPE DEVICE: U-10 Horiba		
WHICH WELL WAS PREVIOUSLY PURGED? N/A							
INITIAL WELL VOLUME					PURGING		
WELL DIAMETER: 2 inch					START: 2:15		
TYPE: PVC					STOP: 2:45		
DEPTH TO BOTTOM OF WELL (ft):		12.90		VOLUME PURGED: 4.49			
DEPTH TO WATER SURFACE (ft):		3.71		COMMENTS:			
LENGTH OF WATER (ft):		9.19		<i>2-in well</i>		0.163	
VOLUME OF WATER (gallons):		1.50		COMPLETION: yes			
3 VOLUMES OF WATER (gallons):		4.49		TIME SAMPLE COLLECTED: 3:00			
IN SUTU TESTING							
WELL VOLUME PURGED	1	2	3	4			
pH	6.54	6.57	6.55	6.58			
COND. (mS/cm)	0.446	0.333	0.328	0.330			
Turbidity	175	63	331	354			
DO (mg/L)	7.85	7.82	7.87	7.92			
Temp (Celsius)	27.9	27.2	27.3	27.1			
Salinity (%)	0.01	0.01	0.01	0.01			
Notes:							
Water was cloudy, brown in color, and petroleum odor was present.							



GROUNDWATER SAMPLING FORMS

LOCATION: CNC North Charleston, South Carolina	DATE: 11-04-2005
JOB No: 05-526	WELL No: 236GW001

PROJECT NAME: CNC - Building 236
 WEATHER CONDITIONS: Sunny/ high 72
 REVIEWED BY: SCM

PURGING DEVICE TYPE DEVICE: 36" Bailer WHICH WELL WAS PREVIOUSLY PURGED? N/A	SAMPLING DEVICE TYPE DEVICE: U-10 Horiba
---	--

INITIAL WELL VOLUME WELL DIAMETER: 2 inch TYPE: PVC DEPTH TO BOTTOM OF WELL (ft): 15.05 DEPTH TO WATER SURFACE (ft): 6.37 LENGTH OF WATER (ft): 8.68 <i>2-in well 0.163</i> VOLUME OF WATER (gallons): 1.41 3 VOLUMES OF WATER (gallons): 4.24	PURGING START: 11:45 STOP: 12:15 VOLUME PURGED: 4.24 COMMENTS: COMPLETION: yes TIME SAMPLE COLLECTED: 12:30
---	--

IN SUTU TESTING

WELL VOLUME PURGED	1	2	3				
pH	6.86	6.83	6.96				
COND. (mS/cm)	0.823	0.837	0.988				
Turbidity	999	999	999				
DO (mg/L)	8.24	8.12	8.07				
Temp (Celsius)	23.8	24.1	24.3				
Salinity (%)	0.03	0.03	0.04				

Notes:
 Water was brown color, very turbid, and no odor was present.



GROUNDWATER SAMPLING FORMS

LOCATION: CNC North Charleston, South Carolina				DATE: 11-04-2005			
JOB No: 05-526				WELL No: 236GW002			
PROJECT NAME: CNC - Building 236							
WEATHER CONDITIONS: Sunny/ high 72							
REVIEWED BY: SCM							
PURGING DEVICE				SAMPLING DEVICE			
TYPE DEVICE: 36" Bailer				TYPE DEVICE: U-10 Horiba			
WHICH WELL WAS PREVIOUSLY PURGED? N/A							
INITIAL WELL VOLUME				PURGING			
WELL DIAMETER: 2 inch				START: 10:30			
TYPE: PVC				STOP: 11:00			
DEPTH TO BOTTOM OF WELL (ft):		14.92		VOLUME PURGED: 4.58			
DEPTH TO WATER SURFACE (ft):		5.55		COMMENTS:			
LENGTH OF WATER (ft):		9.37		<i>2-in well</i>		0.163	
VOLUME OF WATER (gallons):		1.53		COMPLETION: yes			
3 VOLUMES OF WATER (gallons):		4.58		TIME SAMPLE COLLECTED: 11:00			
IN SUTU TESTING							
WELL VOLUME PURGED	1	2	3				
pH	6.50	6.83	6.85				
COND. (mS/cm)	0.861	0.784	0.770				
Turbidity	999	999	999				
DO (mg/L)	8.14	8.00	7.98				
Temp (Celsius)	24.0	24.3	24.3				
Salinity (%)	0.03	0.03	0.03				
Notes:							
Water was brown in color, and no odor was present.							



GROUNDWATER SAMPLING FORMS

LOCATION: CNC North Charleston, South Carolina						DATE: 11-04-2005	
JOB No: 05-526						WELL No: 236GW003	
PROJECT NAME: CNC - Building 236							
WEATHER CONDITIONS: Sunny/ high 72							
REVIEWED BY: SCM							
PURGING DEVICE						SAMPLING DEVICE	
TYPE DEVICE: 36" Bailer						TYPE DEVICE: U-10 Horiba	
WHICH WELL WAS PREVIOUSLY PURGED? N/A							
INITIAL WELL VOLUME						PURGING	
WELL DIAMETER: 2 inch						START: 11:30	
TYPE: PVC						STOP: 12:15	
DEPTH TO BOTTOM OF WELL (ft):		15.15				VOLUME PURGED: 8.10	
DEPTH TO WATER SURFACE (ft):		5.21				COMMENTS:	
LENGTH OF WATER (ft):		9.94		<i>2-in well</i>		0.163	
VOLUME OF WATER (gallons):		1.62				COMPLETION: yes	
3 VOLUMES OF WATER (gallons):		4.86				TIME SAMPLE COLLECTED: 12:30	
IN SUTU TESTING							
WELL VOLUME PURGED	1	2	3	4	5		
pH	7.02	7.00	7.06	7.08	7.15		
COND. (mS/cm)	5.23	9.15	16.80	20.30	23.70		
Turbidity	10	5	22	61	171		
DO (mg/L)	7.80	7.59	7.50	7.66	7.45		
Temp (Celsius)	24.7	25.1	24.7	23.8	23.6		
Salinity (%)	0.27	0.50	0.99	1.21	1.44		
Notes:							
Water was olive color and strong sulfur odor was present.							

APPENDIX B

Laboratory Analytical Report

EARTH SCIENCES, INC.

POST OFFICE BOX 71042

CHARLESTON, SC 29415

PHONE: 843/ 554-1792

FAX: 843/ 554-1808

LABORATORY REPORT

DATE: November 16, 2005

SCDHEC#: 10016

Contract Lab #: 99030

Advent Environmental
498 Wando Park Blvd. Ste. 500
Mt. Pleasant, SC 29464

=====

Sample ID: CNC / 05-513

Lab #: 1105-002

Date Sampled: 11/04/05

The above samples were analyzed as requested. The results are attached.

Thank you for allowing EARTH SCIENCES, INC. the opportunity to handle your analytical analyses.


H.P. Douglas
Laboratory Director



Pace Analytical Services, Inc.
9800 Kincey Avenue, Suite 100
Huntersville, NC 28078
Phone: 704.875.9092
Fax: 704.875.9091

November 14, 2005

Mr. Hillery Douglas
Earth Sciences, Inc.
PO Box 71042
Charleston, SC 29415

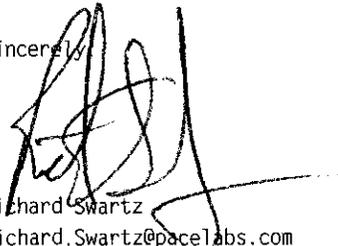
RE: Lab Project Number: 92106910
Client Project ID: CNC/05-513

Dear Mr. Douglas:

Enclosed are the analytical results for sample(s) received by the laboratory on November 5, 2005. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Inorganic Wet Chemistry and Metals Analyses were performed at our Pace Asheville laboratory and Organic testing was performed at our Pace Charlotte laboratory unless otherwise footnoted.

If you have any questions concerning this report please feel free to contact me.

Sincerely,

Richard Swartz
Richard.Swartz@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Asheville Certification IDs
NC Wastewater 40
NC Drinking Water 37712
SC Environmental 99030
FL NELAP E87648



Charlotte Certification IDs
NC Wastewater 12
NC Drinking Water 37706
SC 99006
FL NELAP E87627

Lab Project Number: 92106910
Client Project ID: CNC/05-513

Lab Sample No: 926308636 Project Sample Number: 92106910-001 Date Collected: 11/04/05 12:30
Client Sample ID: 236GW001 Matrix: Water Date Received: 11/05/05 09:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC/MS Volatiles								
GC/MS VOCs by 8260, low level Method: EPA 8260								
Benzene	ND	ug/l	1.0	11/09/05 15:27	MCK	71-43-2		
Ethylbenzene	ND	ug/l	1.0	11/09/05 15:27	MCK	100-41-4		
Naphthalene	210	ug/l	10.	11/09/05 15:27	MCK	91-20-3		
Toluene	ND	ug/l	1.0	11/09/05 15:27	MCK	108-88-3		
m&p-Xylene	ND	ug/l	2.0	11/09/05 15:27	MCK			
o-Xylene	ND	ug/l	1.0	11/09/05 15:27	MCK	95-47-6		
Toluene-d8 (S)	96	%		11/09/05 15:27	MCK	2037-26-5		
4-Bromofluorobenzene (S)	88	%		11/09/05 15:27	MCK	460-00-4		
Dibromofluoromethane (S)	95	%		11/09/05 15:27	MCK	1868-53-7		
1,2-Dichloroethane-d4 (S)	103	%		11/09/05 15:27	MCK	17060-07-0		

Date: 11/14/05

Page: 1 of 10

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NC Drinking Water 37706
SC 99006
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Lab Project Number: 92106910
Client Project ID: CNC/05-513

Lab Sample No: 926308644 Project Sample Number: 92106910-002 Date Collected: 11/04/05 11:15
Client Sample ID: 236GW002 Matrix: Water Date Received: 11/05/05 09:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC/MS Volatiles								
GC/MS VOCs by 8260, low level Method: EPA 8260								
Benzene	ND	ug/l	1.0	11/09/05 16:18	MCK	71-43-2		
Ethylbenzene	ND	ug/l	1.0	11/09/05 16:18	MCK	100-41-4		
Naphthalene	ND	ug/l	1.0	11/09/05 16:18	MCK	91-20-3		
Toluene	ND	ug/l	1.0	11/09/05 16:18	MCK	108-88-3		
m&p-Xylene	ND	ug/l	2.0	11/09/05 16:18	MCK			
o-Xylene	ND	ug/l	1.0	11/09/05 16:18	MCK	95-47-6		
Toluene-d8 (S)	95	%		11/09/05 16:18	MCK	2037-26-5		
4-Bromofluorobenzene (S)	87	%		11/09/05 16:18	MCK	460-00-4		
Dibromofluoromethane (S)	94	%		11/09/05 16:18	MCK	1868-53-7		
1,2-Dichloroethane-d4 (S)	108	%		11/09/05 16:18	MCK	17060-07-0		

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Pace Analytical Services, Inc.
 9800 Kincey Avenue, Suite 100
 Huntersville, NC 28078
 Phone: 704.875.9092
 Fax: 704.875.9091

Lab Project Number: 92106910
 Client Project ID: CNC/05-513

Lab Sample No: 926308651 Project Sample Number: 92106910-003 Date Collected: 11/04/05 12:30
 Client Sample ID: 236GW003 Matrix: Water Date Received: 11/05/05 09:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
GC/MS Volatiles								
GC/MS VOCs by 8260, low level Method: EPA 8260								
Benzene	ND	ug/l	1.0	11/09/05 19:44	MCK	71-43-2		
Ethylbenzene	ND	ug/l	1.0	11/09/05 19:44	MCK	100-41-4		
Naphthalene	ND	ug/l	1.0	11/09/05 19:44	MCK	91-20-3		
Toluene	ND	ug/l	1.0	11/09/05 19:44	MCK	108-88-3		
m&p-Xylene	ND	ug/l	2.0	11/09/05 19:44	MCK			
o-Xylene	ND	ug/l	1.0	11/09/05 19:44	MCK	95-47-6		
Toluene-d8 (S)	95	%		11/09/05 19:44	MCK	2037-26-5		
4-Bromofluorobenzene (S)	86	%		11/09/05 19:44	MCK	460-00-4		
Dibromofluoromethane (S)	103	%		11/09/05 19:44	MCK	1868-53-7		
1,2-Dichloroethane-d4 (S)	106	%		11/09/05 19:44	MCK	17060-07-0		

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Page: 3 of 10

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Lab Project Number: 92106910
Client Project ID: CNC/05-513

Lab Sample No: 926308669 Project Sample Number: 92106910-004 Date Collected: 11/04/05 15:20
Client Sample ID: 1279GW001 Matrix: Water Date Received: 11/05/05 09:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
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GC/MS Volatiles

GC/MS VOCs by 8260, low level Method: EPA 8260

Benzene	NO	ug/l	1.0	11/09/05 16:44	MCK	71-43-2		
Ethylbenzene	ND	ug/l	1.0	11/09/05 16:44	MCK	100-41-4		
Naphthalene	ND	ug/l	1.0	11/09/05 16:44	MCK	91-20-3		
Toluene	ND	ug/l	1.0	11/09/05 16:44	MCK	108-88-3		
m&p-Xylene	ND	ug/l	2.0	11/09/05 16:44	MCK			
o-Xylene	ND	ug/l	1.0	11/09/05 16:44	MCK	95-47-6		
Toluene-d8 (S)	97	%		11/09/05 16:44	MCK	2037-26-5		
4-Bromofluorobenzene (S)	88	%		11/09/05 16:44	MCK	460-00-4		
Dibromofluoromethane (S)	93	%		11/09/05 16:44	MCK	1868-53-7		
1,2-Dichloroethane-d4 (S)	106	%		11/09/05 16:44	MCK	17060-07-0		

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Page: 4 of 10

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Lab Project Number: 92106910
Client Project ID: CNC/05-513

Lab Sample No: 926308677 Project Sample Number: 92106910-005 Date Collected: 11/04/05 15:50
Client Sample ID: 1279GW002 Matrix: Water Date Received: 11/05/05 09:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
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GC/MS Volatiles

GC/MS VOCs by 8260, low level Method: EPA 8260

Benzene	ND	ug/l	1.0	11/09/05 17:10	MCK	71-43-2		
Ethylbenzene	1.5	ug/l	1.0	11/09/05 17:10	MCK	100-41-4		
Naphthalene	ND	ug/l	1.0	11/09/05 17:10	MCK	91-20-3		
Toluene	ND	ug/l	1.0	11/09/05 17:10	MCK	108-88-3		
m&p-Xylene	ND	ug/l	2.0	11/09/05 17:10	MCK			
o-Xylene	ND	ug/l	1.0	11/09/05 17:10	MCK	95-47-6		
Toluene-d8 (S)	99	%		11/09/05 17:10	MCK	2037-26-5		
4-Bromofluorobenzene (S)	89	%		11/09/05 17:10	MCK	460-00-4		
Dibromofluoromethane (S)	96	%		11/09/05 17:10	MCK	186B-53-7		
1,2-Dichloroethane-d4 (S)	109	%		11/09/05 17:10	MCK	17060-07-0		

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Page: 5 of 10

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Lab Project Number: 92106910
Client Project ID: CNC/05-513

Lab Sample No: 926308685 Project Sample Number: 92106910-006 Date Collected: 11/04/05 15:00
Client Sample ID: 1279GW003 Matrix: Water Date Received: 11/05/05 09:00

Parameters	Results	Units	Report Limit	Analyzed	By	CAS No.	Qual	RegLmt
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GC/MS Volatiles

GC/MS VOCs by 8260, low level		Method: EPA 8260						
Benzene	28.	ug/l	1.0	11/09/05 19:18	MCK	71-43-2		
Ethylbenzene	11.	ug/l	1.0	11/09/05 19:18	MCK	100-41-4		
Naphthalene	100	ug/l	1.0	11/09/05 19:18	MCK	91-20-3		
Toluene	ND	ug/l	1.0	11/09/05 19:18	MCK	108-88-3		
m&p-Xylene	ND	ug/l	2.0	11/09/05 19:18	MCK			
o-Xylene	ND	ug/l	1.0	11/09/05 19:18	MCK	95-47-6		
Toluene-d8 (S)	96	%		11/09/05 19:18	MCK	2037-26-5		
4-Bromofluorobenzene (S)	89	%		11/09/05 19:18	MCK	460-00-4		
Dibromofluoromethane (S)	98	%		11/09/05 19:18	MCK	1868-53-7		
1,2-Dichloroethane-d4 (S)	100	%		11/09/05 19:18	MCK	17060-07-0		

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PARAMETER FOOTNOTES

Method 9071B modified to use ASE.

All pH, Free Chlorine, Total Chlorine and Ferrous Iron analyses conducted outside of EPA recommended immediate hold time.

Depending on the moisture content the PRLs can be elevated for all soil samples reported on a dry weight basis.

2-Chloroethyl vinyl ether has been shown to degrade in the presence of acid.

ND Not detected at or above adjusted reporting limit
NC Not Calculable
J Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
MDL Adjusted Method Detection Limit
(S) Surrogate

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QUALITY CONTROL DATA

Lab Project Number: 92106910
Client Project ID: CNC/05-513

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 926318874 926318882

Parameter	Units	926294059	Spike	MS	MSD	MS	MSD	RPD	Footnotes
		Result	Conc.	Result	Result	% Rec	% Rec		
Benzene	ug/l	0	50.00	46.46	46.91	93	94	1	
Toluene	ug/l	0	50.00	45.71	45.43	91	91	1	
Toluene-d8 (S)						94	94		
4-Bromofluorobenzene (S)						87	89		
Dibromofluoromethane (S)						102	99		
1,2-Dichloroethane-d4 (S)						105	104		

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Charlotte Certification IDs
NC Wastewater 12
NC Drinking Water 37706
SC 99006
FL NELAP E87627

QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines, unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

- LCS(D) Laboratory Control Sample (Duplicate)
- MS(D) Matrix Spike (Duplicate)
- DUP Sample Duplicate
- ND Not detected at or above adjusted reporting limit
- NC Not Calculable
- J Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit
- MDL Adjusted Method Detection Limit
- RPD Relative Percent Difference
- (S) Surrogate

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Charlotte Certification IDs

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NC Drinking Water	37706
SC	99006
FL NELAP	E87627