September 22, 2011 073-9602411.600

Mr. Nick Marotta, Regional Engineer
WCA Waste Corporation
Material Recovery, LLC
2600 Brown-Field Road
Raleigh, NC. 27610 USA

RE: SUMMARY OF PIEZOMETER DECOMMISSIONING, MONITORING WELL AND GAS PROBE INSTALLATION, MONITORING WELL DEVELOPMENT, PUMP INSTALLATIONS, AND BACKGROUND SAMPLING FOR PHASE 2A LANDFILL EXPANSION MATERIAL RECOVERY, LLC CONSTRUCTION & DEMOLITION LANDFILL, PERMIT NO. 92-31

Dear Nick:

Golder Associates NC, Inc. (Golder) is pleased to present this letter report summarizing environmental services associated with the Phase 2A Landfill Expansion at WCA Waste Corporation's (WCA's) Material Recovery, LLC Construction & Demolition (C&D) Landfill in Wake County, North Carolina. As directed in the *Permit to Construct: Phase 2A and Permit to Operate: Phase 1, Cells A, B, and C*, dated January 28, 2011, for the Material Recovery C&D Landfill, this report details piezometer decommissioning, monitoring well and methane monitoring probe installations, monitoring well development, bladder pump installations, and background sampling conducted by Golder in May and June 2011.

DECOMMISSIONING OF PIEZOMETERS

On April 4 and 5, 2011, and May 10, 2011, a Golder geologist provided oversight for the decommissioning of eight piezometers in accordance with Title 15A of the North Carolina Administrative Code (NCAC) 2C .0113(b). The piezometers were decommissioned by Geologic Exploration of Statesville, North Carolina, a North Carolina Certified Well Drilling company. Eight piezometers (G-3, G-5. G-6, G-7, G-9, G-16, G-23, and P-7) were overdrilled to remove well construction materials and then grouted, due to their locations in the future Phase 2A and/or Phase 2B waste units. Piezometers G-3, G-5. G-6, G-7, G-9, G-23, and P-7 were overdrilled using a Drilltech T25KW truck-mounted drilling rig utilizing a 10-inch outer diameter (OD) downhole hammer. Piezometer G-16 was overdrilled using a Deidrich D-120 track-mounted drilling rig utilizing 4.25-inner diameter (ID) hollow stem augers (HSAs). The piezometers did not have protective casings or concrete aprons to be removed. All piezometers were decommissioned by overdrilling the full extent of the piezometers, except G-16, which drilling was terminated 3 feet from the bottom of the well because the augers were unable to be advance any further. The boreholes were grouted with a Portland Type I cement and bentonite slurry to just below the proposed base grades.

A summary of piezometer, overdrilling, and grouting depths are presented on Table 1. Copies of the well abandonment records (Form GW-30 Rev. 5/06) for the decommissioned piezometers are included as Attachment A.

GAS PROBE INSTALLATION

On May 9 and 10, 2011, a Golder geologist provided oversight for the installation of six methane monitoring probes (LFG-5, LFG-6, LFG-7, LFG-8, LFG-9, and LFG-10) in accordance with 15A NCAC Subchapter 13B .0544(d)(2) and in the *Landfill Gas Monitoring Guidance* (November 2010). The methane monitoring probes were installed by Geologic Exploration using a Deidrich D-120 drilling rig utilizing 4.25-inch ID HSAs. Samples were collected with 24-inch long split-spoon samplers on 5-foot centers for geologic description and standard penetration test (SPT) blow-counts. Drilling was continued until groundwater or bedrock was encountered. When groundwater was encountered, the water level was

allowed to stabilize and the borehole was backfilled to construct the methane monitoring probes approximately 5 feet above groundwater.

The methane monitoring probes were constructed with 2-inch schedule 40 polyvinyl-chloride (PVC) screen and riser pipe. The 0.010-inch slotted screen was installed from the bottom of each probe to 5 feet below ground surface (bgs). Concrete aprons and lockable aluminum protective casings were installed at each methane monitoring probe location. Sampling ports were installed on the top of each riser pipe. The probes were surveyed by Boundary Zone, Inc. Land Surveying Services of Apex, North Carolina in August 2011. A survey plat is provided as Attachment B.

A summary of methane monitoring probe drilling and construction depths are provided on Table 2. Soil boring and well construction logs for the methane monitoring probes and the Well Construction Records (Form GW-1B Rev. 2/09) are included in Attachment C. The locations of the methane monitoring probes are shown on Drawing 1.

INSTALLATION OF GROUNDWATER MONITORING WELLS

On May 11, 2011, and May 31 through June 1, 2011, a Golder geologist provided oversight for the installation of four monitoring wells (MW-6As, MW-6Ad, MW-7As, and MW-7Ad) in accordance with 15A NCAC Subchapter 2C .0100 and in the *Draft North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities; Solid Waste Section, Division of Solid Waste Management; Department of Environment, Health and Natural Resources* (March 1995). The wells were drilled and installed by Geologic Exploration using a Deidrich D-120 drilling rig with 4.25-inch ID HSAs for the shallow wells (MW-6As and MW-7As) and a Geoprobe 7822DT track-mounted drilling rig with an external air compressor and a 6-inch OD downhole hammer for the deep wells (MW-6Ad and MW-7Ad). Split-spoon samples were collected on 5-foot centers for geologic description and SPT blow-counts.

The borings for the shallow wells were continued until groundwater or bedrock was encountered and were screened across the saprolite and partially weathered rock (PWR) units. The wells were constructed so that the screened intervals intersected the top of the water table. The deep wells were installed into bedrock and screened across fractured water bearing zones. A 4-inch diameter PVC temporary well casing was set for MW-6Ad to 33 feet bgs to seal off the shallow aquifer and to prevent cave-in and was removed during well construction.

The monitoring wells were constructed of 2-inch schedule 40 PVC riser pipe and 0.010-inch slotted screen. Concrete aprons and lockable aluminum protective casings were installed at each well location. A summary of well construction information is provided as Table 3. The wells were surveyed by Boundary Zone, Inc. Land Surveying Services in August 2011. A survey plat is provided as Attachment B. Soil boring and well construction logs for the monitoring wells and the Well Construction Records (Form GW-1B Rev. 2/09) are included in Attachment D.

GROUNDWATER MONITORING WELL DEVELOPMENT

Golder personnel developed the four newly-installed monitoring wells (MW-6As, MW-6Ad, MW-7As, and MW-7Ad) on June 1 and 2, 2011 using a Grundfos electric submersible pump that was decontaminated between wells. Water levels were measured during the development activities with an electronic water level indicator, and water quality measurements (pH, temperature, specific conductance, and turbidity) were collected during development. Between approximately 20 and 30 gallons of water were pumped from the wells until the turbidity was less than 100 nephelometric turbidity units (NTUs), except for MW-6As, which more than 16 well volumes of water were removed and was purged dry twice; however, turbidity remained above 100 NTUs. If additional development is required, it will be done in conjunction with the next routine event. Monitoring well development data sheets are included in Attachment E.

DEDICATED BLADDER PUMP INSTALLATION

New dedicated bladder pumps were installed in monitoring wells MW-6As, MW-6Ad, MW-7As, and MW-7Ad on June 15, 2011. The pumps were placed approximately between 2 to 5 feet above the bottom of each well depending on the water column thickness and anticipated drawdown.

BACKGROUND SAMPLING OF GROUNDWATER MONITORING WELLS

On June 15-16, 2011, the four newly-installed groundwater monitoring wells (MW-6As, MW-6Ad, MW-7As, and MW-7Ad) were purged and sampled using dedicated bladder pumps and low-flow techniques. The monitoring wells were sampled using procedures outlined in the facility's approved *Water Quality Monitoring Plan*.

Depth to water measurements were recorded to the nearest 0.01-foot prior to initiating groundwater purging and sampling activities. The respective groundwater level elevations for the wells are presented in Table 4. Measurements of temperature, pH, specific conductivity, dissolved oxygen, oxidation-reduction potential, and turbidity were recorded on approximately 3- to 4-minute intervals during the purge, depending on the purge rate. In general, the purge rate was matched to the yield of the monitoring well, as determined by continuously monitoring the depth to water, never allowing the purge rate to exceed 500 milliliters per minute. Purging was continued until stabilization was indicated by the field parameters.

Prior to sampling, the laboratory-supplied sample containers were prepared. Each sample container was labeled with the sample identification number, sampling personnel, date and time of sample collection, project name and number, and requested chemical analyses. The required groundwater samples were collected directly from the dedicated bladder pump discharge lines into the labeled, laboratory-supplied, pre-preserved sample containers after purging was completed based on stabilization of field parameters. The groundwater sampling logs are included in Attachment F.

The samples from the monitoring wells were analyzed for the NC Appendix I list of constituents plus the C&D indicator parameters, which include iron, mercury, manganese, chloride, sulfate, alkalinity, total dissolved solids, and tetrahydrofuran. Following collection, the samples were placed in a cooler on ice under chain-of-custody control and were shipped to Environmental Conservation Laboratories, Inc. of Cary, North Carolina for analysis. A copy of the laboratory analytical report with chain-of-custody and Golder's laboratory data review is included as Attachment G.

As presented on Table 5, three NC Appendix I metals (antimony, cobalt, and vanadium) were detected at estimated concentrations below the Solid Waste Section Limits (SWSLs), but above the NC Solid Waste Section Groundwater Protection Standards in samples from one or more of the newly-installed monitoring wells during the background sampling event. No NC Appendix I metals were detected in groundwater samples above the SWSLs during the event. Indicator parameters iron and manganese were detected in MW-6As, MW-7As, and MW-7Ad at concentrations above their respective SWSLs and NC 2L Groundwater Quality Standards during the event. No NC Appendix I volatile organic compounds were detected in samples from the monitoring wells.

CLOSING

Thank you for this opportunity to perform these services for WCA. Should you have any questions or require additional information, please do not hesitate to contact the undersigned at (336) 852-4903.

Sincerely,
GOLDER ASSOCIATES NC, INC.

David "Dusty" Y. Reedy II, P.G.
Senior Project Hydrogeologist

Rachel P. Kirkman, P.G.
Associate and Senior Geologist

Attachments:

Table 1	Summary of Piezometer Decommissioning
Table 2	Summary of Methane Monitoring Probe Construction Information
Table 3	Summary of Monitoring Well Construction Information
Table 4	Summary of Groundwater Elevation Data in Background Monitoring Wells
Table 5	Summary of Detected Constituents in Groundwater Samples
Drawing 1	Site Plan
Attachment A	Well Abandonment Records
Attachment B	Survey Plat
Attachment C	Methane Monitoring Probe Boring and Well Construction Logs and Well Construction Records
Attachment D	Groundwater Monitoring Well Boring and Well Construction Logs and Well Construction Records
Attachment E	Monitoring Well Development Data Sheets
Attachment F	Groundwater Sampling Logs
Attachment G	Laboratory Analytical Report, Chain-of-Custody Form, and Laboratory Data Review

C: File

g:\projects\wca\wake-material recovery\environmental\well, gas probe installation and decommission\final wca mr drilling & decommissioning report 9-6-11.docx

DENR USE ONLY: ☐ Paper Report ☐ Electronic Data - Email CD (data loaded: Yes / No) Doc/Event #:

NC DENR
Division of Waste Management - Solid Waste

Environmental Monitoring Reporting Form

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):

Golder Associates NC, Inc. on behalf of Material Recovery, LLC

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

Name: David Y. Reedy II, P.G. Phone: 336-852-4903

E-mail: dreedy@golder.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Material Recovery,LLC C&D Landfill	2600 Brown-Field Rd, Raleigh, NC 27610	92-31	.0500	June 16, 2011

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

Notification attached?

☐ No. No groundwater or surface water standards or explosive methane gas limits 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.

David Y. Reedy II, P.G. Senior Project Hydrogeologist (336) 852-4903

Facility Representative Name (Print) Title (Area Code) Telephone Number

Signature 5-22-11 Date

Affix NC Licensed/Professional Geologist Seal

NORTH CAROLINA LICENSED SEAL 1963 GEOLOGIST DAVID YATES REEDY, II 5-22-11

Revised 10/2006

TABLES

TABLE 1

Summary of Piezometer Decommissioning
Material Recovery LLC, C&D Landfill, Permit No. 92-31

Piezometer Identification	Decommission Date	Original Depth (ft bgs)	Overdrilled Depth (ft bgs)	Top of Grout (ft bgs)
G-3	04/05/11	48	48	36
G-5	04/05/11	54	54	26
G-6	04/04/11	47	47	20
G-7	04/04/11	53	53	10
G-9	04/05/11	24	24	2
G-16	05/10/11	68	65	65
G-23	04/04/11	73	73	16
P-7	04/04/11	75	75	16

Note:
ft bgs = feet below ground surface

TABLE 2

Summary of Methane Monitoring Probe Construction Information
Material Recovery LLC, C&D Landfill, Permit No. 92-31

Methane Monitoring Probe Identification	Date Installed	Casing Diameter (inches)	Elevations		Total Depth Drilled		Screened Interval				Lithology of Screened Interval
			Ground Surface	TOC	Depth (ft bgs)	Elevation (ft AMSL)	Depth (ft bgs)		Elevation (ft AMSL)		
			ft AMSL				from	to	from	to	
LFG-5	05/09/11	2	252.3	254.50	25	227.3	5	10	247.3	242.3	Saprolite
LFG-6	05/09/11	2	264.3	266.68	25	239.3	5	20	259.3	244.3	Saprolite/PWR
LFG-7	05/09/11	2	251.4	254.03	16	235.4	5	8	246.4	243.4	Saprolite
LFG-8	05/09/11	2	250.0	252.87	15	235.0	5	10	245.0	240.0	PWR
LFG-9	05/10/11	2	272.0	274.41	30	242.0	5	18	267.0	254.0	Saprolite
LFG-10	05/10/11	2	272.1	274.63	13	259.1	5	13	267.1	259.1	Saprolite/PWR

Notes:

1. ft AMSL = feet above mean sea level
2. bgs = below ground surface
3. TOC = top of casing
4. PWR = partially weathered rock

TABLE 3

Summary of Monitoring Well Construction Information
Material Recovery LLC, C&D Landfill, Permit No. 92-31

Well Identification	Date Installed	Casing Diameter (inches)	Well Elevations		Total Depth Drilled		Screened Interval				Lithology of Screened Interval
			Ground Surface	TOC	Depth (ft bgs)	Elevation (ft AMSL)	Depth (ft bgs)		Elevation (ft AMSL)		
			ft AMSL				from	to	from	to	
MW-6As	05/11/11	2	214.7	217.40	16	229.17	5	15	209.7	199.7	Saprolite/PWR
MW-6Ad	06/01/11	2	214.3	216.72	57	157.30	47	57	167.3	157.3	Bedrock
MW-7As	05/11/11	2	235.6	238.35	34	201.60	9	24	226.6	211.6	PWR
MW-7Ad	05/31/11	2	235.3	237.20	48	187.30	38	48	197.3	187.3	Bedrock

Notes:

1. ft AMSL = feet above mean sea level
2. bgs = below ground surface
3. TOC = top of casing
4. PWR = partially weathered rock

TABLE 4

Summary of Groundwater Elevation Data in Background Monitoring Wells
Material Recovery LLC, C&D Landfill, Permit No. 92-31

	Monitoring Wells			
	MW-6As	**MW-6Ad**	**MW-7As**	**MW-7Ad**
TOC Elevation (ft AMSL)	**217.40**	**216.72**	**238.35**	**237.20**
Date	**Static Groundwater Elevation (ft AMSL)**			
06/16/11	207.99	208.16	224.98	224.76

Notes:
1. TOC = top of casing
2. ft AMSL = feet above mean sea level

TABLE 5

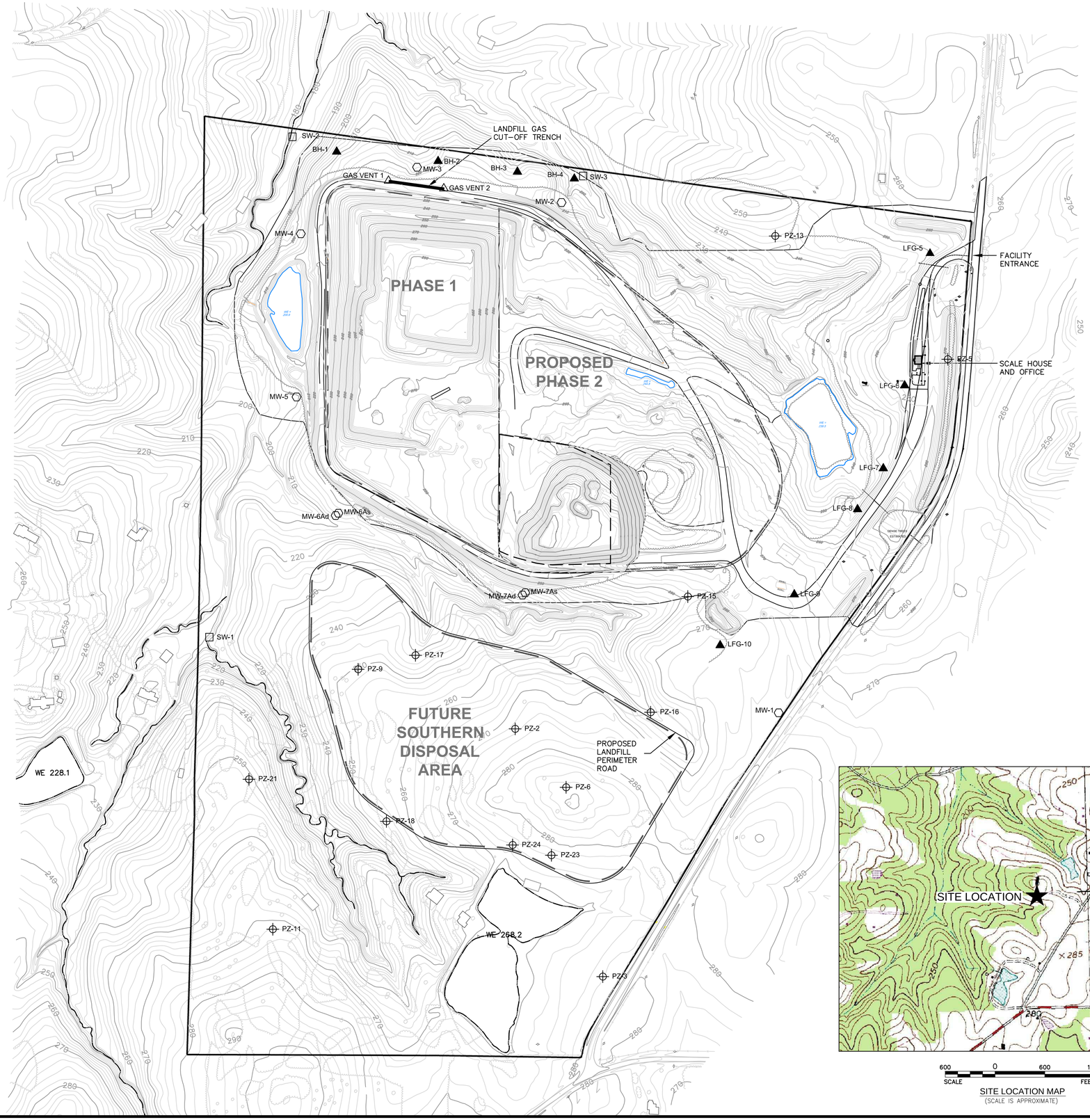
Summary of Detected Constituents in Groundwater Samples
Material Recovery LLC, C&D Landfill, Permit No. 92-31

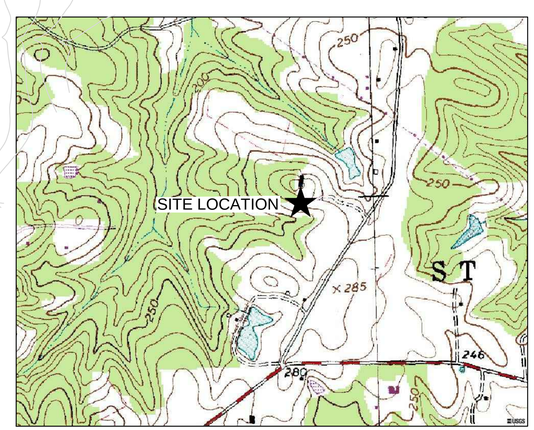
Parameter	Reporting Units	Date	SWS Reporting Limit	MW-6As		MW-6Ad		MW-7As		MW-7Ad		Blanks
Antimony SWS GPS = 1 ug/L	ug/L	06/16/11	6	ND		4.88	J	0.276	J	ND		ND
Arsenic NC 2L = 10 ug/L	ug/L	06/16/11	10	ND		ND		3.92	J	ND		ND
Barium NC 2L = 700 ug/L	ug/L	06/16/11	100	32.5	J	14.9	J	51.7	J	38.6	J	ND
Beryllium SWS GPS = 4 ug/L	ug/L	06/16/11	1	0.177	J	0.128	J	1.05		0.834	J	ND
Chromium NC 2L = 10 ug/L	ug/L	06/16/11	10	1.33	J	ND		1.80	J	1.37	J	ND
Cobalt SWS GPS = 1 ug/L	ug/L	06/16/11	10	1.65	J	ND		2.57	J	1.47	J	ND
Copper NC 2L = 1000 ug/L	ug/L	06/16/11	10	ND		1.82	J	6.54	J	4.98	J	ND
Lead NC 2L = 15 ug/L	ug/L	06/16/11	10	1.97	J	4.04	J	6.51	J	5.03	J	ND
Nickel NC 2L = 100 ug/L	ug/L	06/16/11	50	2.00	J	ND		2.05	J	2.58	J	ND
Vanadium SWS GPS = 0.3 ug/L	ug/L	06/16/11	25	ND		ND		5.90	J	5.58	J	ND
Zinc NC 2L = 1000 ug/L	ug/L	06/16/11	10	11.0		ND		27.4		8.94	J	ND
Iron NC 2L = 300 ug/L	ug/L	06/16/11	300	970		161	J	4360		2860		ND
Manganese NC 2L = 50 ug/L	ug/L	06/16/11	50	1230		15.1	J	219		88.4		ND
Chloride (NC 2L = 250 mg/L)	mg/L	06/16/11	--	3.6	J	5		4.6	J	4.2	J	ND
Total Dissolved Solids (NC 2L = 1000 mg/L)	mg/L	06/16/11	--	110		76		86		94		ND
Sulfate (NC 2L = 250 mg/L)	mg/L	06/16/11	250	6.3	J	1.6	J	4.7	J	3.9	J	ND
Total Alkalinity (No Standard)	mg/L	06/16/11	--	14	J	27		25		15		ND
pH (field)	S.U.	06/16/11	--	6.56		5.28		6.22		5.91		--
Specific Conductance (Field)	uS/cm	06/16/11	--	71		94		97		85		--
Temperature (Field)	^{o}C	06/16/11	--	19.13		16.87		18.15		18.41		--
Turbidity (Field)	NTU	06/16/11	--	30.5		4.68		131		94.2		--
Dissolved Oxygen (Field)	mg/L	06/16/11	--	3.70		3.21		3.01		3.48		--
Oxidation-Reduction Potential (Field)	mV	06/16/11	--	202.3		281.7		222.9		235.7		--

Notes:

1. MW = groundwater monitoring well
2. ug/L = micrograms per liter
3. mg/L = milligrams per liter
4. S.U. = Standard Units
5. uS/cm = microsiemens per centimeter
6. ^{o}C = degrees Celsius
7. NTU = Nephelometric Turbidity Units
8. mV = millivolts
9. J = Estimated Value
10. B = Blank-qualified data
11. ND = Not detected at or above the stated reporting limit
12. NC 2L = North Carolina groundwater quality standard established under 15A NCAC 2L .0202
13. SWS GPS = North Carolina Solid Waste Section Groundwater Protection Standard
14. -- = no data available
15. Shaded values are above their current respective NC 2L Standard or GPS.
16. Blanks = Field, trip, and laboratory blanks

DRAWING





600 0 600 1200
SCALE FEET

SITE LOCATION MAP
(SCALE IS APPROXIMATE)

LEGEND

	EXISTING 10-FOOT GROUND SURFACE CONTOUR
	EXISTING 2-FOOT GROUND SURFACE CONTOUR
	PROPERTY LINE
	APPROXIMATE LIMITS OF WASTE
	EXISTING ROAD
BH-1	LANDFILL GAS BAR-HOLE LOCATION
LFG-5	LANDFILL GAS MONITORING PROBE
MW-1	GROUNDWATER MONITORING WELL
SW-3	SURFACE WATER MONITORING POINT
PZ-13	PIEZOMETER LOCATION IDENTIFICATION
	TREELINE
	TOPOGRAPHIC DIVIDING LINE (SEE NOTE 6)
	PROPOSED TRENCH (SEE DETAIL)
GAS VENT 1	LANDFILL GAS VENT

NOTES

1) TOPOGRAPHIC CONTOUR INTERVAL = 2 FEET

2) DRAWING BASED ON THE SITE PLAN PREPARED BY JOYCE ENGINEERING, INC. (SEPTEMBER, 2006). DIGITAL MAPPING PROVIDED BY SPATIAL DATA CONSULTANTS, INC., OF HIGH POINT, NORTH CAROLINA. DATE OF AERIAL FLYOVER WAS MARCH 27, 2001.

3) LANDFILL GAS MONITORING POINTS AND SURFACE WATER MONITORING POINT LOCATIONS ARE APPROXIMATE.

4) ELEVATIONS SHOWN IN THIS DRAWING ARE IN FEET ABOVE SEA LEVEL DATUM ("SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM (NGVD) OF 1929); AND COORDINATES ARE EXPRESSED IN TERMS OF THE STATE PLANE COORDINATE SYSTEM.

5) TOPOGRAPHIC CONTOURS WERE UPDATED FEBRUARY 11, 2010, BY AMI ENGINEERING.

6) TOPOGRAPHIC DIVIDING LINE DIVIDES THE BASE MAP TOPOGRAPHIC CONTOURS FROM UPDATED TOPOGRAPHIC CONTOURS.

7) THE LOCATIONS OF THE LANDFILL GAS MONITORING PROBES AND BAR-HOLE LOCATIONS ARE APPROXIMATE.

REFERENCES

1.) REFERENCES

200 0 200 400
SCALE FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
–	–	–	– –	–	–	–

PROJECT
MATERIAL RECOVERY, LLC
C&D LANDFILL
WAKE COUNTY, NORTH CAROLINA

TITLE
SITE PLAN

Golder Associates
GREENSBORO, NC

PROJECT No.	073-9602410		FILE No. SITE PLAN (LKB 9-13-11)	
DESIGN	DYR	5/11/10	SCALE 1"=200'	REV. –
CADD	LKB	5/11/10		
CHECK	DYE	5/11/10	DWG. 1	
REVIEW	RPK	5/11/10		

X:\Projects\WCA\Material Recovery C&D Landfill\073-9602-4070\SITE PLAN (LKB 9-13-11).dwg 9/13/2011 4:00 PM

ATTACHMENT A

WELL ABANDONMENT RECORDS

WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2452

1. WELL CONTRACTOR:

JERRY WATKINS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC.
Well Contractor Company Name

STREET ADDRESS 176 COMMERCE BLVD.

STATESVILLE NC 28625
City or Town State Zip Code

(704) - 872-7686
Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable) G-3

STATE WELL PERMIT # (if applicable) _____

COUNTY WELL PERMIT # (if applicable) _____

DWQ or OTHER PERMIT # (if applicable) _____

WELL USE (Check applicable use): ☑ Monitoring ☐ Residential ☐ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐ Irrigation

☐ Other (list use) _____

3. WELL LOCATION:

COUNTY WAKE QUADRANGLE NAME _____

NEAREST TOWN: RALEIGH

2600 BROWNFIELD ROAD 27610
(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other _____
(Check appropriate setting)

LATITUDE __ __ _____

LONGITUDE __ __ _____

May be in degrees, minutes, seconds, or in a decimal format

Latitude/longitude source: ☐ GPS ☐ Topographic map

(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and4b. (If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID #(if applicable) _____

NAME OF FACILITY C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD

RALEIGH NC 27610
City or Town State Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD RALEIGH, NC 27610

5. WELL DETAILS:

a. Total Depth: 48.0 ft. Diameter: 2.0 in.

b. Water Level (Below Measuring Point): _____ ft.

Measuring point is _____ ft. above land surface.

6. CASING:

	Length	Diameter
a. Casing Depth (if known):	N/A ft.	_____ in.
b. Casing Removed:	N/A ft.	_____ in.

7. DISINFECTION: N/A

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Cement -- lb.
Water -- gal.

Sand Cement

Cement -- lb.
Water -- gal.

Bentonite

Bentonite lb.

Type: ☑ Slurry ☐ Pellets

Water _____ gal.

Other

Type material PORTLAND BENTONITE SLURRY

Amount 32.0 GALLONS

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

OVERDRILLED AND GROUTED VIA TREMIE PIPE WITH PORTLAND BENTONITE SLURRY

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED 4/5/11

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Jerry Watkins 04/07/11

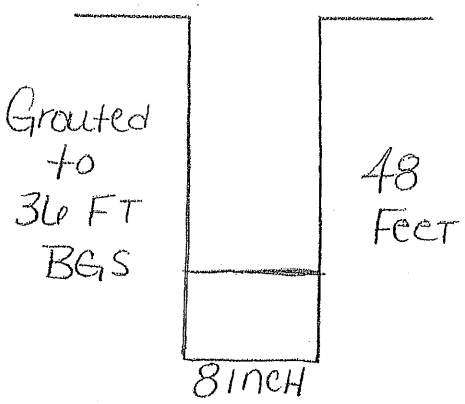
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE
(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

JERRY WATKINS
PRINTED NAME OF PERSON ABANDONING THE WELL

Submit a copy to the owner and the original to the Division of Water Quality within 30 days.
Attn: Information Management, 1617 Mail Service Center – Raleigh, NC 27699-1617, Phone No. (919) 733-7015 ext 568.

Form GW-30
Rev. 5/06


Grouted
to
36 FT
BGS
48
Feet
8 inch

WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2452

1. WELL CONTRACTOR:

JERRY WATKINS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC.
Well Contractor Company Name

STREET ADDRESS 176 COMMERCE BLVD.

STATESVILLE NC 28625
City or Town State Zip Code

(704) - 872-7686
Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable) G-5

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Check applicable use): ☑ Monitoring ☐ Residential ☐ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐ Irrigation

☐ Other (list use)

3. WELL LOCATION:

COUNTY WAKE QUADRANGLE NAME

NEAREST TOWN: RALEIGH

2600 BROWNFIELD ROAD 27610
(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other
(Check appropriate setting)

LATITUDE
LONGITUDE

May be in degrees, minutes, seconds, or in a decimal format

Latitude/longitude source: ☐ GPS ☐ Topographic map

(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and 4b. (If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID #(if applicable)

NAME OF FACILITY C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD

RALEIGH NC 27610
City or Town State Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD RALEIGH, NC 27610

5. WELL DETAILS:

a. Total Depth: 54.0 ft. Diameter: 2.0 in.

b. Water Level (Below Measuring Point): ft.

Measuring point is ft. above land surface.

6. CASING:

	Length	Diameter
a. Casing Depth (if known):	N/A ft.	in.
b. Casing Removed:	N/A ft.	in.

7. DISINFECTION: N/A

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Cement -- lb.
Water -- gal.

Sand Cement

Cement -- lb.
Water -- gal.

Bentonite

Bentonite lb.

Type: ☑ Slurry ☐ Pellets

Water gal.

Other

Type material PORTLAND BENTONITE SLURRY

Amount 70.0 GALLONS

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

OVERDRILLED AND GROUTED VIA TREMIE PIPE WITH PORTLAND BENTONITE SLURRY

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED 4/5/11

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

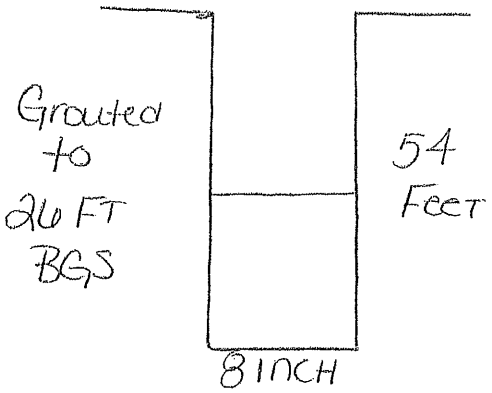
Jerry Watkins 04/07/11
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE
(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

JERRY WATKINS
PRINTED NAME OF PERSON ABANDONING THE WELL

Submit a copy to the owner and the original to the Division of Water Quality within 30 days.
Attn: Information Management, 1617 Mail Service Center – Raleigh, NC 27699-1617, Phone No. (919) 733-7015 ext 568.

Form GW-30
Rev. 5/06


Grouted
to
26 FT
BGS
54
Feet
8 INCH

WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2452

1. WELL CONTRACTOR:

JERRY WATKINS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC.
Well Contractor Company Name

STREET ADDRESS 176 COMMERCE BLVD.

STATESVILLE NC 28625
City or Town State Zip Code

(704) - 872-7686
Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable) G-6

STATE WELL PERMIT # (if applicable) _____

COUNTY WELL PERMIT # (if applicable) _____

DWQ or OTHER PERMIT # (if applicable) _____

WELL USE (Check applicable use): ☑ Monitoring ☐ Residential ☐ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐ Irrigation

☐ Other (list use) _____

3. WELL LOCATION:

COUNTY WAKE QUADRANGLE NAME _____

NEAREST TOWN: RALEIGH

2600 BROWNFIELD ROAD 27610
(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other _____
(Check appropriate setting)

LATITUDE ___ ___ _____

LONGITUDE ___ ___ _____

May be in degrees, minutes, seconds, or in a decimal format

Latitude/longitude source: ☐ GPS ☐ Topographic map

(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and4b. (If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID #(if applicable) _____

NAME OF FACILITY C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD

RALEIGH NC 27610
City or Town State Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD RALEIGH, NC 27610

5. WELL DETAILS:

a. Total Depth: 47.0 ft. Diameter: 2.0 in.

b. Water Level (Below Measuring Point): _____ ft.

Measuring point is _____ ft. above land surface.

6. CASING:

	Length	Diameter
a. Casing Depth (if known):	N/A ft.	_____ in.
b. Casing Removed:	N/A ft.	_____ in.

7. DISINFECTION: N/A

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Cement -- lb.
Water -- gal.

Sand Cement

Cement -- lb.
Water -- gal.

Bentonite

Bentonite lb.

Type: ☑ Slurry ☐ Pellets

Water _____ gal.

Other

Type material PORTLAND BENTONITE SLURRY

Amount 70.0 GALLONS

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

OVERDRILLED AND GROUTED VIA TREMIE PIPE WITH PORTLAND BENTONITE SLURRY

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED 4/5/11

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

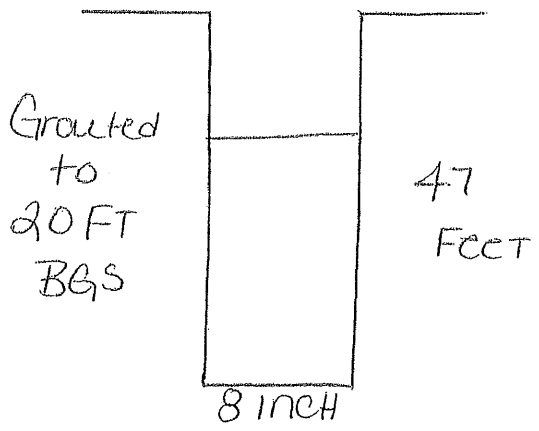
Jerry Watkins 04/07/11
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE
(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

JERRY WATKINS
PRINTED NAME OF PERSON ABANDONING THE WELL

Submit a copy to the owner and the original to the Division of Water Quality within 30 days.
Attn: Information Management, 1617 Mail Service Center – Raleigh, NC 27699-1617, Phone No. (919) 733-7015 ext 568.

Form GW-30
Rev. 5/06


Grouted
to
20 FT
BGS
47
Feet
8 inch

WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2452

1. WELL CONTRACTOR:

JERRY WATKINS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC.
Well Contractor Company Name

STREET ADDRESS 176 COMMERCE BLVD.

STATESVILLE NC 28625
City or Town State Zip Code

(704) - 872-7686
Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable) G-7

STATE WELL PERMIT # (if applicable) _____

COUNTY WELL PERMIT # (if applicable) _____

DWQ or OTHER PERMIT # (if applicable) _____

WELL USE (Check applicable use): ☑ Monitoring ☐ Residential ☐ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐ Irrigation

☐ Other (list use) _____

3. WELL LOCATION:

COUNTY WAKE QUADRANGLE NAME _____

NEAREST TOWN: RALEIGH

2600 BROWNFIELD ROAD 27610
(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other _____
(Check appropriate setting)

LATITUDE ___ ___ _____

LONGITUDE ___ ___ _____

May be in degrees, minutes, seconds, or in a decimal format

Latitude/longitude source: ☐ GPS ☐ Topographic map

(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and4b. (If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID #(if applicable) _____

NAME OF FACILITY C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD

RALEIGH NC 27610
City or Town State Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD RALEIGH, NC 27610

5. WELL DETAILS:

a. Total Depth: 53.0 ft. Diameter: 2.0 in.

b. Water Level (Below Measuring Point): _____ ft.

Measuring point is _____ ft. above land surface.

6. CASING:

	Length	Diameter
a. Casing Depth (if known):	N/A ft.	_____ in.
b. Casing Removed:	N/A ft.	_____ in.

7. DISINFECTION: N/A

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Cement -- lb.
Water -- gal.

Sand Cement

Cement -- lb.
Water -- gal.

Bentonite

Bentonite lb.

Type: ☑ Slurry ☐ Pellets

Water _____ gal.

Other

Type material PORTLAND BENTONITE SLURRY

Amount 110.0 GALLONS

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

OVERDRILLED AND GROUTED VIA TREMIE PIPE WITH PORTLAND BENTONITE SLURRY

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED 4/5/11

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

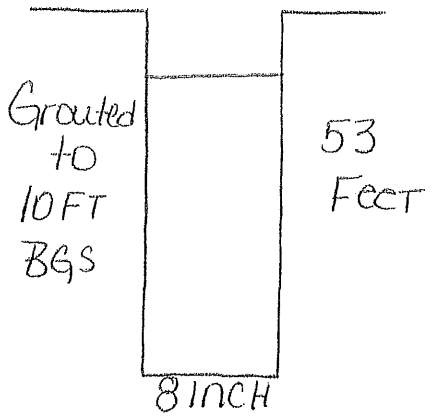
Jerry Watkins 04/07/11
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

_____
SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE
(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

JERRY WATKINS
PRINTED NAME OF PERSON ABANDONING THE WELL

Submit a copy to the owner and the original to the Division of Water Quality within 30 days.
Attn: Information Management, 1617 Mail Service Center – Raleigh, NC 27699-1617, Phone No. (919) 733-7015 ext 568.

Form GW-30
Rev. 5/06


Grouted
to
10 FT
BGS
53
Feet
8 INCH

WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2452

1. WELL CONTRACTOR:

JERRY WATKINS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC.
Well Contractor Company Name

STREET ADDRESS 176 COMMERCE BLVD.

STATESVILLE NC 28625
City or Town State Zip Code

(704) - 872-7686
Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable) G-9

STATE WELL PERMIT # (if applicable) _____

COUNTY WELL PERMIT # (if applicable) _____

DWQ or OTHER PERMIT # (if applicable) _____

WELL USE (Check applicable use): ☑ Monitoring ☐ Residential ☐ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐ Irrigation

☐ Other (list use) _____

3. WELL LOCATION:

COUNTY WAKE QUADRANGLE NAME _____

NEAREST TOWN: RALEIGH

2600 BROWNFIELD ROAD 27610
(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other _____
(Check appropriate setting)

LATITUDE ___ ___ _____

LONGITUDE ___ ___ _____

May be in degrees, minutes, seconds, or in a decimal format

Latitude/longitude source: ☐ GPS ☐ Topographic map

(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and4b. (If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID #(if applicable) _____

NAME OF FACILITY C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD

RALEIGH NC 27610
City or Town State Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD RALEIGH, NC 27610

5. WELL DETAILS:

a. Total Depth: 24.0 ft. Diameter: 2.0 in.

b. Water Level (Below Measuring Point): _____ ft.

Measuring point is _____ ft. above land surface.

6. CASING:

	Length	Diameter
a. Casing Depth (if known):	N/A ft.	_____ in.
b. Casing Removed:	N/A ft.	_____ in.

7. DISINFECTION: N/A

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Cement -- lb.
Water -- gal.

Sand Cement

Cement -- lb.
Water -- gal.

Bentonite

Bentonite lb.

Type: ☑ Slurry ☐ Pellets

Water _____ gal.

Other

Type material PORTLAND BENTONITE SLURRY

Amount 57.0 GALLONS

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

OVERDRILLED AND GROUTED VIA TREMIE PIPE WITH PORTLAND BENTONITE SLURRY

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED 4/5/11

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Jerry Watkins 04/07/11

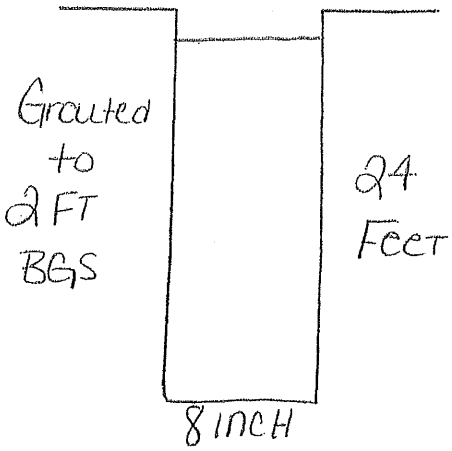
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE
(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

JERRY WATKINS
PRINTED NAME OF PERSON ABANDONING THE WELL

Submit a copy to the owner and the original to the Division of Water Quality within 30 days.
Attn: Information Management, 1617 Mail Service Center – Raleigh, NC 27699-1617, Phone No. (919) 733-7015 ext 568.

Form GW-30
Rev. 5/06


Grouted
to
2 FT
BGS
24
Feet
8 inch

WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2581

1. WELL CONTRACTOR:

BRIAN THOMAS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC.
Well Contractor Company Name

STREET ADDRESS 176 COMMERCE BLVD.

STATESVILLE NC 28625
City or Town State Zip Code

(704) - 872-7686
Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable) G-16

STATE WELL PERMIT # (if applicable)

COUNTY WELL PERMIT # (if applicable)

DWQ or OTHER PERMIT # (if applicable)

WELL USE (Check applicable use): ☑ Monitoring ☐ Residential ☐ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐ Irrigation

☐ Other (list use)

3. WELL LOCATION:

COUNTY WAKE QUADRANGLE NAME

NEAREST TOWN: RALEIGH

2600 BROWNFIELD ROAD 27610
(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other
(Check appropriate setting)

LATITUDE
LONGITUDE

May be in degrees, minutes, seconds, or in a decimal format

Latitude/longitude source: ☐ GPS ☐ Topographic map

(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and4b. (If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID #(if applicable)

NAME OF FACILITY C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD

RALEIGH NC 27610
City or Town State Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD RALEIGH, NC 27610

5. WELL DETAILS:

a. Total Depth: 65.0 ft. Diameter: 2.0 in.

b. Water Level (Below Measuring Point): ft.

Measuring point is ft. above land surface.

6. CASING:

	Length	Diameter
a. Casing Depth (if known):	N/A ft.	in.
b. Casing Removed:	N/A ft.	in.

7. DISINFECTION: N/A

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Cement -- lb.
Water -- gal.

Sand Cement

Cement -- lb.
Water -- gal.

Bentonite

Bentonite lb.

Type: ☑ Slurry ☐ Pellets

Water gal.

Other

Type material PORTLAND BENTONITE SLURRY

Amount 160.0 GALLONS

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

OVERDRILLED AND GROUTED VIA TREMIE PIPE WITH PORTLAND BENTONITE SLURRY

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED 5/10/11

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

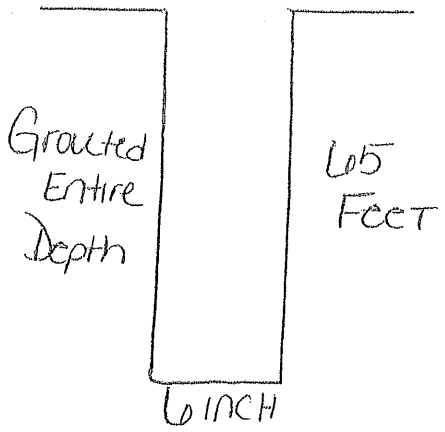
SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 06/06/11

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL — DATE
(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

BRIAN THOMAS
PRINTED NAME OF PERSON ABANDONING THE WELL

Submit a copy to the owner and the original to the Division of Water Quality within 30 days.
Attn: Information Management, 1617 Mail Service Center – Raleigh, NC 27699-1617, Phone No. (919) 733-7015 ext 568.

Form GW-30
Rev. 5/06


Grouted
Entire
Depth
105
Feet
6 INCH

WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2452

1. WELL CONTRACTOR:

JERRY WATKINS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC.
Well Contractor Company Name

STREET ADDRESS 176 COMMERCE BLVD.

STATESVILLE NC 28625
City or Town State Zip Code

(704) - 872-7686
Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable) G-23

STATE WELL PERMIT # (if applicable) _____

COUNTY WELL PERMIT # (if applicable) _____

DWQ or OTHER PERMIT # (if applicable) _____

WELL USE (Check applicable use): ☑ Monitoring ☐ Residential ☐ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐ Irrigation

☐ Other (list use) _____

3. WELL LOCATION:

COUNTY WAKE QUADRANGLE NAME _____

NEAREST TOWN: RALEIGH

2600 BROWNFIELD ROAD 27610
(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other _____
(Check appropriate setting)

LATITUDE ___ ___ _____

LONGITUDE ___ ___ _____

May be in degrees, minutes, seconds, or in a decimal format

Latitude/longitude source: ☐ GPS ☐ Topographic map

(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and4b. (If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID #(if applicable) _____

NAME OF FACILITY C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD

RALEIGH NC 27610
City or Town State Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD RALEIGH, NC 27610

5. WELL DETAILS:

a. Total Depth: 73.0 ft. Diameter: 2.0 in.

b. Water Level (Below Measuring Point): _____ ft.

Measuring point is _____ ft. above land surface.

6. CASING:

	Length	Diameter
a. Casing Depth (if known):	N/A ft.	_____ in.
b. Casing Removed:	N/A ft.	_____ in.

7. DISINFECTION: N/A

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Cement -- lb.
Water -- gal.

Sand Cement

Cement -- lb.
Water -- gal.

Bentonite

Bentonite lb.

Type: ☑ Slurry ☐ Pellets

Water _____ gal.

Other

Type material PORTLAND BENTONITE SLURRY

Amount 150.0 GALLONS

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

OVERDRILLED AND GROUTED VIA TREMIE PIPE WITH PORTLAND BENTONITE SLURRY

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED 4/5/11

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Jerry Watkins — 04/07/11

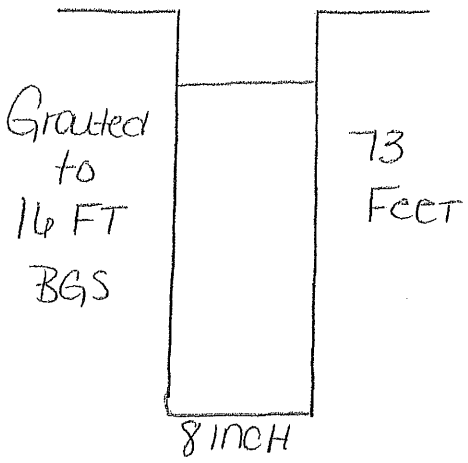
SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL — DATE
(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

JERRY WATKINS
PRINTED NAME OF PERSON ABANDONING THE WELL

Submit a copy to the owner and the original to the Division of Water Quality within 30 days.
Attn: Information Management, 1617 Mail Service Center – Raleigh, NC 27699-1617, Phone No. (919) 733-7015 ext 568.

Form GW-30
Rev. 5/06


Grouted
to
16 FT
BGS
73
Feet
8 INCH

WELL ABANDONMENT RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2452

1. WELL CONTRACTOR:

JERRY WATKINS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC.
Well Contractor Company Name

STREET ADDRESS 176 COMMERCE BLVD.

STATESVILLE NC 28625
City or Town State Zip Code

(704) - 872-7686
Area code - Phone number

2. WELL INFORMATION:

SITE WELL ID # (if applicable) P-7

STATE WELL PERMIT # (if applicable) _____

COUNTY WELL PERMIT # (if applicable) _____

DWQ or OTHER PERMIT # (if applicable) _____

WELL USE (Check applicable use): ☑ Monitoring ☐ Residential ☐ Municipal/Public ☐ Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐ Irrigation

☐ Other (list use) _____

3. WELL LOCATION:

COUNTY WAKE QUADRANGLE NAME _____

NEAREST TOWN: RALEIGH

2600 BROWNFIELD ROAD 27610
(Street/Road Name, Number, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING:

☐ Slope ☐ Valley ☐ Flat ☐ Ridge ☐ Other _____
(Check appropriate setting)

LATITUDE __ __ _____

LONGITUDE __ __ _____

May be in degrees, minutes, seconds, or in a decimal format

Latitude/longitude source: ☐ GPS ☐ Topographic map

(Location of well must be shown on a USGS topo map and attached to this form if not using GPS.)

4a. FACILITY- The name of the business where the well is located. Complete 4a and4b. (If a residential well, skip 4a; complete 4b, well owner information only.)

FACILITY ID #(if applicable) _____

NAME OF FACILITY C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD

RALEIGH NC 27610
City or Town State Zip Code

4b. CONTACT PERSON/WELL OWNER:

NAME C&D LANDFILL

STREET ADDRESS 2600 BROWNFIELD ROAD RALEIGH, NC 27610

5. WELL DETAILS:

a. Total Depth: 75.0 ft. Diameter: 2.0 in.

b. Water Level (Below Measuring Point): _____ ft.

Measuring point is _____ ft. above land surface.

6. CASING:

	Length	Diameter
a. Casing Depth (if known):	N/A ft.	_____ in.
b. Casing Removed:	N/A ft.	_____ in.

7. DISINFECTION: N/A

(Amount of 65%-75% calcium hypochlorite used)

8. SEALING MATERIAL:

Neat Cement

Cement -- lb.
Water -- gal.

Sand Cement

Cement -- lb.
Water -- gal.

Bentonite

Bentonite lb.

Type: ☑ Slurry ☐ Pellets

Water _____ gal.

Other

Type material PORTLAND BENTONITE SLURRY

Amount 150.0 GALLONS

9. EXPLAIN METHOD OF EMPLACEMENT OF MATERIAL:

OVERDRILLED AND GROUTED VIA TREMIE PIPE WITH PORTLAND BENTONITE SLURRY

10. WELL DIAGRAM: Draw a detailed sketch of the well on the back of this form showing total depth, depth and diameter of screens (if any) remaining in the well, gravel interval, intervals of casing perforations, and depths and types of fill materials used.

11. DATE WELL ABANDONED 4/5/11

I DO HEREBY CERTIFY THAT THIS WELL WAS ABANDONED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Jerry Watkins 04/07/11

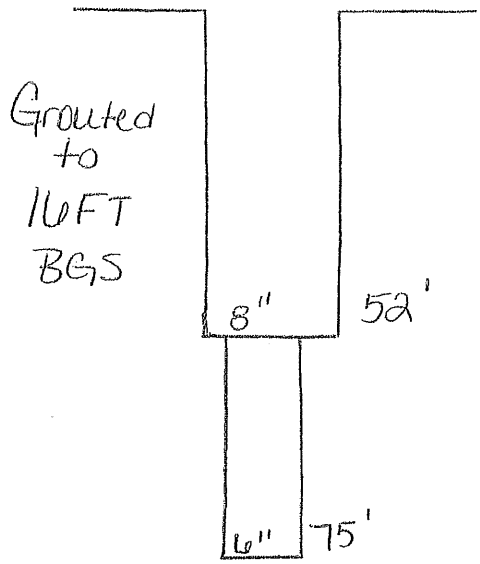
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

SIGNATURE OF PRIVATE WELL OWNER ABANDONING THE WELL DATE
(The private well owner must be an individual who personally abandons his/her residential well in accordance with 15A NCAC 2C .0113.)

JERRY WATKINS
PRINTED NAME OF PERSON ABANDONING THE WELL

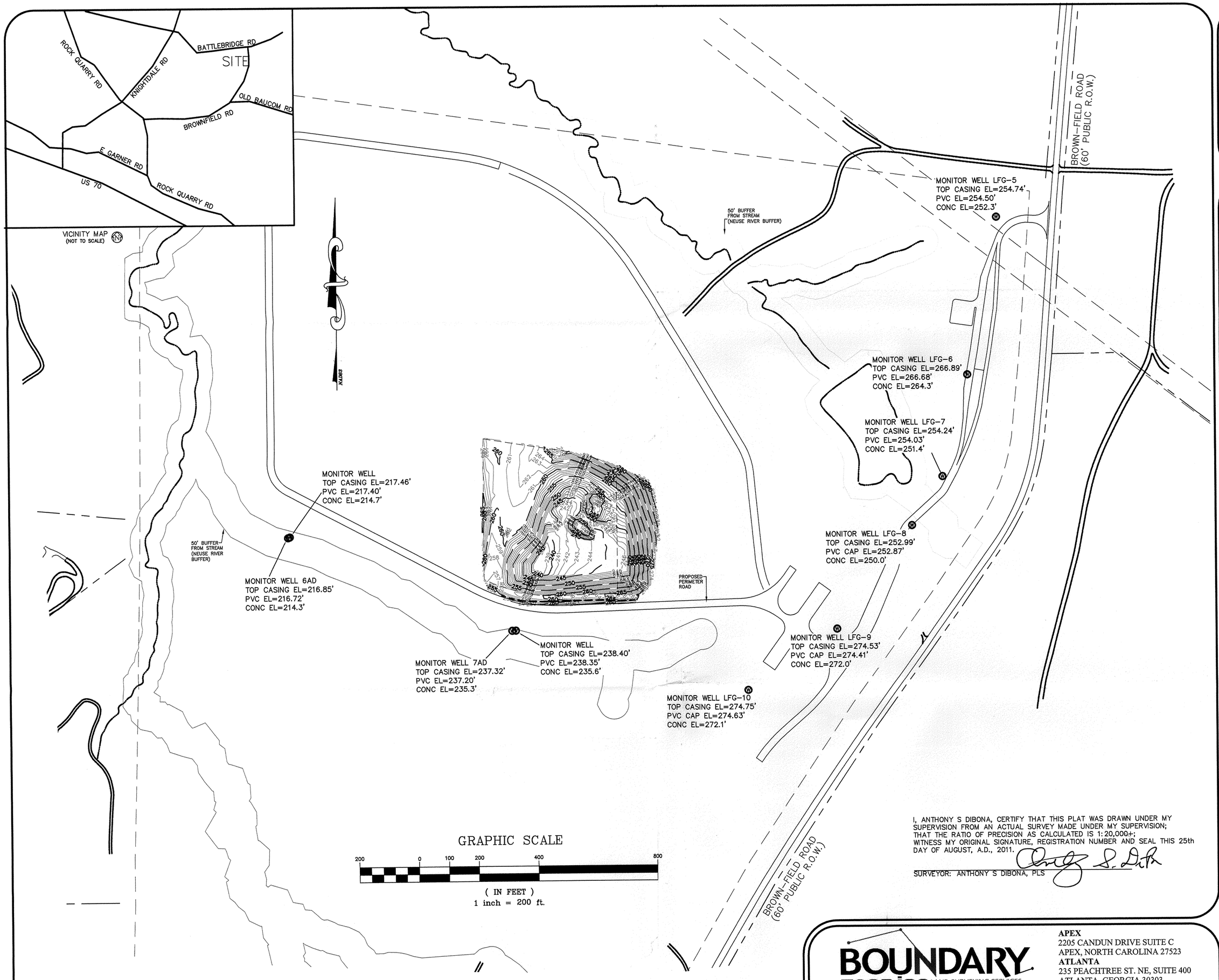
Submit a copy to the owner and the original to the Division of Water Quality within 30 days.
Attn: Information Management, 1617 Mail Service Center – Raleigh, NC 27699-1617, Phone No. (919) 733-7015 ext 568.

Form GW-30
Rev. 5/06


Grouted
to
16FT
BGS
8"
52'
6"
75'

ATTACHMENT B

SURVEY PLAT



NAD 83 NORTH

SCALE 1"=200'

MONITOR WELL SURVEY

PREPARED FOR MATERIAL RECOVERY, LLC
ST MARY'S TOWNSHIP,
WAKE COUNTY, NORTH CAROLINA -8/25/11

I, ANTHONY S DIBONA, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:20,000+; WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS 25th DAY OF AUGUST, A.D., 2011.

SURVEYOR: ANTHONY S DIBONA, PLS

NORTH CAROLINA PROFESSIONAL SEAL L - 3967 LAND SURVEYOR ANTHONY S. DIBONA

FOR THE FIRM
BOUNDARY ZONE, INC.
FIRM NUMBER: C-3534

THIS SURVEY WAS MADE WITHOUT THE BENEFIT OF A CURRENT TITLE COMMITMENT. EASEMENTS AND ENCUMBRANCES MAY EXIST WHICH BENEFIT AND BURDEN THIS PROPERTY.

BOUNDARY zone, inc. LAND SURVEYING SERVICES
APEX, NORTH CAROLINA: (919) 363-9226
FAX: (919) 363-9228 WWW.BOUNDARYZONE.COM

APEX
2205 CANDUN DRIVE SUITE C
APEX, NORTH CAROLINA 27523
ATLANTA
235 PEACHTREE ST. NE, SUITE 400
ATLANTA, GEORGIA 30303
BUFORD
4195 SOUTH LEE STREET, SUITE I
BUFORD, GEORGIA 30518

PROJECT
11033-01

SHEET
1 OF 1

ATTACHMENT C

METHANE MONITORING PROBE BORING AND WELL CONSTRUCTION LOGS AND WELL CONSTRUCTION RECORDS

RECORD OF BOREHOLE LFG-5

SHEET 1 of 1

PROJECT: WCA-Material Recovery, LLC
PROJECT NUMBER: 073-9602411.400
DRILLED DEPTH: 25.0 ft
LOCATION: Raleigh, NC

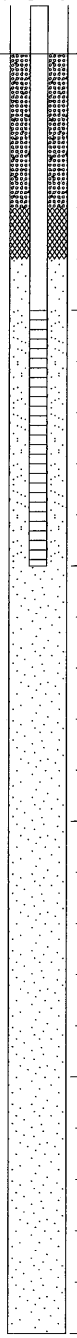
DRILL RIG: Deidrich D-120
DATE STARTED: 5/9/11
DATE COMPLETED: 5/12/11

NORTHING: 714,278.6
EASTING: 2,148,629.4
GS ELEVATION: 252.3 ft
TOC ELEVATION: 254.5 ft

DEPTH W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 1.0 Topsoil, dark organic material and residual soils	N/A		251.3					
		1.0 - 5.0 Orange silty CLAY, medium plasticity, moist, moderately firm, micaceous.	CL		1.0 / 247.3					
5		5.0 - 10.0 Orange/tan silty CLAY, moist, slightly firm, slight plasticity, granitic texture, micaceous, large quartz grains.	CL		5.0 / 242.3	4-6'	SPT	2-2-3-5	5	95% / 2.0
10		10.0 - 11.0 PWR lense, granitic w/abundant quartz and feldspar, medium grained, banding, mafic staining	PWR		10.0 / 241.3	9-11'	SPT	4-5-6-24	11	85% / 2.0
		11.0 - 15.0 Brown to tan clayey SILT, moist, soft, fine-grained, granitic relic structure	ML		11.0 / 237.3	14-16'	SPT	3-5-7-6	12	90% / 2.0
15		15.0 - 20.0 PWR, granitic, w/abundant coarse-grained quartz, moist, iron staining, quartz vein @ 15.5 - 16' bgs, very moist to wet @ 18.5' bgs.	PWR		15.0 / 232.3	19-21'	SPT	3-4-8-8	12	50% / 2.0
20		20.0 - 25.0 PWR, granitic, wet @ 20-25' bgs. Originally set probe at 15' bgs, but raised well to 10' since water was in bottom of probe.	PWR		20.0 / 227.3	23-25'	SPT	2-6-11-10	17	40% / 2.0
25		Boring completed at 25.0 ft								
30										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0-5'
Material: PVC
Diameter: 2"
Joint Type: threaded

WELL SCREEN
Interval: 5-10'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 4-25'
Type: #2 filter sand

FILTER PACK SEAL
Interval: 3-4'
Type: 3/8" bentonite chips

ANNULUS SEAL
Interval: 0-3'
Type: Portland cement

WELL COMPLETION
Pad: 3'x3' concrete pad
Protective Casing: 4" round anodized aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Brian Thomas

GA INSPECTOR: Jeremy DeVore
CHECKED BY: David Reedy, P.G.
DATE: 5/12/11

Golder Associates

RECORD OF BOREHOLE LFG-6

PROJECT: WCA-Material Recovery, LLC
PROJECT NUMBER: 073-9602411.400
DRILLED DEPTH: 25.0 ft
LOCATION: Raleigh, NC

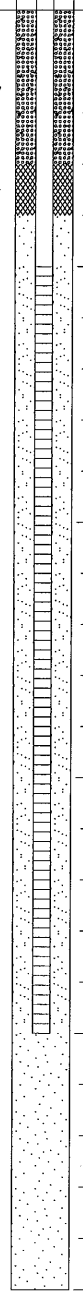
DRILL RIG: Deidrich D-120
DATE STARTED: 5/9/11
DATE COMPLETED: 5/12/11

NORTHING: 713,752.0
EASTING: 2,148,528.6
GS ELEVATION: 264.3 ft
TOC ELEVATION: 266.7 ft

DEPTH W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 4.0 Lt. Brown sandy SILT, micaceous, dry, soft, PWR granitic layer @ 2-3'.	SM		260.3					
	260	4.0 - 5.0 Tan to white sandy SILT, large quartz grains, loose, dry.	SM		4.0 259.3	4-6'	SPT	5-7-7-5	14	100% 2.0
5		5.0 - 9.0 Lt. Brown to tan/white silty SAND, fine to med. grained, loose, dry.	SM		5.0 255.3					
	255	9.0 - 14.0 Red to orange clayey SILT w/some sand, large quartz grains, granitic texture, slightly firm to firm, slightly moist.	ML		9.0 250.3	9-11'	SPT	4-5-15-20	20	60% 2.0
10										
	250	14.0 - 19.0 Lt. Gray to white sandy SILT, dry, loose, fine to med. grained, granitic texture w/ biotite, muscovite, feldspar, and quartz grains.	SM		14.0 245.3	14-16'	SPT	10-12-16-16	28	60% 2.0
15										
	245	19.0 - 23.0 Orange to tan PWR, granitic, large quartz fragments w/muscovite, biotite, feldspar, mafic mineral staining, unconsolidated, moist to wet @ 22-23' bgs.	PWR		19.0 241.3	19-21'	SPT	14-10-9-8	19	100% 2.0
20										
		23.0 - 25.0 Brown to orange clayey SILT, granitic texture, slightly firm, slight plasticity, wet.	ML		23.0 239.3	23-25'	SPT	5-7-9-7	16	80% 2.0
	240									
25		Boring completed at 25.0 ft								
	235									
30										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0-5'
Material: PVC
Diameter: 2"
Joint Type: threaded

WELL SCREEN
Interval: 5-20'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 4-25'
Type: #2 filter sand

FILTER PACK SEAL
Interval: 3-4'
Type: 3/8" bentonite chips

ANNULUS SEAL
Interval: 0-3'
Type: Portland cement

WELL COMPLETION
Pad: 3'x3' concrete pad
Protective Casing: 4" round anodized aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Brian Thomas

GA INSPECTOR: Jeremy DeVore
CHECKED BY: David Reedy, P.G.
DATE: 5/12/11

Golder Associates

RECORD OF BOREHOLE LFG-7

SHEET 1 of 1

PROJECT: WCA-Material Recovery, LLC
PROJECT NUMBER: 073-9602411.400
DRILLED DEPTH: 16.0 ft
LOCATION: Raleigh, NC

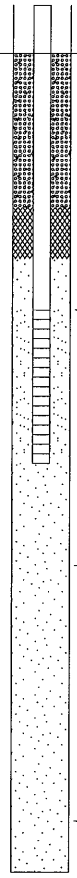
DRILL RIG: Deidrich D-120
DATE STARTED: 5/9/11
DATE COMPLETED: 5/12/11

NORTHING: 713,414.6
EASTING: 2,148,443.1
GS ELEVATION: 254.0 ft
TOC ELEVATION: 251.4 ft

DEPTH W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 4.0 Red to orange clayey SILT w/organics, loose.	ML		250.0					
	250	4.0 - 5.0 Brown clayey SILT w/organics, micaceous, firm, dry.	ML		4.0 / 249.0	4-6'	SPT	2-2-2-7	4	100% / 2.0
5		5.0 - 5.5 Red to orange silty CLAY, micaceous, medium plasticity, dense, slightly moist.	CL		248.5					
		5.5 - 8.0 Tan to white/brown, clayey SILT, granitic texture, loose, slightly moist.	ML		5.5 / 246.0					
	245	8.0 - 14.0 Tan to white/gray sandy SILT w/iron staining.	SM		8.0 / 240.0	9-11'	SPT	2-2-4-7	6	60% / 2.0
10										
	240	14.0 - 16.0 PWR, granitic w/muscovite, biotite, quartz, and feldspar, wet @ 15' bgs.	PWR		14.0 / 238.0	14-16'	SPT	5-5-6-11	11	40% / 2.0
15		Boring completed at 16.0 ft								
	235									
20										
	230									
25										
	225									
30										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0-5'
Material: PVC
Diameter: 2"
Joint Type: threaded

WELL SCREEN
Interval: 5-8'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 4-16'
Type: #2 filter sand

FILTER PACK SEAL
Interval: 3-4'
Type: 3/8" bentonite chips

ANNULUS SEAL
Interval: 0-3'
Type: Portland cement

WELL COMPLETION
Pad: 3'x3' concrete pad
Protective Casing: 4" round anodized aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Brian Thomas

GA INSPECTOR: Jeremy DeVore
CHECKED BY: David Reedy, P.G.
DATE: 5/12/11

Golder Associates

RECORD OF BOREHOLE LFG-8

PROJECT: WCA-Material Recovery, LLC
PROJECT NUMBER: 073-9602411.400
DRILLED DEPTH: 15.0 ft
LOCATION: Raleigh, NC

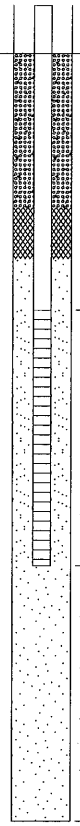
DRILL RIG: Deidrich D-120
DATE STARTED: 5/9/11
DATE COMPLETED: 5/12/11

NORTHING: 713,252.1
EASTING: 2,148,339.3
GS ELEVATION: 250.0 ft
TOC ELEVATION: 252.9 ft

DEPTH W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	250	0.0 - 0.5 Topsoil, organic material.	N/A		249.5					
		0.5 - 3.0 Lt. Brown to tan clayey SILT, loose, moist, slight plasticity.	ML		0.5 / 247.0					
		3.0 - 5.0 Brown to gray clayey SILT w/ organics, loose, moist.	OL		3.0 / 245.0	4-6'	SPT	4-5-7-9	12	100% / 2.0
5	245	5.0 - 10.0 PWR, white to orange granitic, large quartz grains w/feldspar, muscovite, slightly firm.	PWR		5.0 / 240.0	9-11'	SPT	3-4-6-6	10	70% / 2.0
10	240	10.0 - 15.0 Orange clayey SILT, some quartz, loose, moist, soft, wet at 14-15' bgs, mafic minerals @ 15' grading to granitic PWR at bottom of boring.	ML		10.0 / 235.0	13-15'	SPT	2-3-4-5	7	25% / 2.0
15	235	Boring completed at 15.0 ft								
20	230									
25	225									
30	220									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0-5'
Material: PVC
Diameter: 2"
Joint Type: threaded

WELL SCREEN
Interval: 5-10'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 4-15'
Type: #2 filter sand

FILTER PACK SEAL
Interval: 3-4'
Type: 3/8" bentonite chips

ANNULUS SEAL
Interval: 0-3'
Type: Portland cement

WELL COMPLETION
Pad: 3'x3' concrete pad
Protective Casing: 4" round anodized aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Brian Thomas

GA INSPECTOR: Jeremy DeVore
CHECKED BY: David Reedy, P.G.
DATE: 5/12/11

Golder Associates

RECORD OF BOREHOLE LFG-9

PROJECT: WCA-Material Recovery, LLC
PROJECT NUMBER: 073-9602411.400
DRILLED DEPTH: 30.0 ft
LOCATION: Raleigh, NC

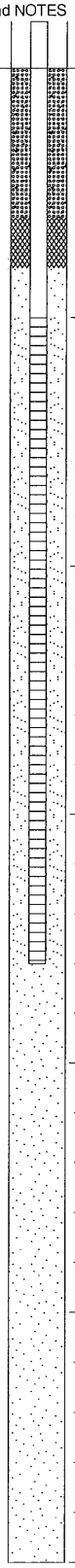
DRILL RIG: Deidrich D-120
DATE STARTED: 5/10/11
DATE COMPLETED: 5/12/11

NORTHING: 712,908.7
EASTING: 2,148,085.0
GS ELEVATION: 272.0 ft
TOC ELEVATION: 274.4 ft

DEPTH W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 4.0 Orange silty CLAY, loose, soft, dry, low plasticity.	CL		268.0					
	270									
		4.0 - 5.0 Brownish-red clayey SILT, stiff, dry.	ML		4.0 267.0					
5		5.0 - 10.0 Orangish-pink clayey SILT, loose, slightly moist, soft, relic granitic texture.	ML		5.0	4-6'	SPT	8-6-5-6	11	70% / 2.0
	265									
10		10.0 - 15.0 Brown to tan clayey SILT, loose, slightly moist, relic granitic structure and fractures w/quartz and feldspar.	ML		262.0 10.0	9-11'	SPT	7-7-4-5	11	50% / 2.0
	260									
15		15.0 - 15.5 PWR, granitic, large quartz fragments w/feldspar, loose, soft, micaceous, slightly moist.	PWR		257.0 256.5	14-16'	SPT	5-9-6-6	15	100% / 2.0
	255	15.5 - 28.0 Lt. Brown, inorganic SILT, some clay, loose, soft, w/muscovite, biotite, mafic banding, moist at 26-28' bgs.	ML		15.5					
20						19-21'	SPT	5-4-5-7	9	75% / 2.0
	250									
25						24-26'	SPT	8-4-4-5	8	10% / 2.0
	245				244.0					
		28.0 - 30.0 PWR, granitic, large quartz fragments w/muscovite, biotite, relic fractures, wet.	PWR		28.0	28-30'	SPT	2-2-4-5	6	25% / 2.0
30		Boring completed at 30.0 ft			242.0					

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0-5'
Material: PVC
Diameter: 2"
Joint Type: threaded

WELL SCREEN
Interval: 5-18'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 4-30'
Type: #2 filter sand

FILTER PACK SEAL
Interval: 3-4'
Type: 3/8" bentonite chips

ANNULUS SEAL
Interval: 0-3'
Type: Portland cement

WELL COMPLETION
Pad: 3'x3' concrete pad
Protective Casing: 4" round anodized aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Brian Thomas

GA INSPECTOR: Jeremy DeVore
CHECKED BY: David Reedy, P.G.
DATE: 5/12/11

Golder Associates

RECORD OF BOREHOLE LFG-10

SHEET 1 of 1

PROJECT: WCA-Material Recovery, LLC
PROJECT NUMBER: 073-9602411.400
DRILLED DEPTH: 13.0 ft
LOCATION: Raleigh, NC

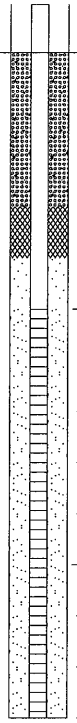
DRILL RIG: Deidrich D-120
DATE STARTED: 5/10/11
DATE COMPLETED: 5/12/11

NORTHING: 712,705.1
EASTING: 2,147,785.9
GS ELEVATION: 272.1 ft
TOC ELEVATION: 274.6 ft

DEPTH W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 4.0 Orange clayey SILT, loose, soft, low plasticity, slightly moist.	ML		268.1					
	270	4.0 - 5.0 Brown to tan clayey SILT, loose, soft, low plasticity, slightly moist.	ML		4.0 / 267.1	4-6'	SPT	4-5-7-9	12	100%
5		5.0 - 5.5 Orange to red silty CLAY, low plasticity, firm.	CL		266.6					2.0
	265	5.5 - 9.5 Brown to red clayey SILT, loose, soft, micaceous.	ML		5.5 / 262.6					
10		9.5 - 11.0 Tan to beige sandy SILT, loose, dry, soft, w/ brownish-orange layers, micaceous, relic granitic texture.	SM		9.5 / 261.1	9-11'	SPT	3-6-5-4	11	100% 2.0
	260	11.0 - 12.0 PWR, white to gray granitic, firm to hard w/quartz, feldspar, muscovite, biotite.	PWR		11.0 / 260.1	11-13'	SPT	50/5	50/5	10% 2.0
		12.0 - 13.0 GRANITE, competent bedrock, abundant quartz, feldspar, muscovite, biotite, amphibole, very hard, dry.	BR		12.0 / 259.1					
		Boring completed at 13.0 ft								
15										
	255									
20										
	250									
25										
	245									
30										

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0-5'
Material: PVC
Diameter: 2"
Joint Type: threaded

WELL SCREEN
Interval: 5-13'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 4-13'
Type: #2 filter sand

FILTER PACK SEAL
Interval: 3-4'
Type: 3/8" bentonite chips

ANNULUS SEAL
Interval: 0-3'
Type: Portland cement

WELL COMPLETION
Pad: 3'x3' concrete pad
Protective Casing: 4" round anodized aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Brian Thomas

GA INSPECTOR: Jeremy DeVore
CHECKED BY: David Reedy, P.G.
DATE: 5/12/11

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Project Name	WCA-Material Recovery	Project Number	0739602411
Project Location	Raleigh, NC	Client	WCA
Drilling Company	Geologic Exploration	Driller Name	Brian Thomas
Ground Elevation	N/A	Rig Type	Diedrich D-120
Groundwater elevation	N/A	Logged By	JAD
Date Start/Finish	5/9/11 - 5/12/11	Total Depth	10' bgs

BORING NO. LFO-5

Page 1 of 1

Elev. Ft.	Depth ft.	Sample Type & No.	Blows per 6"	Pen in.	Rec %	Remarks	Graphic Log (USCS)	Soil and Rock Descriptions
							OL	0-1' Topsoil, dark organic material + residual soils
		SS					CL	1-5' Orange silty clay, med. plasticity, moist, moderately firm, micaceous
	5	4-6'	2 2 3 5	95% →				
							~~ML~~ CL	5-10' Orange/tan silty clay, moist, slightly firm, slight plasticity, granitic texture, micaceous, large quartz grains
	10	9-11'	4 5 6 24	85% →		@		
							PWR	10-11' PWR lense, granitic, quartz, feldspar abundant, med. grained, banding, mafic stainings
	15	14-16'	3 5 7 6	90% →				
							ML	11-15' Brown to tan clayey silt, moist, soft, fine grained, granitic relic structure
	20	19-21'	3 4 8 8	50% →			PWR	15-20' PWR, large quartz grains, granitic, moist, iron staining, quartz vein @ 15.5-16', very moist to wet @ 18.5'
	25	23-25'	2 6 11 10	40% →			PWR	20-25' PWR, granitic, wet @ 20'

Set well @ 15' Screen 5-15'

Raised well to 10' bgs since water @ bottom of hole @ 15'

Final well set @ 10' bgs screen 5-10'

Blows per 6 in. - 140lb hammer falling 30 in. to drive a 2.0 in. OD split spoon sampler.
Pen - Penetration Length of Sampler or Core Barrell
Rec - Recovery Length of Sample RQD - Lenght of Sound Cores >4in./Length Cored %
S - Split Spoon Sample U - Undisturbed Samples

Notes: (Rig Type, drilling method, bit or auger size, PSI, Equipment Failures, possible contamination, deviations from drilling plan, drilling difficulties, ect.)
4.25" I.D. HSA Splitspoons 5' centers

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MONITORING WELL INSTALLATION SKETCH

Project: WCA-Material Recovery

Drilling Subcontractor: Geologic Exploration

Driller: Brian Thomas

Logged By: JAD

Monitoring Well No.: LFG-5

Date/time of Well Installation: 5/9/11 14:30

Depth to Bottom of Well From Top of Monitoring Well Pipe: 18.10' (5/10/11) 13.50' (final) (5/12/11)

Depth or Height (ft) From Ground Surface

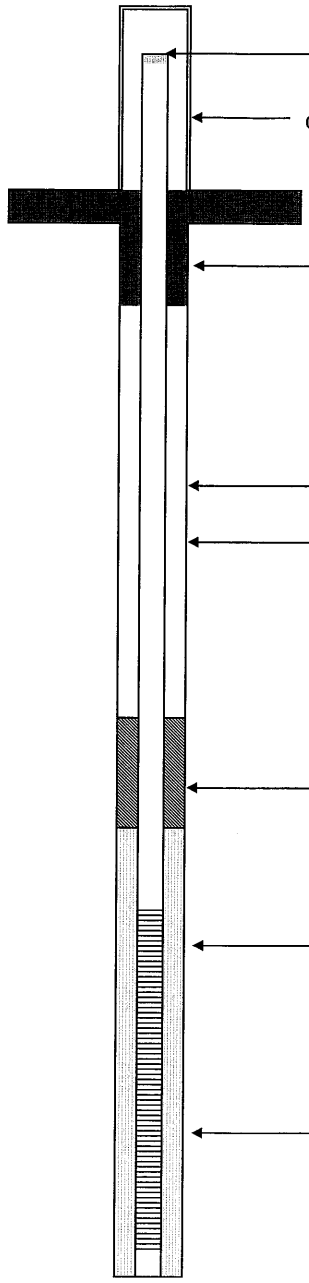
0'

3'

4'

5'

10'



Approx. Stickup: 2.0'

O.D. of Outer Protective Casing: 4"

Dimensions of Concrete Pad: 3'x3'x0.5'

Type of Surface Seal: Portland cement

Type of Backfill: cement grout

Diameter of Borehole: 8"

Type of Seal: bentonite hole plug

I.D. of screen: 2"

Size of Screen Opening: 0.010"

Type of Screen: PVC Sch. 40

Size of Filter Sand: #2

screened interval 13.5'-8.5' from TOC

WATER LEVEL MEASUREMENTS

Date	5/10/11	5/12/11					
Depth from TOC	17.90'	dry					
Time	12:30	8:40					

Project Name	WCA Material Recovery	Project Number	0739602411
Project Location	Raleigh, NC	Client	WCA
Drilling Company	Geologic Exploration	Driller Name	Brian Thomas
Ground Elevation	N/A	Rig Type	Diedrich D-120
Groundwater elevation	N/A	Logged By	JAD
Date Start/Finish	5/9/11 - 5/12/11	Total Depth	20' bgs

BORING NO. LFG-6

Page 1 of 1

Elev. Ft.	Depth ft.	Sample Type & No.	Blows per 6"	Pen in.	Rec %	Remarks	Graphic Log (USCS)	Soil and Rock Descriptions
		SS					SM	0-4' Lt. Brown sandy SILT, micaceous, dry, soft, PWR layer @ 2-3' (granitic)
	5	4-6'	5 7 7 5		100%		SM	4-5' Tan to white sandy SILT, large quartz fragments, loose, dry
	10	9-11'	4 5 15 20		60%		SM	5-9' Lt Brown to tan/white silty SAND, fine to med grained, loose, dry
							ML	9-14' Red to orange Clayey SILT w/ some sand, large quartz grains, granitic texture, slightly firm to firm, slightly moist
	15	14-16'	10 12 16 16		60%			
							SM	14-19' Lt gray to white sandy SILT, dry, loose, fine to med. grained, granitic texture w/ biotite, muscovite, feldspar, quartz
	20	19-21'	14 10 9 8		100%			
							PWR	19-23' Orange to tan PWR, granitic, large quartz crystal fragments w/ muscovite, biotite, feldspar, mafic minerals staining, ~~unconsolidated~~ moist to wet @ 22-23'
	25	23-25'	5 7 9 7		80%			
	30						ML	23-25' Brown to orange clayey SILT, granitic texture, slightly firm, slight plasticity, wet.

Set well @ 20' bgs

Screen 5-20'

Blows per 6 in. - 140lb hammer falling 30 in. to drive a 2.0 in. OD split spoon sampler.
Pen - Penetration Length of Sampler or Core Barrell
Rec - Recovery Length of Sample RQD - Lenght of Sound Cores >4in./Length Cored %
S - Split Spoon Sample U - Undisturbed Samples

Notes: (Rig Type, drilling method, bit or auger size, PSI, Equipment Failures, possible contamination, deviations from drilling plan, drilling difficulties, ect.)

4.25" I.D. HSA, Splitspoons 5ft centers

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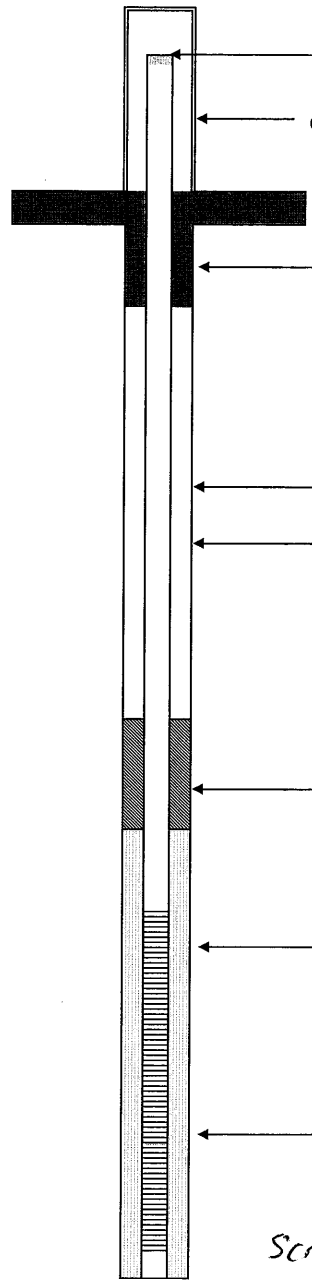
MONITORING WELL INSTALLATION SKETCH

Project:	WCA Material Recovery	Monitoring Well No.:	LFG-6
Drilling Subcontractor:	Geologic Exploration	Date/time of Well Installation:	5/9/11 15:30
Driller:	Brian Thomas	Depth to Bottom of Well From Top of Monitoring Well Pipe:	23.1'
Logged By:	JAD		

Depth or Height (ft) From Ground Surface



Approx. Stickup: 2.2'

O.D. of Outer Protective Casing: 4"

Dimensions of Concrete Pad: 3'x3'x0.5'

Type of Surface Seal: Portland cement

Type of Backfill: cement grout

Diameter of Borehole: 8"

Type of Seal: bentonite hole-plug

I.D. of screen: 2"

Size of Screen Opening: 0.010"

Type of Screen: PVC Sch. 40

Size of Filter Sand: #2

Screened interval 23.1' - 8.1' from TOC

0'

3'

4'

5'

20'

WATER LEVEL MEASUREMENTS

Date	5/10/11	5/12/11					
Depth from TOC	dry	dry					
Time	12:40	8:38					

Project Name	WCA - Material Recovery	Project Number	0739602411
Project Location	Raleigh, NC	Client	WCA
Drilling Company	Geologic Exploration	Driller Name	Brian Thomas
Ground Elevation	N/A	Rig Type	Diedrich D-120
Groundwater elevation	N/A	Logged By	JAA
Date Start/Finish	5/9/11 - 5/12/11	Total Depth	8' bgs

BORING NO. LFG-7

Page 1 of 1

Elev. Ft.	Depth ft.	Sample Type & No.	Blows per 6"	Pen in.	Rec %	Remarks	Graphic Log (USCS)	Soil and Rock Descriptions
							ML	0-4 red to orange clayey silt w/ organics, loose
		SS					ML	4-5 brown clayey silt w/ organics, micaceous firm, dry
	5	4-6'	2 2 2 ~~3~~		100%		CL	5-5.5 red to orange ~~clayey silt~~ silty clay (QP), micaceous, medplasticity, dense, sl. moist
	10	9-11'	2 2 4 7		60%		ML	5.5-8 tan to white/brown clayey silt, granic texture, loose, slightly moist
	15	14-16'	5 5 6 11		40%		SM	8-14 sandy silt, tan to white/gray w/ fe iron staining
	20	~~19-21'~~					PWR	14-16' PWR, granite, muscovite, biotite, quartz, feldspar, wet @ 15', saturated
	25							- water @ ~12'
								Set well @ 8' with 3' screen screen 5-8'

Blows per 6 in. - 140lb hammer falling 30 in. to drive a 2.0 in. OD split spoon sampler.
Pen - Penetration Length of Sampler or Core Barrell
Rec - Recovery Length of Sample RQD - Lenght of Sound Cores >4in./Length Cored %
S - Split Spoon Sample U - Undisturbed Samples

Notes: (Rig Type, drilling method, bit or auger size, PSI, Equipment Failures, possible contamination, deviations from drilling plan, drilling difficulties, ect.)

4.25" HSA, split spoons @ 5' centers

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713 0008

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MONITORING WELL INSTALLATION SKETCH

Project: WCA - Material Recovery

Drilling Subcontractor: Geologic Exploration

Driller: Brian Thomas

Logged By: JM

Monitoring Well No.: LFG-7

Date/time of Well Installation: 5/9/11 16:20

Depth to Bottom of Well From Top of Monitoring Well Pipe: 11.12'

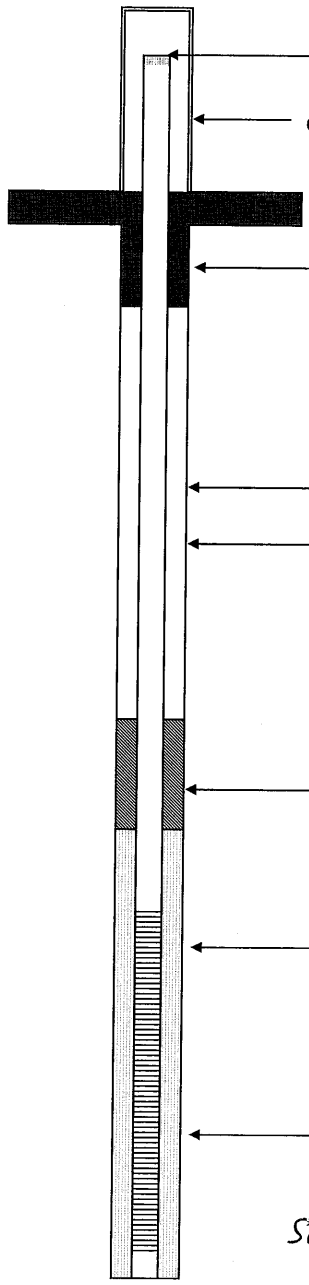
Depth or Height (ft) From Ground Surface

0'

3'

4'

8'



Approx. Stickup: 2.3'

O.D. of Outer Protective Casing: 4"

Dimensions of Concrete Pad: 3'x3'x0.5'

Type of Surface Seal: Portland cement

Type of Backfill: cement grout

Diameter of Borehole: 8"

Type of Seal: bentonite holeplug

I.D. of screen: 2"

Size of Screen Opening: 0.010"

Type of Screen: PVC Sch. 40

Size of Filter Sand: #2

Screened interval 11.12'-8.12' from TOC

WATER LEVEL MEASUREMENTS

Date	5/10/11	5/12/11					
Depth from TOC	dry	dry					
Time	12:45	8:35					

Project Name	WCA-Method Recovery	Project Number	0739602411
Project Location	Raleigh, NC	Client	WCA
Drilling Company	Geologic Exploration	Driller Name	Brian Thomas
Ground Elevation	N/A	Rig Type	Diedrich D-120
Groundwater elevation	N/A	Logged By	JAO
Date Start/Finish	5/9/11 - 5/12/11	Total Depth	10' bgs

BORING NO. LFG-8

Page 1 of 1

Elev. Ft.	Depth ft.	Sample Type & No.	Sample Blows per 6"	Sample Pen in.	Sample Rec %	Remarks	Graphic Log (USCS)	Soil and Rock Descriptions
								0-0.5 topsoil
		SS					ML	0.5-3 light brown to tan clayey silt, loose, moist slight plasticity
	5	4-6'	4 5 7 9		100%		OL	3-5 brown to gray, organic ~~silty clay~~ clayey silt, loose, moist
								5-10' PWR, white to orange granitic texture, large quartz crystals, feldspar, muscovite, slightly firm
	10	9-11'	3 4 6 6		70%		ML	10'-15' orange clayey silt, some quartz, loose moist, soft, wet @ 14-15' dark minerals @ 15' in to PWR
	15	13-15'	2 3 4 5		25%			
	20							Set @ 10' based on wetness @ 14-15' Screen 5-10'

Blows per 6 in. - 140lb hammer falling 30 in. to drive a 2.0 in. OD split spoon sampler.
Pen - Penetration Length of Sampler or Core Barrell
Rec - Recovery Length of Sample RQD - Lenght of Sound Cores >4in./Length Cored %
S - Split Spoon Sample U - Undisturbed Samples

Notes: (Rig Type, drilling method, bit or auger size, PSI, Equipment Failures, possible contamination, deviations from drilling plan, drilling difficulties, ect.)
4.25" H.S.A Splitspoon 5' centers

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MONITORING WELL INSTALLATION SKETCH

Project:	WCA-Material Recovery	Monitoring Well No.:	LFG-8
Drilling Subcontractor:	Geologic Exploration	Date/time of Well Installation:	5/9/11 17:00
Driller:	Brian Thomas	Depth to Bottom of Well From Top of Monitoring Well Pipe:	13.10'
Logged By:	JAD		

Depth or Height (ft) From Ground Surface

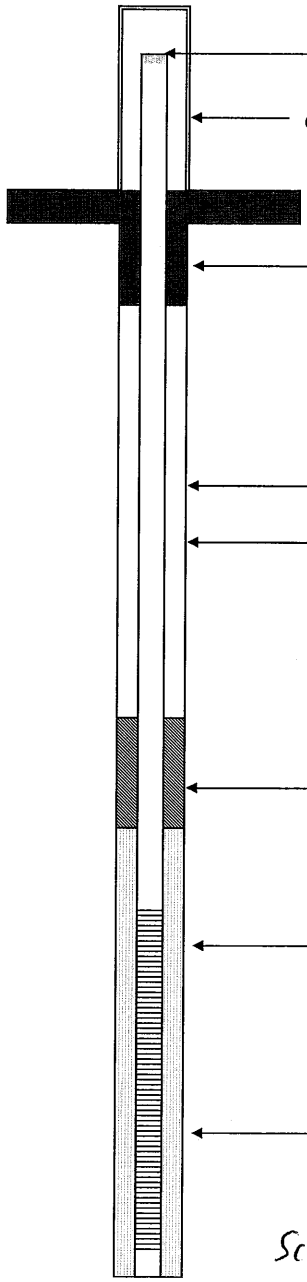
0'

3'

4'

5'

10'



Approx. Stickup 2.5'

O.D. of Outer Protective Casing 4"

Dimensions of Concrete Pad 3'x3'x0.5'

Type of Surface Seal Portland cement

Type of Backfill cement grout

Diameter of Borehole 8"

Type of Seal bentonite holeplug

I.D. of screen 2"

Size of Screen Opening 0.010"

Type of Screen PVC Sch.40

Size of Filter Sand #2

Screened interval 13.1'-8.1' from TOC

WATER LEVEL MEASUREMENTS

Date	5/10/11	5/12/11					
Depth from TOC	dry	dry					
Time	12:48	8:30					

Project Name	WCA - Material Recovery	Project Number	0739602411
Project Location	Raleigh, NC	Client	WCA
Drilling Company	Geologic Exploration	Driller Name	Brian Thomas
Ground Elevation	N/A	Rig Type	Diedrich D-120
Groundwater elevation	NA	Logged By	JAD
Date Start/Finish	5/10/11 - 5/12/11	Total Depth	18' bgs

BORING NO. LFG-9

Page 1 of 1

Elev. Ft.	Depth ft.	Sample Type & No.	Blows per 6"	Pen in.	Rec %	Remarks	Graphic Log (USCS)	Soil and Rock Descriptions
		SS					CL	0-4' Orange silty CLAY, loose, soft, dry, low plasticity
	5	4-6'	8 6 5 6		70%		ML	4-5' Brownish red clayey SILT, stiff, dry
							ML	5-10' ~~Brown to~~ Orangish pink, clayey SILT, loose, slightly moist, soft, relic granitic texture.
	10	9-11'	7 7 4 5		50%		ML	10-15' Brown to tan clayey SILT, loose, slightly moist, relic granitic structure + fractures, with quartz + feldspar
	15	14-16'	5 9 6 6		100%		PWR	15-15.5' PWR, granitic, large quartz fragments, feldspar, loose, soft, micaceous, slightly moist.
	20	19-21'	5 4 5 7		75%		ML	15.5-28' Lt. brown, inorganic SILT, micaceous, loose, soft, slightly moist, some clay, with muscovite, biotite, mafic bands moist @ 26-28'
	25	24-26'	8 4 4 5		10%			
							PWR	28-30' PWR, granitic, large quartz fragments, w/ muscovite, biotite, relic fractures, wet
	30	28-30	2 2 4 5		25%			
								Set well @ 18' Screen @ 5-18'

Blows per 6 in. - 140lb hammer falling 30 in. to drive a 2.0 in. OD split spoon sampler.
Pen - Penetration Length of Sampler or Core Barrell
Rec - Recovery Length of Sample RQD - Lenght of Sound Cores >4in./Length Cored %
S - Split Spoon Sample U - Undisturbed Samples

Notes: (Rig Type, drilling method, bit or auger size, PSI, Equipment Failures, possible contamination, deviations from drilling plan, drilling difficulties, ect.)
4.25" ID HSA, 5ft center splitspoons

Golder Associates

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MONITORING WELL INSTALLATION SKETCH

Project: WCA. Material Recovery

Drilling Subcontractor: Geologic Exploration

Driller: Brian Thomas

Logged By: JRD

Monitoring Well No.: LFG-9

Date/time of Well Installation: 5/10/11 9:20

Depth to Bottom of Well From Top of Monitoring Well Pipe: 20.40' ~~(well not set yet)~~ 90

Depth or Height (ft) From Ground Surface

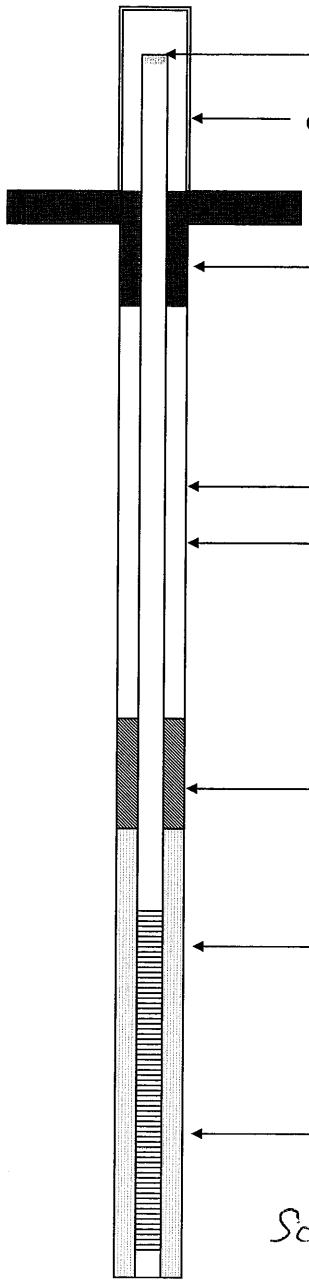
0'

3'

4'

5'

18'



Approx. Stickup 2.0'

O.D. of Outer Protective Casing 4"

Dimensions of Concrete Pad 3'x3'x0.5'

Type of Surface Seal Portland cement

Type of Backfill cement grout

Diameter of Borehole 8"

Type of Seal bentonite holeplug

I.D. of screen 2"

Size of Screen Opening 0.010"

Type of Screen PVC Sch. 40

Size of Filter Sand #2

Screened interval 20.4'-7.4' from TOC

WATER LEVEL MEASUREMENTS

Date	5/10/11	5/12/11					
Depth from TOC	dry	dry					
Time	12:50	8:23					

Project Name	WCA - Material Recovery	Project Number	0739602411
Project Location	Raleigh, NC	Client	WCA
Drilling Company	Geologic Exploration	Driller Name	Brian Thomas
Ground Elevation	N/A	Rig Type	Diedrich D-120
Groundwater elevation	N/A	Logged By	JAD
Date Start/Finish	5/10/11 - 5/12/11	Total Depth	13' bgs

BORING NO. LFG-10

Page 1 of 1

Elev. Ft.	Depth ft.	Sample Type & No.	Sample Blows per 6"	Sample Pen in.	Sample Rec %	Remarks	Graphic Log (USCS)	Soil and Rock Descriptions
		SS	4				ML	0-4' Orange clayey SILT, loose, soft, slightly moist, low plasticity.
	5	4-6'	5 7 9		100%		ML	4-5' Brown to tan clayey SILT, loose, soft, slightly moist
							CL	5-5.5' Orange to red silty CLAY, low plasticity, firm
	10	9-11'	3 6 5 4		100%		ML	5.5-9.5' Brown to red clayey SILT, loose, soft, micaceous
							SM	9.5-11' Tan to beige sandy SILT, loose, dry, soft w/ brownish/orangish layers, micaceous, granitic fabric
	15	12-13'	50/5		10%		PWR	11-12' PWR, white to gray granite, firm to hard w/ quartz, feldspar, muscovite biotite
	20							
	25					Granite →		12-13' Competent granite bedrock w/ quartz, feldspar, muscovite, biotite, amphibole, very hard, dry

Set well @ 13' (at top of bedrock)

Screen 5-13'

Blows per 6 in. - 140lb hammer falling 30 in. to drive a 2.0 in. OD split spoon sampler.
Pen - Penetration Length of Sampler or Core Barrell
Rec - Recovery Length of Sample
RQD - Lenght of Sound Cores >4in./Length Cored %
S - Split Spoon Sample
U - Undisturbed Samples

Notes: (Rig Type, drilling method, bit or auger size, PSI, Equipment Failures, possible contamination, deviations from drilling plan, drilling difficulties, ect.)

4.25" ID HSA, Splitspoons 5' centers

Golder Associates

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MONITORING WELL INSTALLATION SKETCH

Project: WCA. Material Recovery

Drilling Subcontractor: Geologic Exploration

Driller: Brian Thomas

Logged By: JAD

Monitoring Well No.: LFG-10

Date/time of Well Installation: 5/10/11 10:00

Depth to Bottom of Well From Top of Monitoring Well Pipe: 17.90'

(90) (~~screen~~ riser not yet cut down) 5/10/11

Final depth 5/12/11 15.25

Depth or Height (ft) From Ground Surface

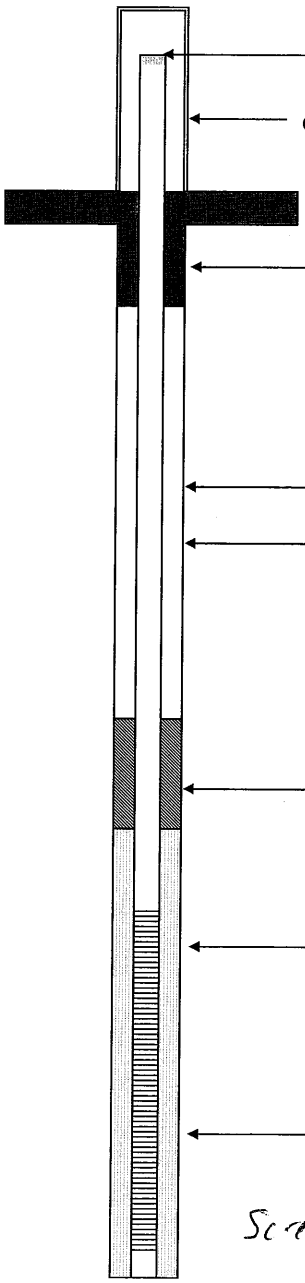
0'

3'

4'

5'

13'



Approx. Stickup 2.2'

O.D. of Outer Protective Casing 4"

Dimensions of Concrete Pad 3'x3'x0.5'

Type of Surface Seal Portland cement

Type of Backfill cement grout

Diameter of Borehole 8"

Type of Seal bentonite holeplug

I.D. of screen 2"

Size of Screen Opening 0.010"

Type of Screen PVC Sch. 40

Size of Filter Sand #2

Screened interval 15.25'-7.25' from TOC

WATER LEVEL MEASUREMENTS

Date	5/10/11	5/12/11					
Depth from TOC	dry	dry					
Time	12:55	8:19					

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2581

1. WELL CONTRACTOR:

BRIAN THOMAS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC
Well Contractor Company Name

176 COMMERCE BLVD
Street Address

STATESVILLE | NC | 28625
City or Town | State | Zip Code

(704) 872-7686
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# N/A

OTHER ASSOCIATED PERMIT#(if applicable)

SITE WELL ID #(if applicable) LFG-6

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ☐ (list use)

DATE DRILLED 05/09/11 - 05/17/11

4. WELL LOCATION:

2600 BROWNFIELD ROAD 27610
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: RALEIGH COUNTY WAKE

TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐Slope ☐Valley ☐Flat ☐Ridge ☐Other

LATITUDE ___°___'___" DMS **OR** ___ DD

LONGITUDE ___°___'___" DMS **OR** ___ DD

Latitude/longitude source: ☐GPS ☐Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

WCA - MATERIAL RECOVERY | N/A
Facility Name | Facility ID# (if applicable)

2600 BROWNFIELD ROAD
Street Address

RALEIGH | NC | 27610
City or Town | State | Zip Code

WCA - MATERIAL RECOVERY
Contact Name

2600 BROWNFIELD ROAD
Mailing Address

RALEIGH | NC | 27610
City or Town | State | Zip Code

( )
Area code Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 20.0 FEET

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑

c. **WATER LEVEL** Below Top of Casing: DRY FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 2.5 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** N/A **METHOD OF TEST** N/A

f. **DISINFECTION: Type** N/A **Amount** N/A

g. **WATER ZONES** (depth):

Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:

Depth		Diameter	Thickness/ Weight	Material
Top 0.0	Bottom 5.0	Ft. 2 INCH	SCH 40	PVC
Top	Bottom	Ft.		
Top	Bottom	Ft.		

8. GROUT:

Depth		Material	Method
Top 0.0	Bottom 3.0	Ft. PORTLAND BENTONITE	SLURRY
Top	Bottom	Ft.	
Top	Bottom	Ft.	

9. SCREEN:

Depth		Diameter	Slot Size	Material
Top 5.0	Bottom 20.0	Ft. 2.0 in.	.010 in.	PVC
Top	Bottom	Ft. in.	in.	
Top	Bottom	Ft. in.	in.	

10. SAND/GRAVEL PACK:

Depth		Size	Material
Top 4.0	Bottom 20.0	Ft. 20-40	FINE SILICA SAND
Top	Bottom	Ft.	
Top	Bottom	Ft.	

11. DRILLING LOG

Top	Bottom	Formation Description
0.0	5.0	BLACK SAND
5.0	14.0	RED SILTY CLAY
14.0	25.0	TAN SILTY SANDY CLAY

12. REMARKS:

BENTONITE SEAL FROM 3.0 TO 4.0 FEET

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Brian Thomas | 06/06/11
SIGNATURE OF CERTIFIED WELL CONTRACTOR | DATE

BRIAN THOMAS
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09


Brownfield Rd
site
Old Baucom Rd.

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2581

1. WELL CONTRACTOR:

BRIAN THOMAS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC
Well Contractor Company Name

176 COMMERCE BLVD
Street Address

STATESVILLE | NC | 28625
City or Town | State | Zip Code

(704) 872-7686
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# N/A

OTHER ASSOCIATED PERMIT#(if applicable)

SITE WELL ID #(if applicable) LFG-7

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ☐ (list use)

DATE DRILLED 05/09/11 - 05/17/11

4. WELL LOCATION:

2600 BROWNFIELD ROAD 27610
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: RALEIGH COUNTY WAKE

TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐Slope ☐Valley ☐Flat ☐Ridge ☐Other

LATITUDE ___°___'___" DMS **OR** ___ DD

LONGITUDE ___°___'___" DMS **OR** ___ DD

Latitude/longitude source: ☐GPS ☐Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

WCA - MATERIAL RECOVERY | N/A
Facility Name | Facility ID# (if applicable)

2600 BROWNFIELD ROAD
Street Address

RALEIGH | NC | 27610
City or Town | State | Zip Code

WCA - MATERIAL RECOVERY
Contact Name

2600 BROWNFIELD ROAD
Mailing Address

RALEIGH | NC | 27610
City or Town | State | Zip Code

(_____) _____
Area code Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 8.0 FEET

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑

c. **WATER LEVEL** Below Top of Casing: DRY FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 2.5 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** N/A **METHOD OF TEST** N/A

f. **DISINFECTION: Type** N/A **Amount** N/A

g. **WATER ZONES** (depth):

Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:

Depth		Diameter	Thickness/ Weight	Material
Top 0.0	Bottom 5.0	Ft. 2 INCH	SCH 40	PVC
Top	Bottom	Ft.		
Top	Bottom	Ft.		

8. GROUT:

Depth		Material	Method
Top 0.0	Bottom 3.0	Ft. PORTLAND BENTONITE	SLURRY
Top	Bottom	Ft.	
Top	Bottom	Ft.	

9. SCREEN:

Depth		Diameter	Slot Size	Material
Top 5.0	Bottom 8.0	Ft. 2.0 in.	.010 in.	PVC
Top	Bottom	Ft. in.	in.	
Top	Bottom	Ft. in.	in.	

10. SAND/GRAVEL PACK:

Depth		Size	Material
Top 4.0	Bottom 8.0	Ft. 20-40	FINE SILICA SAND
Top	Bottom	Ft.	
Top	Bottom	Ft.	

11. DRILLING LOG

Top	Bottom	Formation Description
0.0	3.0	BLACK SAND
3.0	9.0	RED SILTY CLAY
9.0	16.0	TAN SILTY SANDY CLAY

12. REMARKS:

BENTONITE SEAL FROM 3.0 TO 4.0 FEET

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Brian Thomas 06/06/11
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

BRIAN THOMAS
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09


Brownfield Rd
site
Old Baucom Rd.

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2581

1. WELL CONTRACTOR:

BRIAN THOMAS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC
Well Contractor Company Name

176 COMMERCE BLVD
Street Address

STATESVILLE NC 28625
City or Town State Zip Code

(704) 872-7686
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# N/A

OTHER ASSOCIATED PERMIT#(if applicable)

SITE WELL ID #(if applicable) LFG-8

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ☐ (list use)

DATE DRILLED 05/09/11 - 05/17/11

4. WELL LOCATION:

2600 BROWNFIELD ROAD 27610
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: RALEIGH COUNTY WAKE

TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐Slope ☐Valley ☐Flat ☐Ridge ☐Other

LATITUDE ___°___'___" DMS **OR** ___ DD

LONGITUDE ___°___'___" DMS **OR** ___ DD

Latitude/longitude source: ☐GPS ☐Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

WCA - MATERIAL RECOVERY N/A
Facility Name Facility ID# (if applicable)

2600 BROWNFIELD ROAD
Street Address

RALEIGH NC 27610
City or Town State Zip Code

WCA - MATERIAL RECOVERY
Contact Name

2600 BROWNFIELD ROAD
Mailing Address

RALEIGH NC 27610
City or Town State Zip Code

( )
Area code Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 10.0 FEET

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑

c. **WATER LEVEL** Below Top of Casing: DRY FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 2.5 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** N/A **METHOD OF TEST** N/A

f. **DISINFECTION: Type** N/A **Amount** N/A

g. **WATER ZONES** (depth):

Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:

Depth		Diameter	Thickness/ Weight	Material
Top 0.0	Bottom 5.0	Ft. 2 INCH	SCH 40	PVC
Top	Bottom	Ft.		
Top	Bottom	Ft.		

8. GROUT:

Depth		Material	Method
Top 0.0	Bottom 3.0	Ft. PORTLAND BENTONITE	SLURRY
Top	Bottom	Ft.	
Top	Bottom	Ft.	

9. SCREEN:

Depth		Diameter	Slot Size	Material
Top 5.0	Bottom 10.0	Ft. 2.0 in.	.010 in.	PVC
Top	Bottom	Ft. in.	in.	
Top	Bottom	Ft. in.	in.	

10. SAND/GRAVEL PACK:

Depth		Size	Material
Top 4.0	Bottom 10.0	Ft. 20-40	FINE SILICA SAND
Top	Bottom	Ft.	
Top	Bottom	Ft.	

11. DRILLING LOG

Top	Bottom	Formation Description
0.0	5.0	BLACK SAND
5.0	8.0	RED SILTY CLAY
8.0	15.0	TAN SILTY SANDY CLAY

12. REMARKS:

BENTONITE SEAL FROM 3.0 TO 4.0 FEET

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Brian Thomas 06/06/11
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

BRIAN THOMAS
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

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Form GW-1b
Rev. 2/09


Brownfield Rd
site
Old Baucom Rd.

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2581

1. WELL CONTRACTOR:

BRIAN THOMAS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC
Well Contractor Company Name

176 COMMERCE BLVD
Street Address

STATESVILLE NC 28625
City or Town State Zip Code

(704) 872-7686
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# N/A

OTHER ASSOCIATED PERMIT#(if applicable)

SITE WELL ID #(if applicable) LFG-9

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ☐ (list use)

DATE DRILLED 05/09/11 - 05/17/11

4. WELL LOCATION:

2600 BROWNFIELD ROAD 27610
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: RALEIGH COUNTY WAKE

TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐Slope ☐Valley ☐Flat ☐Ridge ☐Other

LATITUDE ___°___'___" DMS **OR** ___ DD

LONGITUDE ___°___'___" DMS **OR** ___ DD

Latitude/longitude source: ☐GPS ☐Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

WCA - MATERIAL RECOVERY N/A
Facility Name Facility ID# (if applicable)

2600 BROWNFIELD ROAD
Street Address

RALEIGH NC 27610
City or Town State Zip Code

WCA - MATERIAL RECOVERY
Contact Name

2600 BROWNFIELD ROAD
Mailing Address

RALEIGH NC 27610
City or Town State Zip Code

(_____) _____
Area code Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 18.0 FEET

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑

c. **WATER LEVEL** Below Top of Casing: DRY FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 2.5 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** N/A **METHOD OF TEST** N/A

f. **DISINFECTION: Type** N/A **Amount** N/A

g. **WATER ZONES** (depth):

Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:

Depth		Diameter	Thickness/ Weight	Material
Top 0.0	Bottom 5.0	Ft. 2 INCH	SCH 40	PVC
Top	Bottom	Ft.		
Top	Bottom	Ft.		

8. GROUT:

Depth		Material	Method
Top 0.0	Bottom 3.0	Ft. PORTLAND BENTONITE	SLURRY
Top	Bottom	Ft.	
Top	Bottom	Ft.	

9. SCREEN:

Depth		Diameter	Slot Size	Material
Top 5.0	Bottom 18.0	Ft. 2.0 in.	.010 in.	PVC
Top	Bottom	Ft. in.	in.	
Top	Bottom	Ft. in.	in.	

10. SAND/GRAVEL PACK:

Depth		Size	Material
Top 4.0	Bottom 18.0	Ft. 20-40	FINE SILICA SAND
Top	Bottom	Ft.	
Top	Bottom	Ft.	

11. DRILLING LOG

Top	Bottom	Formation Description
0.0	5.0	BLACK SAND
5.0	20.0	RED SILTY CLAY
20.0	30.0	TAN SILTY SANDY CLAY

12. REMARKS:

BENTONITE SEAL FROM 3.0 TO 4.0 FEET

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE 06/06/11

BRIAN THOMAS
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09


Brownfield Ro
site
Old Baucom Rd.

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2581

1. WELL CONTRACTOR:

BRIAN THOMAS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC
Well Contractor Company Name

176 COMMERCE BLVD
Street Address

STATESVILLE NC 28625
City or Town State Zip Code

(704) 872-7686
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# N/A

OTHER ASSOCIATED PERMIT#(if applicable)

SITE WELL ID #(if applicable) LFG-10

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ☐ (list use)

DATE DRILLED 05/09/11 - 05/17/11

4. WELL LOCATION:

2600 BROWNFIELD ROAD 27610
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: RALEIGH COUNTY WAKE

TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐Slope ☐Valley ☐Flat ☐Ridge ☐Other

LATITUDE ___°___'___" DMS **OR** ___ DD

LONGITUDE ___°___'___" DMS **OR** ___ DD

Latitude/longitude source: ☐GPS ☐Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

WCA - MATERIAL RECOVERY N/A
Facility Name Facility ID# (if applicable)

2600 BROWNFIELD ROAD
Street Address

RALEIGH NC 27610
City or Town State Zip Code

WCA - MATERIAL RECOVERY
Contact Name

2600 BROWNFIELD ROAD
Mailing Address

RALEIGH NC 27610
City or Town State Zip Code

(_____) _____
Area code Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 13.0 FEET

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑

c. **WATER LEVEL** Below Top of Casing: DRY FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 2.5 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** N/A **METHOD OF TEST** N/A

f. **DISINFECTION: Type** N/A **Amount** N/A

g. **WATER ZONES** (depth):

Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:

Depth		Diameter	Thickness/ Weight	Material
Top 0.0	Bottom 5.0	Ft. 2 INCH	SCH 40	PVC
Top	Bottom	Ft.		
Top	Bottom	Ft.		

8. GROUT:

Depth		Material	Method
Top 0.0	Bottom 3.0	Ft. PORTLAND BENTONITE	SLURRY
Top	Bottom	Ft.	
Top	Bottom	Ft.	

9. SCREEN:

Depth		Diameter	Slot Size	Material
Top 5.0	Bottom 13.0	Ft. 2.0 in.	.010 in.	PVC
Top	Bottom	Ft. in.	in.	
Top	Bottom	Ft. in.	in.	

10. SAND/GRAVEL PACK:

Depth		Size	Material
Top 4.0	Bottom 13.0	Ft. 20-40	FINE SILICA SAND
Top	Bottom	Ft.	
Top	Bottom	Ft.	

11. DRILLING LOG

Top	Bottom	Formation Description
0.0	3.0	BLACK SAND
3.0	8.0	RED SILTY CLAY
8.0	13.0	TAN SILTY SANDY CLAY

12. REMARKS:

BENTONITE SEAL FROM 3.0 TO 4.0 FEET

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Brian Thomas 06/06/11
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

BRIAN THOMAS
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

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Form GW-1b
Rev. 2/09


Brown Field Ro
site
Old Baucom Rd.

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2581

1. WELL CONTRACTOR:

BRIAN THOMAS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC
Well Contractor Company Name

176 COMMERCE BLVD
Street Address

STATESVILLE | NC | 28625
City or Town | State | Zip Code

(704) 872-7686
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# N/A

OTHER ASSOCIATED PERMIT#(if applicable)

SITE WELL ID #(if applicable) LFG-5

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ☐ (list use)

DATE DRILLED 05/09/11 - 05/17/11

4. WELL LOCATION:

2600 BROWNFIELD ROAD 27610
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: RALEIGH COUNTY WAKE

TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐Slope ☐Valley ☐Flat ☐Ridge ☐Other

LATITUDE ___°___'___" DMS **OR** ___ DD

LONGITUDE ___°___'___" DMS **OR** ___ DD

Latitude/longitude source: ☐GPS ☐Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

WCA - MATERIAL RECOVERY | N/A
Facility Name | Facility ID# (if applicable)

2600 BROWNFIELD ROAD
Street Address

RALEIGH | NC | 27610
City or Town | State | Zip Code

WCA - MATERIAL RECOVERY
Contact Name

2600 BROWNFIELD ROAD
Mailing Address

RALEIGH | NC | 27610
City or Town | State | Zip Code

(_____) _____
Area code Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 10.0 FEET

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑

c. **WATER LEVEL** Below Top of Casing: DRY FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 2.5 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** N/A **METHOD OF TEST** N/A

f. **DISINFECTION: Type** N/A **Amount** N/A

g. **WATER ZONES** (depth):

Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:

	Depth		Diameter	Thickness/ Weight	Material
Top 0.0	Bottom 5.0	Ft.	2 INCH	SCH 40	PVC
Top	Bottom	Ft.			
Top	Bottom	Ft.			

8. GROUT:

	Depth		Material	Method
Top 0.0	Bottom 3.0	Ft.	PORTLAND BENTONITE	SLURRY
Top	Bottom	Ft.		
Top	Bottom	Ft.		

9. SCREEN:

	Depth		Diameter	Slot Size	Material
Top 5.0	Bottom 10.0	Ft.	2.0 in.	.010 in.	PVC
Top	Bottom	Ft.	in.	in.	
Top	Bottom	Ft.	in.	in.	

10. SAND/GRAVEL PACK:

	Depth		Size	Material
Top 4.0	Bottom 10.0	Ft.	20-40	FINE SILICA SAND
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0.0	5.0	BLACK SAND
5.0	13.0	RED SILTY CLAY
13.0	25.0	TAN SILTY SANDY CLAY

12. REMARKS:

BENTONITE SEAL FROM 3.0 TO 4.0 FEET

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR | 06/06/11 DATE

BRIAN THOMAS
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

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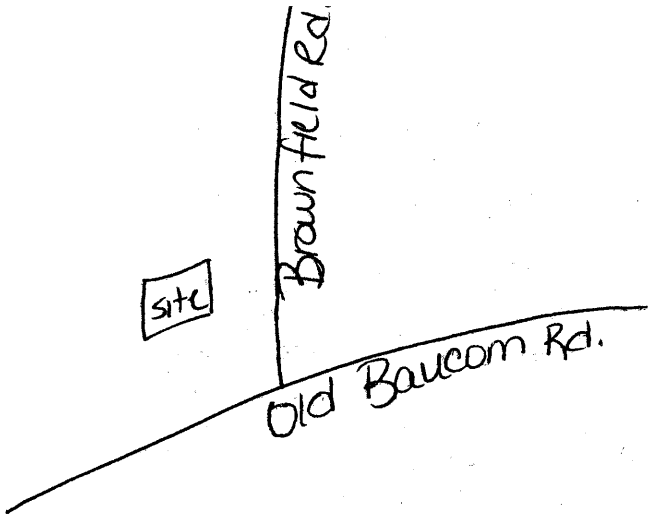

Brownfield Rd.
site
Old Baucom Rd.

ATTACHMENT D

MONITORING WELL BORING AND WELL CONSTRUCTION LOGS AND WELL CONSTRUCTION RECORDS

RECORD OF BOREHOLE MW-6As

SHEET 1 of 1

PROJECT: WCA-Material Recovery, LLC
PROJECT NUMBER: 073-9602411.400
DRILLED DEPTH: 16.0 ft
LOCATION: Raleigh, NC

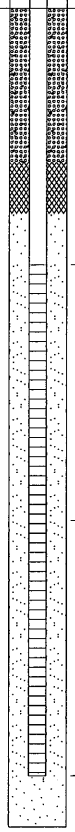
DRILL RIG: Deidrich D-120
DATE STARTED: 5/11/11
DATE COMPLETED: 5/12/11

NORTHING: 713,228.6
EASTING: 2,146,251.1
GS ELEVATION: 214.7 ft
TOC ELEVATION: 217.4 ft

DEPTH W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0		0.0 - 5.0 Lt. Brown to tan gravelly SAND w/some silt, poorly sorted, dry, unconsolidated.	GM							
5	210	5.0 - 11.0 Orangish-red to tan clayey SILT, dry, loose, low plasticity, micaceous, PWR granitic layer @ 10-10.5' bgs.	ML		209.7 5.0	4-6'	SPT	6-3-5-8	8	90% 2.0
10	205				203.7	9-11'	SPT	5-6-8-5	14	50% 2.0
		11.0 - 14.0 PWR, granitic, unconsolidated, large quartz and feldspar grains w/muscovite and biotite, saturated.	PWR		11.0 200.7					
15	200	14.0 - 16.0 GRANITE, competent bedrock, very hard.	N/A		14.0 198.7	14-16'	SPT	28-50/4	50/4	25% 2.0
		Boring completed at 16.0 ft								
20	195									
25	190									
30	185									

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0-5'
Material: PVC
Diameter: 2"
Joint Type: threaded

WELL SCREEN
Interval: 5-15'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 4-16'
Type: #2 filter sand

FILTER PACK SEAL
Interval: 3-4'
Type: 3/8" bentonite chips

ANNULUS SEAL
Interval: 0-3'
Type: Portland cement

WELL COMPLETION
Pad: 3'x3' concrete pad
Protective Casing: 4" round anodized aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Brian Thomas

GA INSPECTOR: Jeremy DeVore
CHECKED BY: David Reedy, P.G.
DATE: 5/12/11

Golder Associates

RECORD OF BOREHOLE MW-6Ad

PROJECT: WCA-Material Recovery, LLC
PROJECT NUMBER: 073-9602411.400
DRILLED DEPTH: 57.0 ft
LOCATION: Raleigh, NC

DRILL RIG: Geoprobe 7822DT
DATE STARTED: 6/1/11
DATE COMPLETED: 6/1/11

NORTHING: 713,226.2
EASTING: 2,146,245.3
GS ELEVATION: 214.3 ft
TOC ELEVATION: 216.7 ft

DEPTH W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0		0.0 - 6.0 Light brown to orangish-red silty SAND	SM		208.3					
5	210									
		6.0 - 12.0 Orangish-red clayey SILT	ML		6.0 202.3					
10	205									
		12.0 - 18.0 PWR, gray to tan, granitic (possible clay lense @ 18-20'), shallow water bearing zone @ 13-14'	PWR		12.0 196.3					
15	200								Grout	
		18.0 - 20.0 Possible water bearing zone at 18-20', softer material	PWR		18.0 194.3					
20	195									
		20.0 - 23.0 GRANITE rock	BR		20.0 191.3				Riser	
		23.0 - 25.0 Possible water bearing zone at 23-24', softer material	BR		23.0 189.3					
25	190	25.0 - 33.0 Harder material	BR		25.0					
30	185									

Log continued on next page

WELL CASING
Interval: 0-47'
Material: PVC
Diameter: 2"
Joint Type: threaded

WELL SCREEN
Interval: 47-57'
Material: PVC Sch. 40
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 37-57'
Type: #2 sand

FILTER PACK SEAL
Interval: 31-37'
Type: bentonite 3/8" pellets

ANNULUS SEAL
Interval: 0-31'
Type: Portland cement grout

WELL COMPLETION
Pad: 3'x'3 concrete pad
Protective Casing: 4" OD round anodized aluminum

DRILLING METHODS
Soil Drill: 6-inch Downhole Hammer
Rock Drill: 4-inch Downhole Hammer

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Johnny Burr

GA INSPECTOR: Jeremy DeVore
CHECKED BY: David Reedy, P.G.
DATE: 6/1/11

Golder Associates

RECORD OF BOREHOLE MW-6Ad

PROJECT: WCA-Material Recovery, LLC
PROJECT NUMBER: 073-9602411.400
DRILLED DEPTH: 57.0 ft
LOCATION: Raleigh, NC

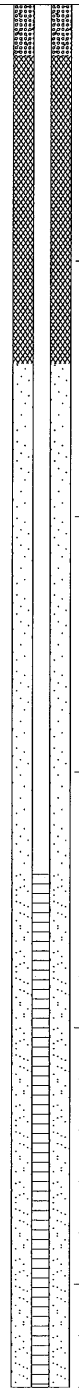
DRILL RIG: Geoprobe 7822DT
DATE STARTED: 6/1/11
DATE COMPLETED: 6/1/11

NORTHING: 713,226.2
EASTING: 2,146,245.3
GS ELEVATION: 214.3 ft
TOC ELEVATION: 216.7 ft

DEPTH W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC
30		25.0 - 33.0 Harder material *(Continued)*	BR					
					181.3 / 33.0			
		33.0 - 42.0 Set temporary casing to seal off shallow water						
	180							
35			BR					
	175							
40					172.3 / 42.0			
		42.0 - 52.0 Water producing zone, color change to reddish-brown, possible clay lense or other fracture						
	170							
45			BR					
	165							
50					162.3 / 52.0			
		52.0 - 57.0 Water producing zone						
	160		BR					
55					157.3			
		Boring completed at 57.0 ft						
	155							
60								

MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0-47'
Material: PVC
Diameter: 2"
Joint Type: threaded

WELL SCREEN
Interval: 47-57'
Material: PVC Sch. 40
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 37-57'
Type: #2 sand

FILTER PACK SEAL
Interval: 31-37'
Type: bentonite 3/8" pellets

ANNULUS SEAL
Interval: 0-31'
Type: Portland cement grout

WELL COMPLETION
Pad: 3'x'3 concrete pad
Protective Casing: 4" OD round anodized aluminum

DRILLING METHODS
Soil Drill: 6-inch Downhole Hammer
Rock Drill: 4-inch Downhole Hammer

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Johnny Burr

GA INSPECTOR: Jeremy DeVore
CHECKED BY: David Reedy, P.G.
DATE: 6/1/11

Golder Associates

RECORD OF BOREHOLE MW-7As

PROJECT: WCA-Material Recovery, LLC
PROJECT NUMBER: 073-9602411.400
DRILLED DEPTH: 34.0 ft
LOCATION: Raleigh, NC

DRILL RIG: Deidrich D-120
DATE STARTED: 5/11/11
DATE COMPLETED: 5/12/11

NORTHING: 712,910.3
EASTING: 2,147,004.3
GS ELEVATION: 235.6 ft
TOC ELEVATION: 238.4 ft

DEPTH W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC
0	235	0.0 - 4.5 Brown to Lt. brown sandy SILT, loose, well-sorted, slightly moist, soft, some organics.	SM		231.1 / 4.5					
5	230	4.5 - 5.5 Tan silty SAND, moist, poorly sorted.	SM		230.1 / 5.5	4-6'	SPT	2-3-1-1	4	90% / 2.0
		5.5 - 7.0 Orange to tan silty CLAY w/trace sand, poorly sorted, slight plasticity, moist, slightly firm.	CL		228.6 / 7.0					
		7.0 - 10.0 Lt. Brown sandy SILT, moist, soft.	SM		225.6 / 10.0					
10	225	10.0 - 15.0 PWR, granitic, light gray/white to orange w/quartz and feldspar, soft, moist to wet.	PWR		220.6 / 15.0	9-11'	SPT	4-4-7-8	11	100% / 2.0
15	220	15.0 - 34.0 PWR, granitic, white to pink, large quartz grains w/ feldspar, muscovite, biotite, wet at 15-34' bgs, hard at 20' bgs, relic structures and fractures, increasing hardness w/depth, clay lenses.	PWR			14-16'	SPT	2-2-3-4	5	100% / 2.0
20	215					19-21'	SPT	3-6-19-26	25	65% / 2.0
25	210					24-26'	SPT	17-27-45-50/6	>50	70% / 2.0
30						29-31'	SPT	6-14-22-31	36	50% / 2.0

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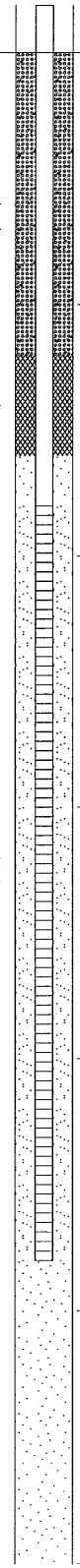
MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES



WELL CONSTRUCTION DETAILS

WELL CASING
Interval: 0-9'
Material: PVC
Diameter: 2"
Joint Type: threaded

WELL SCREEN
Interval: 9-24'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 8-34'
Type: #2 filter sand

FILTER PACK SEAL
Interval: 6-8'
Type: 3/8" bentonite chips

ANNULUS SEAL
Interval: 0-6'
Type: Portland cement

WELL COMPLETION
Pad: 3'x3' concrete pad
Protective Casing: 4" round anodized aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Brian Thomas

GA INSPECTOR: Jeremy DeVore
CHECKED BY: David Reedy, P.G.
DATE: 5/12/11

Golder Associates

RECORD OF BOREHOLE MW-7As

PROJECT: WCA-Material Recovery, LLC
PROJECT NUMBER: 073-9602411.400
DRILLED DEPTH: 34.0 ft
LOCATION: Raleigh, NC

DRILL RIG: Deidrich D-120
DATE STARTED: 5/11/11
DATE COMPLETED: 5/12/11

NORTHING: 712,910.3
EASTING: 2,147,004.3
GS ELEVATION: 235.6 ft
TOC ELEVATION: 238.4 ft

DEPTH W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	BLOWS per 6 in (140 lb hammer 30 inch drop)	N	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
30	205	15.0 - 34.0 PWR, granitic, white to pink, large quartz grains w/ feldspar, muscovite, biotite, wet at 15-34' bgs, hard at 20' bgs, relic structures and fractures, increasing hardness w/depth, clay lenses. *(Continued)*	PWR			29-31'	SPT	6-14-22-31	36	50% 2.0		
					201.6							
		Boring completed at 34.0 ft										
35	200											
40	195											
45	190											
50	185											
55	180											
60												

WELL CASING
Interval: 0-9'
Material: PVC
Diameter: 2"
Joint Type: threaded

WELL SCREEN
Interval: 9-24'
Material: PVC
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 8-34'
Type: #2 filter sand

FILTER PACK SEAL
Interval: 6-8'
Type: 3/8" bentonite chips

ANNULUS SEAL
Interval: 0-6'
Type: Portland cement

WELL COMPLETION
Pad: 3'x3' concrete pad
Protective Casing: 4" round anodized aluminum

DRILLING METHODS
Soil Drill: 4.25-inch ID Hollow Stem Augers
Rock Drill: N/A

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Brian Thomas

GA INSPECTOR: Jeremy DeVore
CHECKED BY: David Reedy, P.G.
DATE: 5/12/11

Golder Associates

RECORD OF BOREHOLE MW-7Ad

PROJECT: WCA-Material Recovery, LLC
PROJECT NUMBER: 073-9602411.400
DRILLED DEPTH: 48.0 ft
LOCATION: Raleigh, NC

DRILL RIG: Geoprobe 7822DT
DATE STARTED: 5/31/11
DATE COMPLETED: 5/31/11

NORTHING: 712,910.0
EASTING: 2,146,992.2
GS ELEVATION: 235.3 ft
TOC ELEVATION: 237.2 ft

DEPTH W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
0	235	0.0 - 10.0 Brown to Light Brown sandy SILT, some clay at ~5'	SM		225.3 / 10.0					
5	230									
10	225	10.0 - 38.0 PWR, light gray to beige/orange, granitic (water bearing zone @ ~10-15' bgs) 25-38' Water bearing zone @ 25-35'	PWR							
15	220								Grout Riser	
20	215									
25	210									
30		Log continued on next page								

WELL CASING
Interval: 0-38'
Material: PVC
Diameter: 2"
Joint Type: threaded

WELL SCREEN
Interval: 38-48'
Material: PVC Sch. 40
Diameter: 2"
Slot Size: 0.010"
End Cap: PVC

FILTER PACK
Interval: 36-48'
Type: #2 sand

FILTER PACK SEAL
Interval: 33-36'
Type: bentonite 3/8" pellets

ANNULUS SEAL
Interval: 0-33'
Type: Portland cement grout

WELL COMPLETION
Pad: 3'x3' concrete pad
Protective Casing: 4" OD round anodized aluminum

DRILLING METHODS
Soil Drill: 6-inch Downhole Hammer
Rock Drill: 6-inch Downhole Hammer

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Johnny Burr

GA INSPECTOR: Jeremy DeVore
CHECKED BY: David Reedy, P.G.
DATE: 5/31/11

Golder Associates

RECORD OF BOREHOLE MW-7Ad

PROJECT: WCA-Material Recovery, LLC
PROJECT NUMBER: 073-9602411.400
DRILLED DEPTH: 48.0 ft
LOCATION: Raleigh, NC

DRILL RIG: Geoprobe 7822DT
DATE STARTED: 5/31/11
DATE COMPLETED: 5/31/11

NORTHING: 712,910.0
EASTING: 2,146,992.2
GS ELEVATION: 235.3 ft
TOC ELEVATION: 237.2 ft

DEPTH W.L.:
DATE W.L.:
TIME W.L.:

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE: DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)	SAMPLES: NUMBER	TYPE	REC	MONITORING WELL/ PIEZOMETER DIAGRAM and NOTES	WELL CONSTRUCTION DETAILS
30	205	10.0 - 38.0 PWR, light gray to beige/orange, granitic (water bearing zone @ ~10-15' bgs) 25-38' Water bearing zone @ 25-35' *(Continued)*	PWR		197.3 / 38.0				Bentonite	**WELL CASING** Interval: 0-38' Material: PVC Diameter: 2" Joint Type: threaded **WELL SCREEN** Interval: 38-48' Material: PVC Sch. 40 Diameter: 2" Slot Size: 0.010" End Cap: PVC **FILTER PACK** Interval: 36-48' Type: #2 sand **FILTER PACK SEAL** Interval: 33-36' Type: bentonite 3/8" pellets **ANNULUS SEAL** Interval: 0-33' Type: Portland cement grout **WELL COMPLETION** Pad: 3'x3' concrete pad Protective Casing: 4" OD round anodized aluminum **DRILLING METHODS** Soil Drill: 6-inch Downhole Hammer Rock Drill: 6-inch Downhole Hammer
35	200									
		38.0 - 48.0 GRANITE, highly fractured competent rock 40-48' water bearing zone @ 40-45'	BR		187.3				#2 Sand Screen	
40	195									
45	190									
		Boring completed at 48.0 ft								
50	185									
55	180									
60										

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Geologic Exploration
DRILLER: Johnny Burr

GA INSPECTOR: Jeremy DeVore
CHECKED BY: David Reedy, P.G.
DATE: 5/31/11

Golder Associates

Project Name	NCA-Material Recycle	Project Number	0739602011
Project Location	Raleigh, NC	Client	NCA
Drilling Company	Geologic Exploration	Driller Name	Brian Thomas
Ground Elevation	N/A	Rig Type	Diedrich D-120
Groundwater elevation	N/A	Logged By	JAD
Date Start/Finish	5/11/11 - 5/12/11	Total Depth	15' bgs

BORING NO. MW-6As

Page 1 of 1

Elev. Ft.	Depth ft.	Sample Type & No.	Sample Blows per 6"	Sample Pen in.	Sample Rec %	Remarks	Graphic Log (USCS)	Soil and Rock Descriptions
							GM	0-5' Lt Brown to tan gravelly SAND w/ some silt poorly sorted, dry, unconsolidated
		SS 4-6'	6 3 5 8		90%		ML	5-11' Orangish red to tan clayey SILT, dry, loose, low plasticity, micaceous PWR layer @ ~10-10.5', granitic
	10	9-11'	5 6 8 5		50%		PWR	11'-14' PWR, granitic, saturated, unconsolidated large quartz, feldspar grains, muscovite, biotite.
	15	14-16'	28 50/4		25%			14-16' competent granite bedrock, very hard
	20							Set well @ 15', screen 5-15' bgs
	25							
	30							
	35							
	40							

Blows per 6 in. - 140lb hammer falling 30 in. to drive a 2.0 in. OD split spoon sampler.
Pen - Penetration Length of Sampler or Core Barrell
Rec - Recovery Length of Sample RQD - Lenght of Sound Cores >4in./Length Cored %
S - Split Spoon Sample U - Undisturbed Samples

Notes: (Rig Type, drilling method, bit or auger size, PSI, Equipment Failures, possible contamination, deviations from drilling plan, drilling difficulties, ect.)
4.25" ID HSA, Splitspoons 5' centers

Golder Associates

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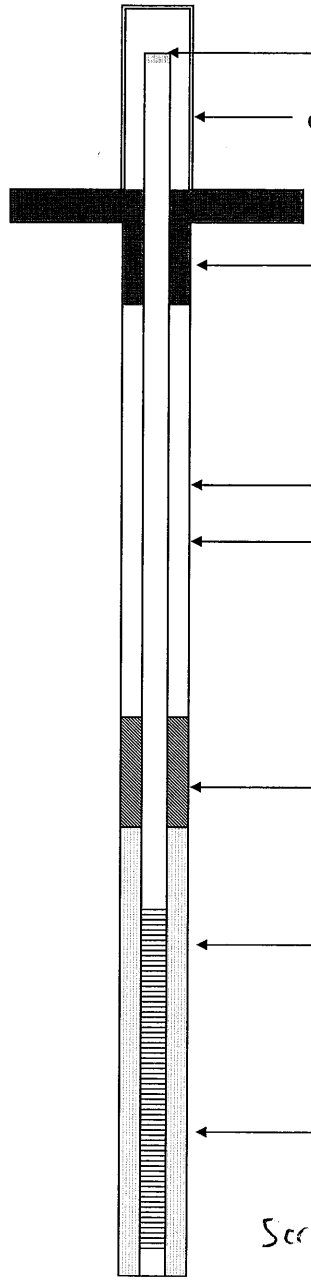
MONITORING WELL INSTALLATION SKETCH

Project:	WCA - Material Recovery	Monitoring Well No.:	MW-6A's
Drilling Subcontractor:	Geologic Exploration	Date/time of Well Installation:	5/11/11 15:30
Driller:	Brian Thomas	Depth to Bottom of Well From Top of Monitoring Well Pipe:	18.3
Logged By:	JAD		

Depth or Height (ft) From Ground Surface



Approx. Stickup: 2.5'

O.D. of Outer Protective Casing: 4"

Dimensions of Concrete Pad: 3' x 3' x 0.5"

Type of Surface Seal: Portland cement

Type of Backfill: cement grout

Diameter of Borehole: 8"

Type of Seal: bentonite holeplug

I.D. of screen: 2"

Size of Screen Opening: 0.010"

Type of Screen: PVC sch 40

Size of Filter Sand: #2

Screened interval ~~8-18~~ 8.5 - 18.5' from TOC

0'

3'

4'

5'

15'

WATER LEVEL MEASUREMENTS

Date	5/11/11	5/11/11		5/12/11	5/31/11		
Depth from TOC	14.5' (4' stickup)	10.2 (4' stickup)		10.05	8.90"		
Time	15:35	16:00		8:10	13:10		

Project Name	WCA - Material Recovery	Project Number	0739602411
Project Location	Raleigh, NC	Client	WCA
Drilling Company	Geologic Exploration	Driller Name	Brian Thomas
Ground Elevation	N/A	Rig Type	Diedrich D-120
Groundwater elevation	N/A	Logged By	JAO
Date Start/Finish	5/11/11 - 5/12/11	Total Depth	25' bgs

BORING NO. MW-7AS

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Elev. Ft.	Depth ft.	Sample Type & No.	Blows per 6"	Pen in.	Rec %	Remarks	Graphic Log (USCS)	Soil and Rock Descriptions
							SM	0-4.5 Brown to Lt. Brown sandy SILT, loose, well-sorted, slightly moist, soft, some organic matter
	5	S5 4-6'	2 3 1 1		90%		SM	4.5-5.5 Tan silty SAND, moist, poorly sorted,
							CL	5.5-7 Orange to tan silty CLAY, with some sand, poorly sorted, slight plasticity, moist, slightly firm
	10	9-11'	4 4 7 8		100%		SM	7-10 Lt Brown sandy SILT, moist, soft
	15	14-16'	2 2 3 4		100%		PWR	10-15 PWR, granitic, light gray, white to orange quartz + feldspar, soft, moist to wet
	20	19-21'	3 6 19 26		65%		PWR	15-34' PWR, white to pink granite, wet @ 15', lg grains quartz, feldspar, muscovite, biotite, hard @ 20' relic structures + fractures, increasing hardness w/depth, clay leases
	25	24-26'	17 27 45 50/6		70%			
	30	29-31'	6 14 22 31		50%			Set well @ 25', screen 10-25'
	35							5/12/11 Moved up well to 24' screen 9-24' to adjust to elevated water level @ top of screen.
	40							

Blows per 6 in. - 140lb hammer falling 30 in. to drive a 2.0 in. OD split spoon sampler.
Pen - Penetration Length of Sampler or Core Barrell
Rec - Recovery Length of Sample
RQD - Lenght of Sound Cores >4in./Length Cored %
S - Split Spoon Sample
U - Undisturbed Samples

Notes: (Rig Type, drilling method, bit or auger size, PSI, Equipment Failures, possible contamination, deviations from drilling plan, drilling difficulties, ect.)

4.25" ID HSA, split spoons 5' cuttings

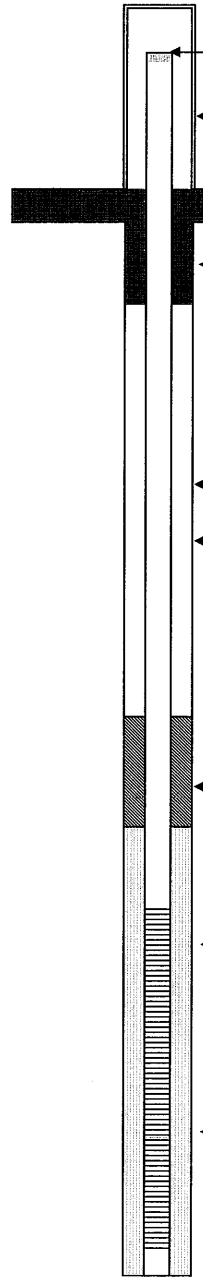
Golder Associates

Golder Associates

MONITORING WELL INSTALLATION SKETCH

Project:	WCA-Material Recovery	Monitoring Well No.:	MW-7As
Drilling Subcontractor:	Geologic Exploration	Date/time of Well Installation:	5/11/11 9:45
Driller:	Brian Thomas	Depth to Bottom of Well From Top of Monitoring Well Pipe:	25.6'
Logged By:	JAS		

Depth or Height (ft) From Ground Surface



Approx. Stickup: 2.3'

O.D. of Outer Protective Casing: 4"

Dimensions of Concrete Pad: 3'x3'x0.5'

Type of Surface Seal: Portland cement

Type of Backfill: cement grout

Diameter of Borehole: 8"

Type of Seal: bentonite hole-plug

I.D. of screen: 2"

Size of Screen Opening: 0.010"

Type of Screen: PVC Sch. 40

Size of Filter Sand: #2

Depth or Height (ft) From Ground Surface: 0', 6', 8', 9', 24'

screened interval 25.6' - 10.6' from TOC

WATER LEVEL MEASUREMENTS

Date	5/11/11	5/11/11	5/12/11	5/12/11	5/31/11		
Depth from TOC	18.3 (4.5' stickup)	14.1 (2.5' stickup)	12.58	13.00	13.18		
Time	10:05	10:10	8:15	15:15	11:00		

Project Name	WCA - Material Recovery	Project Number	0739602411
Project Location	Raleigh, NC	Client	WCA
Drilling Company	Geologic Exploration	Driller Name	Johnny Barr
Ground Elevation		Rig Type	Geoprobe 7822DT
Groundwater elevation		Logged By	JAS
Date Start/Finish	6/1/11	Total Depth	57'

BORING NO. MW-6Ad

Page 1 of 1

Elev. Ft.	Depth ft.	Sample Type & No.	Blows per 6"	Pen in.	Rec %	Remarks	Graphic Log (USCS)	Soil and Rock Descriptions
							SM ML PWR	0-6' Lt Brown to orangish red silty SAND, some silt 6-12' orangish-red clayey SILT 12-20' PWR, granite - possible clay lense 18-20' 20-57' Granite rock shallow water bearing zone at ~13-14' at estimated top of PWR rock. Harder drilling at this interval
	10	N/A (see MW-6As)	N/A					
	20							- possible water bearing zone @ ~~20-22'~~ 18-20', very quick drilling, softer material - PWR or clay lense - in rock ~~again~~ after ~20' (hardest drilling thus far)
	30							- softer area ~23-24', fast drilling, possible water bearing zone - hard drilling in rock 25-33' hardest thus far
	40							temporary 4" PVC well casing set @ 33' bgs sealed off bottom ~5 feet w/ bentonite
	50							3 7/8" bit installed, drill from 33' on - rock drilling - very difficult drilling, continuing to produce water
	60							~~@ 42'~~ @ 44' hit W-producing water bearing zone, color ~~43~~ change to reddish-brown, possible clay lense or other feature @ ~44-45' - continuing to produce water @ 52-57' Set 2" well @ 57' bgs. 10' screen ~12-15 gpm

Blows per 6 in. - 140lb hammer falling 30 in. to drive a 2.0 in. OD split spoon sampler.
Pen - Penetration Length of Sampler or Core Barrell
Rec - Recovery Length of Sample RQD - Lenght of Sound Cores >4in./Length Cored %
S - Split Spoon Sample U - Undisturbed Samples

Notes: (Rig Type, drilling method, bit or auger size, PSI, Equipment Failures, possible contamination, deviations from drilling plan, drilling difficulties, ect.)

6" air hammer w/ 3.25" rods and 3 7/8" bit through 4" temp. casing
- no split spoons
- refer to MW-6As for soils description

Golder Associates

Golder Associates

MONITORING WELL INSTALLATION SKETCH

Project: WCA-Material Recovery
Drilling Subcontractor: Geologic Exploration
Driller: Johnny Barr
Logged By: JAD

Monitoring Well No.: MW-6Ad
Date/time of Well Installation: 6/1/11 10:00
Depth to Bottom of Well From Top of Monitoring Well Pipe: 60.55'

Depth or Height (ft) From Ground Surface

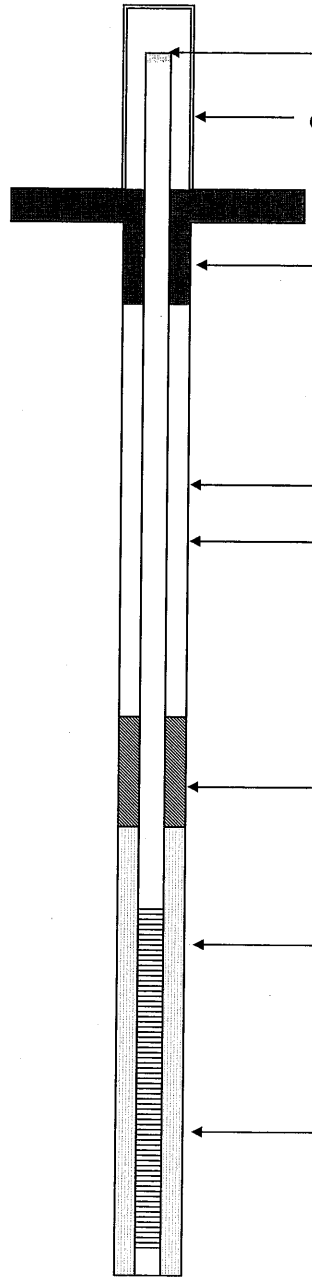
0'

~~20'~~ 31'

~~45'~~ 37'

47'

57'



Approx. Stickup ~2.8'
O.D. of Outer Protective Casing 4"
Dimensions of Concrete Pad 3'x3'x0.5'
Type of Surface Seal Portland cement
Type of Backfill cement grout
Diameter of Borehole ~10"
Type of Seal bentonite hole plug
I.D. of screen 2"
Size of Screen Opening 0.010"
Type of Screen PVC Sch. 40
Size of Filter Sand #2

WATER LEVEL MEASUREMENTS

Date	6/1/11	6/2/11					
Depth from TOC	10.34	8.30					
Time	10:15	10:53					

* Temporary 4" casing set to seal off shallow aquifer @ 33' bgs

Project Name	WCA-Material Recovery	Project Number	0739602411.400
Project Location	Raleigh, NC	Client	WCA
Drilling Company	Geologic Exploration	Driller Name	Johnny Barr
Ground Elevation		Rig Type	Geoprobe 7822DT
Groundwater elevation		Logged By	JAD
Date Start/Finish	5/31/11	Total Depth	48'

BORING NO. MW-7A d

Page 1 of 1

Elev. Ft.	Depth ft.	Sample Type & No.	Sample Blows per 6"	Sample Pen in.	Sample Rec %	Remarks	Graphic Log (USCS)	Soil and Rock Descriptions
							SM	0-10' Brown MLT-Brown sandy SILT, some clay ~5'
							PWR	10-38' PWR, granite, ltgray to beige/orange
	10	N/A	N/A					38'-48' Granite bedrock, difficult drilling
								shallow aquifer water bearing zone ~10-15' bgs
	20							water bearing zone ~25-35' - hi yield
								- likely still in PWR @ 35' per driller
	30							- water zone @ ~40-45' - lo yield
								- harder drilling
								- competent rock ~38'
	40							Set well @ 48', 10' screen
	50							
	60							

Blows per 6 in. - 140lb hammer falling 30 in. to drive a 2.0 in. OD split spoon sampler.
Pen - Penetration Length of Sampler or Core Barrell
Rec - Recovery Length of Sample RQD - Lenght of Sound Cores >4in./Length Cored %
S - Split Spoon Sample U - Undisturbed Samples

Notes: (Rig Type, drilling method, bit or auger size, PSI, Equipment Failures, possible contamination, deviations from drilling plan, drilling difficulties, ect.)
Geoprobe 7822DT, no split spoons
See MW-7A's log for soils - 6" air hammer w/3.25" rods

Golder Associates

Golder Associates

MONITORING WELL INSTALLATION SKETCH

Project:	WCA · Material Recovery	Monitoring Well No.:	MW-[illegible]td
Drilling Subcontractor:	Geologic Exploration	Date/time of Well Installation:	5/31/11 11:30
Driller:	Johnny Bur	Depth to Bottom of Well From Top of Monitoring Well Pipe:	50.00
Logged By:	JAD		

Depth or Height (ft) From Ground Surface

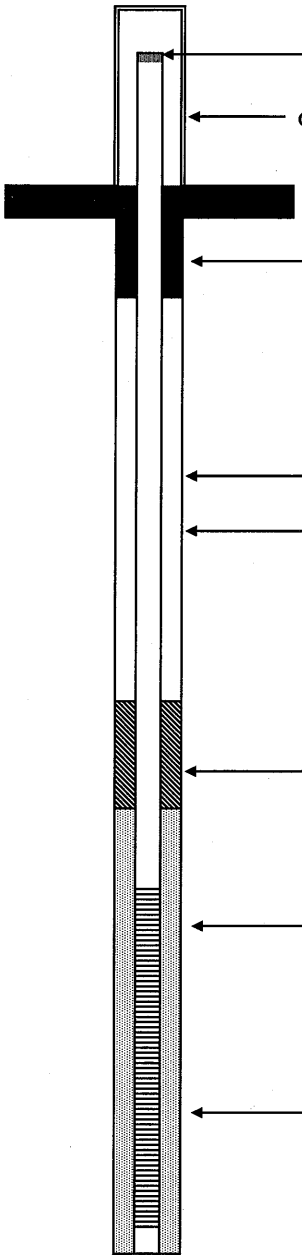
0'

38'

36'

38'

48'



Approx. Stickup ~~2.5~~ ~1.7'

O.D. of Outer Protective Casing 4"

Dimensions of Concrete Pad 3'x3'x0.5'

Type of Surface Seal Portland cement

Type of Backfill cement grout

Diameter of Borehole ~8"

Type of Seal bentonite hole plug

I.D. of screen ~~0.010~~ 2"

Size of Screen Opening 0.010"

Type of Screen PVC Sch. 40

Size of Filter Sand #2

WATER LEVEL MEASUREMENTS

Date	5/31/11	6/2/11					
Depth from TOC	18.10'	12.08'					
Time	12:10	9:25					

Project Name	WCA. Material Recovery	Project Number	0739602411
Project Location	Raleigh, NC	Client	WCA
Drilling Company	Geologic Exploration	Driller Name	Johnny Bar
Ground Elevation		Rig Type	Geoprobe 7822DT
Groundwater elevation		Logged By	JAN
Date Start/Finish	5/31/11	Total Depth	29'

BORING NO. MW-6Ad

Page 1 of 1

Elev. Ft.	Depth ft.	Sample Type & No.	Blows per 6"	Pen in.	Rec %	Remarks	Graphic Log (USCS)	Soil and Rock Descriptions
	10							
	20							shallow aquifer water bearing zone @ ~ 14' at approximate top of bedrock - very hard drilling, slow - water bearing zone possible @ ~22-26', fast drilling, soft material, PWR.
	30							
	40							At 29' bgs - ~24" diameter hole made by exiting water - boring temporarily stopped to install ~~2" PVC casing~~. Driller didn't have 4" casing. Had to leave site to get 4" temporary casing from DSI in Selma. Return tomorrow
	50							
	60							Boring abandoned with bentonite/cement grout on 6/1/11

Blows per 6 in. - 140lb hammer falling 30 in. to drive a 2.0 in. OD split spoon sampler.
Pen - Penetration Length of Sampler or Core Barrell
Rec - Recovery Length of Sample RQD - Lenght of Sound Cores >4in./Length Cored %
S - Split Spoon Sample U - Undisturbed Samples

Notes: (Rig Type, drilling method, bit or auger size, PSI, Equipment Failures, possible contamination, deviations from drilling plan, drilling difficulties, ect.)
6" air hammer w/ 3.25" rods
- no split spoons
- refer to MW-6As log for soils

Golder Associates

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2581

1. WELL CONTRACTOR:

BRIAN THOMAS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC
Well Contractor Company Name

176 COMMERCE BLVD
Street Address

STATESVILLE NC 28625
City or Town State Zip Code

(704) 872-7686
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# N/A

OTHER ASSOCIATED PERMIT#(if applicable)

SITE WELL ID #(if applicable) MW-6-AS

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ☐ (list use)

DATE DRILLED 05/09/11 - 05/17/11

4. WELL LOCATION:

2600 BROWNFIELD ROAD 27610
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: RALEIGH COUNTY WAKE

TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐Slope ☐Valley ☐Flat ☐Ridge ☐Other

LATITUDE ___°___'_____" DMS **OR** _____ DD

LONGITUDE ___°___'_____" DMS **OR** _____ DD

Latitude/longitude source: ☐GPS ☐Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

WCA - MATERIAL RECOVERY N/A
Facility Name Facility ID# (if applicable)

2600 BROWNFIELD ROAD
Street Address

RALEIGH NC 27610
City or Town State Zip Code

WCA - MATERIAL RECOVERY
Contact Name

2600 BROWNFIELD ROAD
Mailing Address

RALEIGH NC 27610
City or Town State Zip Code

(_____) _____
Area code Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 15.0 FEET

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑

c. **WATER LEVEL** Below Top of Casing: 6.0 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 2.5 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** N/A **METHOD OF TEST** N/A

f. **DISINFECTION: Type** N/A **Amount** N/A

g. **WATER ZONES** (depth):

Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:

	Depth		Diameter	Thickness/ Weight	Material
Top 0.0	Bottom 5.0	Ft.	2 INCH	SCH 40	PVC
Top	Bottom	Ft.			
Top	Bottom	Ft.			

8. GROUT:

	Depth		Material	Method
Top 0.0	Bottom 3.0	Ft.	PORTLAND BENTONITE	SLURRY
Top	Bottom	Ft.		
Top	Bottom	Ft.		

9. SCREEN:

	Depth		Diameter		Slot Size		Material
Top 5.0	Bottom 15.0	Ft.	2.0	in.	.010	in.	PVC
Top	Bottom	Ft.		in.		in.	
Top	Bottom	Ft.		in.		in.	

10. SAND/GRAVEL PACK:

	Depth		Size	Material
Top 4.0	Bottom 15.0	Ft.	20-40	FINE SILICA SAND
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0.0	3.0	BLACK SAND
3.0	7.0	RED SILTY CLAY
7.0	16.0	TAN SILTY SANDY CLAY

12. REMARKS:

BENTONITE SEAL FROM 3.0 TO 4.0 FEET

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Brian Thomas 06/06/11
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

BRIAN THOMAS
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09


Brownfield Rd
site
Old Baucom Rd.

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3098

1. WELL CONTRACTOR:

JOHNNY BURR
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC
Well Contractor Company Name

176 COMMERCE BLVD
Street Address

STATESVILLE NC 28625
City or Town State Zip Code

(704) 872-7686
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# N/A

OTHER ASSOCIATED PERMIT#(if applicable)

SITE WELL ID #(if applicable) MW-6-AD

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation ☐ Other ☐ (list use)

DATE DRILLED 05/31/11 - 06/01/11

4. WELL LOCATION:

2600 BROWNFIELD ROAD 27610
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: RALEIGH COUNTY WAKE

TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐Slope ☐Valley ☐Flat ☐Ridge ☐Other

LATITUDE ___°___'___" DMS OR ___ DD

LONGITUDE ___°___'___" DMS OR ___ DD

Latitude/longitude source: ☐GPS ☐Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

WCA - MATERIAL RECOVERY N/A
Facility Name Facility ID# (if applicable)

2600 BROWNFIELD ROAD
Street Address

RALEIGH NC 27610
City or Town State Zip Code

WCA - MATERIAL RECOVERY
Contact Name

2600 BROWNFIELD ROAD
Mailing Address

RALEIGH NC 27610
City or Town State Zip Code

( )
Area code Phone number

6. WELL DETAILS:

a. TOTAL DEPTH: 57.0 FEET

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☑

c. WATER LEVEL Below Top of Casing: 13.0 FT.
(Use "+" if Above Top of Casing)

d. TOP OF CASING IS 2.5 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. YIELD (gpm): N/A METHOD OF TEST N/A

f. DISINFECTION: Type N/A Amount N/A

g. WATER ZONES (depth):

Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:

Depth		Diameter	Thickness/ Weight	Material
Top 0.0	Bottom 47.0	Ft. 2 INCH	SCH 40	PVC
Top	Bottom	Ft.		
Top	Bottom	Ft.		

8. GROUT:

Depth		Material	Method
Top 0.0	Bottom 31.0	Ft. PORTLAND BENTONITE	SLURRY
Top	Bottom	Ft.	
Top	Bottom	Ft.	

9. SCREEN:

Depth		Diameter	Slot Size	Material
Top 47.0	Bottom 57.0	Ft. 2.0 in.	.010 in.	PVC
Top	Bottom	Ft. in.	in.	
Top	Bottom	Ft. in.	in.	

10. SAND/GRAVEL PACK:

Depth		Size	Material
Top 35.0	Bottom 57.0	Ft. 20-40	FINE SILICA SAND
Top	Bottom	Ft.	
Top	Bottom	Ft.	

11. DRILLING LOG

Top	Bottom	Formation Description
0.0	10.0	RED CLAY
10.0	20.0	BROWN SANDY CLAY
20.0	57.0	GRAY ROCK

12. REMARKS:

BENTONITE SEAL FROM 31.0 TO 35.0 FEET

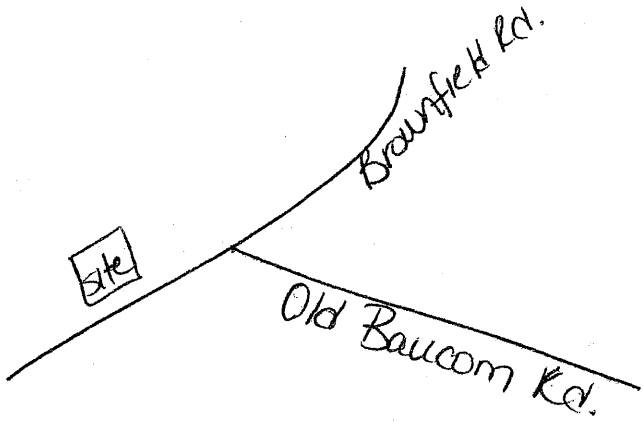
I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Johnny Burr 06/06/11
SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE

JOHNNY BURR
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161; Phone : (919) 807-6300

Form GW-1b
Rev. 2/09


Brownfield Rd.
Site
Old Baucom Rd.

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2581

1. WELL CONTRACTOR:

BRIAN THOMAS
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC
Well Contractor Company Name

176 COMMERCE BLVD
Street Address

STATESVILLE NC 28625
City or Town State Zip Code

(704) 872-7686
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# N/A

OTHER ASSOCIATED PERMIT#(if applicable)

SITE WELL ID #(if applicable) MW-7-AS

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐
Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐
Irrigation☐ Other ☐ (list use)

DATE DRILLED 05/09/11 - 05/17/11

4. WELL LOCATION:

2600 BROWNFIELD ROAD 27610
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: RALEIGH COUNTY WAKE

TOPOGRAPHIC / LAND SETTING: (check appropriate box)
☐Slope ☐Valley ☐Flat ☐Ridge ☐Other

LATITUDE ___°___'___" DMS **OR** ___ DD

LONGITUDE ___°___'___" DMS **OR** ___ DD

Latitude/longitude source: ☐GPS ☐Topographic map
(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

WCA - MATERIAL RECOVERY N/A
Facility Name Facility ID# (if applicable)

2600 BROWNFIELD ROAD
Street Address

RALEIGH NC 27610
City or Town State Zip Code

WCA - MATERIAL RECOVERY
Contact Name

2600 BROWNFIELD ROAD
Mailing Address

RALEIGH NC 27610
City or Town State Zip Code

( )
Area code Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 24.0 FEET

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑

c. **WATER LEVEL** Below Top of Casing: 12.0 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 2.5 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** N/A **METHOD OF TEST** N/A

f. **DISINFECTION: Type** N/A **Amount** N/A

g. **WATER ZONES** (depth):

Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:

Depth		Diameter	Thickness/ Weight	Material
Top 0.0	Bottom 9.0	Ft. 2 INCH	SCH 40	PVC
Top	Bottom	Ft.		
Top	Bottom	Ft.		

8. GROUT:

Depth		Material	Method
Top 0.0	Bottom 5.0	Ft. PORTLAND BENTONITE	SLURRY
Top	Bottom	Ft.	
Top	Bottom	Ft.	

9. SCREEN:

Depth		Diameter	Slot Size	Material
Top 9.0	Bottom 24.0	Ft. 2.0 in.	.010 in.	PVC
Top	Bottom	Ft. in.	in.	
Top	Bottom	Ft. in.	in.	

10. SAND/GRAVEL PACK:

Depth		Size	Material
Top 7.0	Bottom 24.0	Ft. 20-40	FINE SILICA SAND
Top	Bottom	Ft.	
Top	Bottom	Ft.	

11. DRILLING LOG

Top	Bottom	Formation Description
0.0	5.0	BLACK SAND
5.0	14.0	RED SILTY CLAY
14.0	34.0	TAN SILTY SANDY CLAY

12. REMARKS:

BENTONITE SEAL FROM 5.0 TO 7.0 FEET

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR 06/06/11 DATE

BRIAN THOMAS
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09


Brownfield Rd
site
Old Baucom Rd.

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 3098

1. WELL CONTRACTOR:

JOHNNY BURR
Well Contractor (Individual) Name

GEOLOGIC EXPLORATION, INC
Well Contractor Company Name

176 COMMERCE BLVD
Street Address

STATESVILLE NC 28625
City or Town State Zip Code

(704) 872-7686
Area code Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT# N/A

OTHER ASSOCIATED PERMIT#(if applicable)

SITE WELL ID #(if applicable) MW-7-AD

3. WELL USE (Check One Box) Monitoring ☑ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation☐ Other ☐ (list use)

DATE DRILLED 05/31/11 - 06/01/11

4. WELL LOCATION:

2600 BROWNFIELD ROAD 27610
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: RALEIGH COUNTY WAKE

TOPOGRAPHIC / LAND SETTING: (check appropriate box)

☐Slope ☐Valley ☐Flat ☐Ridge ☐Other

LATITUDE ___°___'_____" DMS **OR** _____ DD

LONGITUDE ___°___'_____" DMS **OR** _____ DD

Latitude/longitude source: ☐GPS ☐Topographic map

(location of well must be shown on a USGS topo map andattached to this form if not using GPS)

5. FACILITY (Name of the business where the well is located.)

WCA - MATERIAL RECOVERY N/A
Facility Name Facility ID# (if applicable)

2600 BROWNFIELD ROAD
Street Address

RALEIGH NC 27610
City or Town State Zip Code

WCA - MATERIAL RECOVERY
Contact Name

2600 BROWNFIELD ROAD
Mailing Address

RALEIGH NC 27610
City or Town State Zip Code

(_____) _____
Area code Phone number

6. WELL DETAILS:

a. **TOTAL DEPTH:** 48.0 FEET

b. **DOES WELL REPLACE EXISTING WELL?** YES ☐ NO ☑

c. **WATER LEVEL** Below Top of Casing: 13.0 FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** 2.5 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD (gpm):** N/A **METHOD OF TEST** N/A

f. **DISINFECTION: Type** N/A **Amount** N/A

g. **WATER ZONES** (depth):

Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom
Top	Bottom	Top	Bottom

7. CASING:	Depth		Diameter	Thickness/ Weight	Material
Top 0.0	Bottom 38.0	Ft.	2 INCH	SCH 40	PVC
Top	Bottom	Ft.			
Top	Bottom	Ft.			

8. GROUT:	Depth		Material	Method
Top 0.0	Bottom 34.0	Ft.	PORTLAND BENTONITE	SLURRY
Top	Bottom	Ft.		
Top	Bottom	Ft.		

9. SCREEN:	Depth		Diameter	Slot Size	Material
Top 38.0	Bottom 48.0	Ft.	2.0 in.	.010 in.	PVC
Top	Bottom	Ft.	in.	in.	
Top	Bottom	Ft.	in.	in.	

10. SAND/GRAVEL PACK:	Depth		Size	Material
Top 36.0	Bottom 48.0	Ft.	20-40	FINE SILICA SAND
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG

Top	Bottom	Formation Description
0.0	10.0	RED CLAY
10.0	20.0	BROWN SANDY CLAY
20.0	24.0	TAN SANDY CLAY
24.0	48.0	GRAY ROCK

12. REMARKS:

BENTONITE SEAL FROM 34.0 TO 36.0 FEET

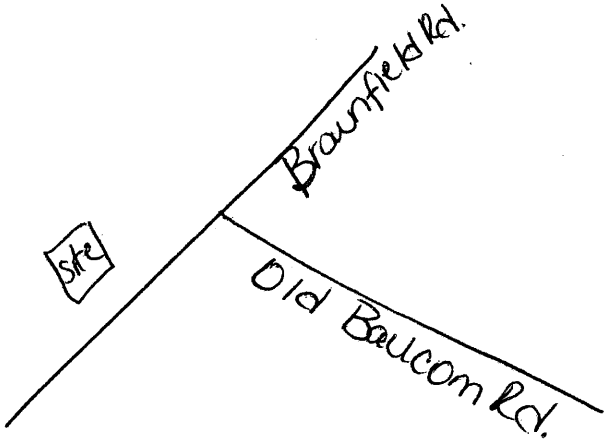
I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CERTIFIED WELL CONTRACTOR 06/06/11 DATE

JOHNNY BURR
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to: Division of Water Quality - Information Processing, 1617 Mail Service Center, Raleigh, NC 27699-161, Phone : (919) 807-6300

Form GW-1b
Rev. 2/09


Brownfield Rd.
site
Old Boucom Rd.

ATTACHMENT E

MONITORING WELL DEVELOPMENT DATA SHEETS

MONITORING WELL DEVELOPMENT DATA SHEET

Golder Associates

Project: WCA- Material Recovery
Date: 6/2/11
Casing Type: PVC
Well/Boring Number: MW-6Ad
Casing Diameter in inches (Dr): 2 in
Screened Interval: 47-57'
Riser Stickup: 0-47' riser (+ ~2.5' stickup)
Total Well Depth (Lw) in feet: ~~8.3~~ 60.55'
Depth to Water (Lf) in feet: 8.30'
Time of Measurement: 10:53

Volume of water in well, using V=0.041 $(Dr)^2$ (Lw - Lf) = 8.57 Gallons

0.164 x (60.55-8.30) = 8.57 gal

FIELD MEASUREMENT OF PHYSICAL PARAMETERS

	Time	pH (S.U.)	Conductivity (µS/cm)	Clarity/ Turbidity (NTU)	Temp (°C)	Volume (gallons)
Before Development	11:05	5.80	136.6	~~740~~ 140	18.9	1.0
After Purging 1 Well Vol	11:27	5.77	131.5	6.40	16.7	8.6
2 Well Vol	11:38	5.79	131.9	10.0	16.4	17.2
3 Well Vol	11:52	5.78	131.7	26.0	16.5	25.8
4 Well Vol						
5 Well Vol						
6 Well Vol						
7 Well Vol						
8 Well Vol						
9 Well Vol						
10 Well Vol						
11 Well Vol						
12 Well Vol						
13 Well Vol						
14 Well Vol						
15 Well Vol						

200mL/min

11:08 surged to ~500 mL/min for 1 min, then back to 200

11:16 increased to 400 mL/min ~~stayed @ 400~~

11:28 increased to 500 mL/min

11:40 dropped back to 400 mL/min

(Fill in one or more of the above columns depending on available equipment)

Method of purging (bailer or pump): Grundfos pump
If pumped, pumping rate: ~200 mL/min (see notes)
Well Purged Dry: No
Continuous Recharge: yes
Notes concerning condition of well, odors, color, etc.: relatively clear from start of purge

Developer's Signature: [signature] Date: 6/2/11
PM's Signature: [signature] Date: 6-28-11

MONITORING WELL DEVELOPMENT DATA SHEET

Golder Associates

Project: WCA - Material Recovery
Date: 6/2/11
Casing Type: PVC
Well/Boring Number: MW-7Ad
Casing Diameter in inches (Dr): 2 in
Screened Interval: 38-48'
Riser Stickup: 0-38' riser (or ~~2.5~~ 1.7' stickup)
Total Well Depth (Lw) in feet: 50.00
Depth to Water (Lf) in feet: 12.08'
Time of Measurement: 9:25

Volume of water in well, using V=0.041 $(Dr)^2$ (Lw - Lf) = 6.22 Gallons

.164 x (50-12.08) = 6.22 gal

FIELD MEASUREMENT OF PHYSICAL PARAMETERS

	Time	pH (S.U.)	Conductivity (µS/cm)	Clarity/ Turbidity (NTU)	Temp (°C)	Volume (gallons)
Before Development	9:42	5.75	107.2	>1000	18.0	0.0
After Purging 1 Well Vol	9:55	5.81	93.5	800	17.3	6.25
2 Well Vol	10:10	5.79	92.1	140	17.5	12.5
3 Well Vol	10:27	5.79	93.8	28.0	17.7	18.75
4 Well Vol	10:30	5.81	92.2	26.0	17.4	20.00
5 Well Vol						
6 Well Vol						
7 Well Vol						
8 Well Vol						
9 Well Vol						
10 Well Vol						
11 Well Vol						
12 Well Vol						
13 Well Vol						
14 Well Vol						
15 Well Vol						

- surged to 500 mL/min for 1 minute, back to 200 mL/min
9:50 - increased to 250 mL/min

(Fill in one or more of the above columns depending on available equipment)

Method of purging (bailer or pump): Grundfos pump
If pumped, pumping rate: ~200 mL/min
Well Purged Dry: no
Continuous Recharge: yes
Notes concerning condition of well, odors, color, etc.: ~~very silty initially~~ relatively clear @ start of purge then silty
med. brown color initially then clearing

Developer's Signature: [signature] Date: 6/2/11
PM's Signature: [signature] Date: 6-28-11

MONITORING WELL DEVELOPMENT DATA SHEET

Golder Associates

Project: WCA - Martinez Recovery
Date: 6/1/11
Casing Type: PVC
Well/Boring Number: MW-6A s
Casing Diameter in inches (Dr): 2 in
Screened Interval: 5-15'
Riser Stickup: 0-5' +2.5' stickup
Total Well Depth (Lw) in feet: 16.05'
Depth to Water (Lf) in feet: 8.96'
Time of Measurement: 15:10

Volume of water in well, using V=0.041 $(Dr)^2$ (Lw - Lf) = 1.16 Gallons

0.164 x ((16.05-8.96)) = 1.16 gal

FIELD MEASUREMENT OF PHYSICAL PARAMETERS

	Time	pH (S.U.)	Conductivity (µS/cm)	Clarity/ Turbidity (NTU)	Temp (°C)	Volume (gallons)	
Before Development	14:25	5.73	124.8	>1000	18.1	0.0	
After Purging 1 Well Vol	14:27	5.76	98.7	>1000	17.1	1.2	~250 mL/min
2 Well Vol	14:31	5.80	85.1	>1000	16.5	2.4	continued cleaning - reduced to 200 mL/m
3 Well Vol	14:34	5.82	88.7	>1000	16.4	3.6	
4 Well Vol	14:40	5.81	84.0	>1000	16.5	4.8	
5 Well Vol	14:44	5.82	94.9	>1000	16.5	6.0	→ increased rate to 500 mL/min to surge + get out silt - decreased back to 200 after 1 min.
6 Well Vol	14:49	5.83	94.1	>1000	16.5	7.2	
7 Well Vol	14:53	5.83	92.4	>1000	16.6	8.4	
8 Well Vol	14:58	5.83	89.7	747	16.1	9.6	
9 Well Vol	15:03	5.83	89.8	>1000	16.6	10.8	- purged dry @ 15:07, let recharge w/ surge to 500 mL/min
back to 200 mL/min — 10 Well Vol	15:11	5.82	90.6	>1000	17.3	12.0	
11 Well Vol	15:15	5.82	84.2	>1000	17.0	13.2	
12 Well Vol	15:19	5.83	82.9	945	16.3	14.4	cleaning
13 Well Vol	15:25	5.83	82.9	853	16.2	15.6	
14 Well Vol	15:30	5.83	80.8	836	16.5	16.8	
15 Well Vol	15:37	5.83	80.5	861	16.4	18.0	
16 well vol	15:44	5.81	80.7	748	16.8	19.2	→ purged dry @ 15:45

(Fill in one or more of the above columns depending on available equipment)

Method of purging (bailer or pump): Grundfos pump
If pumped, pumping rate: ~250 ~~gal~~ mL/min
Well Purged Dry: yes
Continuous Recharge: yes
Notes concerning condition of well, odors, color, etc.: gray color @ initial purge, very silty
Same color with varied hues throughout purge until near end, very lt brown

Developer's Signature: [signature] Date: 6/1/11
PM's Signature: [signature] Date: 6/2/11

* Water in turbidity meter circuitry + screen - no longer working after 16 well vol.

MONITORING WELL DEVELOPMENT DATA SHEET

Golder Associates

Project: WCA - Material Recovery
Date: 6/1/11
Casing Type: PVC
Well/Boring Number: MW-7A s
Casing Diameter in inches (Dr): 2 in
Screened Interval: 9-24'
Riser Stickup: 0-9' (9' riser) +2.3' stickup
Total Well Depth (Lw) in feet: 24.00'
Depth to Water (Lf) in feet: 13.20'
Time of Measurement: 11:40

Volume of water in well, using V=0.041 $(Dr)^2$ (Lw - Lf) = 1.77 Gallons $0.041(2)^2(24-13.2)$
$=0.164(10.8)$
$=1.77$ gal (1x vol)

FIELD MEASUREMENT OF PHYSICAL PARAMETERS

	Time	pH (S.U.)	Conductivity (µS/cm)	Clarity/ Turbidity (NTU)	Temp (°C)	Volume (gallons)	
Before Development	11:55	5.76	121.8	>1000	18.5	0.0	
After Purging 1 Well Vol	11:57	5.79	122.3	>1000	18.3	1.8	(becoming less silty)
2 Well Vol	12:02	5.82	108.9	>1000	16.8	3.6	↓
3 Well Vol	12:12	5.81	104.7	>1000	16.3	5.4	(continuing to clear)
4 Well Vol	12:18	5.80	102.4	900	16.9	7.2	
5 Well Vol	12:27	5.81	102.9	>1000	15.9	9.0	more turbid, adjusted pump ~~rate~~ speed to ~500 mL/min for ~1 min.
increased to 400 mL/min for 1 min — 6 Well Vol	12:33	5.81	102.5	>1000	15.8	10.8	
7 Well Vol	12:36	5.83	96.2	>1000	16.7	12.6	← reduced back to 250 mL/min
8 Well Vol	12:40	5.83	98.0	>1000	16.6	14.4	
9 Well Vol	12:46	5.82	97.5	>1000	16.4	16.2	
10 Well Vol	12:54	5.82	96.3	975	16.8	18.0	
11 Well Vol	13:00	5.82	97.0	525	16.3	19.8	
12 Well Vol	13:06	5.82	94.6	182	16.6	21.6	
13 Well Vol	13:11	5.83	94.5	206	16.8	23.4	
slowed to 200 mL/min — 14 Well Vol	13:18	5.82	95.0	191	16.9	25.2	
15 Well Vol	13:25	5.82	96.0	75.6	16.8	27.0	
16 Well Vol	13:29	5.82	93.0	85.9	17.0	28.8	

(Fill in one or more of the above columns depending on available equipment)

Method of purging (bailer or pump): Grundfos pump
If pumped, pumping rate: ~250 mL/min
Well Purged Dry: no
Continuous Recharge:
Notes concerning condition of well, odors, color, etc.: very turbid, silty initially increased purge rate to ~500 mL/min @ 12:25 for 1 min when became more turbid and reduced back to ~200 mL/min

Developer's Signature: Date: 6/1/11
PM's Signature: Date: 6-28-11

dark to light brown then very light brown color at end of purge

ATTACHMENT F

GROUNDWATER SAMPLING LOGS

DATE: 6-16-11

Golder Associates

GROUNDWATER SAMPLING LOG

Project Name: WCA-Material Recovery
Project No./Phase No.: 0739602411
Well ID: MW-6AS
Sampler(s): N. Rathjen, B. Freyer
Well Diameter: 2 inches
Initial Depth to Water: 9.41 feet
Depth to Bottom: 16.09 feet
Water Column Thickness: 6.68 feet
Pumping Rate: ~~200~~ 100 mL/min.
System Volume: 500 mL
Well Location: South of new phase near perimeter rd. (nested w/ MW-6AD)
Equipment: YSI 556, QED MP-15, Water Level Meter, Dedicated Bladder Pump
Hanna Turbidimeter

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O_2 (mg/L)	Temp. (°C)	ORP (millivolts)	DTW (feet)
1250	8.02	0.100	>1000	5.03	19.50	99.2	9.61
1253	6.22	0.094	>1000	2.00	18.92	186.4	9.61
1258	6.02	0.090	>1000	2.35	19.31	191.9	9.61
~~1255~~							
1303	6.19	0.072	~~>1000~~ 624	3.76	19.80	191.8	9.61
1308	6.50	0.070	260	4.15	19.56	189.2	9.61
1313	6.21	0.072	105	3.86	19.05	216.4	9.61
1318	6.35	0.071	48.9	3.84	19.34	205.8	9.61
1323	6.50	0.071	31.4	3.76	19.20	205.7	9.61
1328	6.60	0.071	30.9	3.88	19.35	199.2	9.61
1333	6.56	0.071	30.5	3.70	19.13	202.3	9.61
	sampled @ 1333						

adjusted purge rate → to 100 due to turbidity

Comments (weather conditions, color, type of sample, purge-water management, etc.):
Sunny, calm, 80's

Signature: [signature] **Date:** 6-16-11

QA/QC Sign Off: [signature] **Date:** 6-30-11

Golder Associates

DATE: 6/16/11

GROUNDWATER SAMPLING LOG

Project Name: WCA-Material Recovery
Project No./Phase No.: 0739602411
Well ID: MW-6AD
Sampler(s): N. Rathjen, B. Freyer
Well Diameter: 2 inches
Initial Depth to Water: 8.56 feet
Depth to Bottom: 60.64 feet
Water Column Thickness: 52.08 feet
Pumping Rate: 200 mL/min.
System Volume: 500 mL
Well Location: SW of new phase, along perimeter rd (next w/ MW-6As)
Equipment: YSI 556, QED MP-15, Water Level Meter, Dedicated Bladder Pump
Hanna Turbidimeter

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O_2 (mg/L)	Temp. (°C)	ORP (millivolts)	DTW (feet)
1347	7.14	0.106	218	6.19	18.36	181.3	8.65
1350	6.05	0.099	84.2	4.69	17.49	246.6	8.65
1353	5.37	0.095	18.5	3.90	17.16	277.2	8.65
1356	5.30	0.094	11.3	3.39	16.89	280.5	8.65
1359	5.29	0.094	5.46	3.28	16.85	281.0	8.65
1402	5.28	0.094	4.68	3.21	16.87	281.7	8.65
	Sampled @ 1402						

Comments (weather conditions, color, type of sample, purge-water management, etc.):
Weather- clear, calm, 80s

Signature: [signature] **Date:** 6/16/11

QA/QC Sign Off: [signature] **Date:** 6.30.11

Golder Associates

DATE: 6-16-11

GROUNDWATER SAMPLING LOG

Project Name: WCA-Material Recovery
Project No./Phase No.: 0739602411
Well ID: MW-7AS
Sampler(s): N. Rathjen, B. Freyer
Well Diameter: 2 inches
Initial Depth to Water: 13.37 feet
Depth to Bottom: 24.00 feet
Water Column Thickness: 10.63 feet
Pumping Rate: 150 mL/min.
System Volume: 500 mL
Well Location: S of new phase along perimeter rd (nested w/ MW-7AD)
Equipment: YSI 556, QED MP-15, Water Level Meter, Dedicated Bladder Pump
Hanna Turbidimeter

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O_2 (mg/L)	Temp. (°C)	ORP (millivolts)	DTW (feet)
1426	6.41	0.107	>1000	6.37	18.50	274.5	13.65
1431	5.60	0.106	>1000	5.74	19.07	290.1	13.71
1434	5.77	0.105	>1000	5.44	18.78	266.4	13.71
1438	5.70	0.105	>1000	4.86	18.45	267.1	13.71
1442	5.62	0.104	982	4.47	18.55	269.4	13.71
1446	5.98	0.104	675	4.27	19.06	243.2	13.71
1450	6.27	0.104	502	4.10	18.70	225.4	13.78
1454	6.04	0.102	421	3.92	18.58	237.2	13.78
1458	6.05	0.101	325	3.80	18.55	235.8	13.78
1502	6.07	0.100	292	3.54	18.65	234.4	13.74
1506	6.36	0.100	241	3.42	18.94	213.3	13.74
1510	6.35	0.099	186	3.28	18.64	214.4	13.74
1514	6.24	0.099	175	4.43	18.48	225.0	13.74
1518	6.21	0.098	141	3.15	18.26	226.5	13.74
1522	6.16	0.098	131	3.05	18.18	228.6	13.74
1526	6.22	0.097	131	3.01	18.15	222.9	13.74
	sampled @ 1526						

Comments (weather conditions, color, type of sample, purge-water management, etc.):
mostly sunny, calm, 80's

Signature: [signature] **Date:** 6-16-11

QA/QC Sign Off: [signature] **Date:** 6-30-11

Golder Associates

DATE: 6-16-11

GROUNDWATER SAMPLING LOG

Project Name: WCA-Material Recovery
Project No./Phase No.: 0739602411
Well ID: MW-7AD
Sampler(s): N. Rathjen, B. Freyer
Well Diameter: 2 inches
Initial Depth to Water: 12.44 feet
Depth to Bottom: 48.00 ~~60.00~~ 90 feet
Water Column Thickness: ~~47.56~~ 90 feet
Pumping Rate: 200 mL/min.
System Volume: 500 35.56 mL
Well Location: S of new phase along perimeter rd (nested w/ MW-7As)
Equipment: YSI 556, QED MP-15, Water Level Meter, Dedicated Bladder Pump
Hanna Turbidimeter

Time	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	Dis O_2 (mg/L)	Temp. (°C)	ORP (millivolts)	DTW (feet)
1543	7.26	0.088	821	6.94	19.43	216.4	12.76
1546	6.47	0.087	681	4.65	18.64	249.9	12.86
1549	5.80	0.086	394	3.96	18.47	272.9	12.81
1552	5.60	0.086	268	3.81	18.50	269.0	12.82
1555	5.68	0.086	235	3.57	18.48	260.0	12.82
1558	5.79	0.085	149	3.52	18.48	250.1	12.82
1601	5.87	0.085	121	3.50	18.39	241.1	12.82
1604	5.91	0.085	94.2	3.48	18.41	235.7	12.82
	Sampled @ 1604						

Comments (weather conditions, color, type of sample, purge-water management, etc.):
Weather - clear, calm, 80s

Signature: Matt Rath **Date:** 6-16-11

QA/QC Sign Off: Paul Reeb **Date:** 6-30-11

ATTACHMENT G

LABORATORY ANALYTICAL REPORT, CHAIN-OF-CUSTODY FORM, AND LABORATORY DATA REVIEW

Environmental Conservation Laboratories, Inc.
102-A Woodwinds Industrial Court
Cary NC, 27511
Phone: 919.467.3090 FAX: 919.467.3515
www.encolabs.com

Thursday, June 30, 2011

Golder Associates, Inc. (GO007)

Attn: Dusty Reedy

5B Oak Branch Drive

Greensboro, NC 27407

RE: Laboratory Results for
Project Number: 073-9602411.600, Project Name/Desc: WCA- Material Recovery, LLC
ENCO Workorder: C106912

Dear Dusty Reedy,

Enclosed is a copy of your laboratory report for test samples received by our laboratory on Thursday, June 16, 2011.

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,

Stephanie Franz
Project Manager

Enclosure(s)

The total number of pages in this report, including this page is 41.

PROJECT NARRATIVE

Date: 30 June 2011
Client: Golder Associates, Inc. (GO007)
Project: WCA- Material Recovery, LLC
Lab ID: C106912

Overview

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

The spike recoveries of Toluene and Trichloroethene were outside of control limits for the 8260B MS sample. The QC batch was approved based on acceptable LCS recovery of these analytes.

The spike recovery of Alkalinity was outside of control limits for the MS and MSD samples. The precision between duplicate samples for the TDS analysis was outside of control limits. The QC batches were approved based on acceptable LCS recovery of these analytes.

Quality Control Remarks

The 8260B surrogate spike recovery of Dibromofluoromethane was outside of control limits for the Method Blank, MW-7As, MW-7Ad, and the Trip Blank. These samples were approved based on acceptable recovery of the other surrogate standards.

Other Comments

All samples received under this work order arrived in acceptable conditions. The samples were not checked for residual chlorine, as it is not required.

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

www.encolabs.com

SAMPLE SUMMARY/LABORATORY CHRONICLE

Client ID: 9231-MW6As (MS/MSD) Lab ID: C106912-01 Sampled: 06/16/11 13:33 Received: 06/16/11 18:15

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	07/14/11	06/29/11 11:59	6/30/2011 05:23
EPA 310.2	06/30/11	06/21/11 08:37	6/21/2011 09:30
EPA 6010C	12/13/11	06/17/11 11:06	6/21/2011 10:41
EPA 6020A	12/13/11	06/17/11 11:15	6/20/2011 11:09
EPA 7470A	07/14/11	06/17/11 08:48	6/17/2011 16:45
EPA 8260B	06/30/11	06/22/11 08:22	6/22/2011 13:16
SM 2540C	06/23/11	06/17/11 10:58	6/17/2011 10:58

Client ID: 9231-MW6Ad Lab ID: C106912-02 Sampled: 06/16/11 14:02 Received: 06/16/11 18:15

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	07/14/11	06/29/11 11:59	6/30/2011 05:39
EPA 310.2	06/30/11	06/21/11 08:37	6/21/2011 09:34
EPA 6010C	12/13/11	06/17/11 11:06	6/21/2011 10:59
EPA 6020A	12/13/11	06/17/11 11:15	6/20/2011 11:35
EPA 7470A	07/14/11	06/17/11 08:48	6/17/2011 17:00
EPA 8260B	06/30/11	06/22/11 08:22	6/22/2011 13:46
SM 2540C	06/23/11	06/17/11 10:58	6/17/2011 10:58

Client ID: 9231-MW7As Lab ID: C106912-03 Sampled: 06/16/11 15:26 Received: 06/16/11 18:15

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	07/14/11	06/29/11 11:59	6/30/2011 05:56
EPA 310.2	06/30/11	06/21/11 08:37	6/21/2011 09:35
EPA 6010C	12/13/11	06/17/11 11:06	6/21/2011 11:01
EPA 6020A	12/13/11	06/17/11 11:15	6/20/2011 11:39
EPA 7470A	07/14/11	06/17/11 08:48	6/17/2011 17:02
EPA 8260B	06/30/11	06/22/11 08:22	6/22/2011 14:16
SM 2540C	06/23/11	06/17/11 10:58	6/17/2011 10:58

Client ID: 9231-MW7Ad Lab ID: C106912-04 Sampled: 06/16/11 16:04 Received: 06/16/11 18:15

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 300.0	07/14/11	06/29/11 11:59	6/30/2011 06:12
EPA 310.2	06/30/11	06/21/11 08:37	6/21/2011 09:36
EPA 6010C	12/13/11	06/17/11 11:06	6/21/2011 11:03
EPA 6020A	12/13/11	06/17/11 11:15	6/20/2011 11:43
EPA 7470A	07/14/11	06/17/11 08:48	6/17/2011 17:05
EPA 8260B	06/30/11	06/22/11 08:22	6/22/2011 14:45
SM 2540C	06/23/11	06/17/11 10:58	6/17/2011 10:58

Client ID: Trip Blank Lab ID: C106912-05 Sampled: 06/16/11 13:33 Received: 06/16/11 18:15

Parameter	Hold Date/Time(s)	Prep Date/Time(s)	Analysis Date/Time(s)
EPA 8260B	06/30/11	06/22/11 08:22	6/22/2011 15:15

www.encolabs.com

NORTH CAROLINA SWS SAMPLE DETECTION SUMMARY

Client ID: 9231-MW6As (MS/MSD) **Lab ID: C106912-01**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Barium - Total	32.5	J	1	1.00	10.0	100	ug/L	EPA 6010C	
Beryllium - Total	0.177	J	1	0.100	1.00	1	ug/L	EPA 6010C	
Chloride	3600	J	1	290	5000	NE	ug/L	EPA 300.0	
Chromium - Total	1.33	J	1	1.00	10.0	10	ug/L	EPA 6010C	
Cobalt - Total	1.65	J	1	1.10	10.0	10	ug/L	EPA 6010C	
Iron - Total	970		1	22.0	50.0	300	ug/L	EPA 6010C	
Lead - Total	1.97	J	1	1.90	10.0	10	ug/L	EPA 6010C	
Manganese - Total	1230		1	1.10	10.0	50	ug/L	EPA 6010C	
Nickel - Total	2.00	J	1	1.80	10.0	50	ug/L	EPA 6010C	
Sulfate	6300	J	1	70	5000	250000	ug/L	EPA 300.0	
Total Alkalinity as CaCO3	14000	J	1	12000	15000	NE	ug/L	EPA 310.2	
Total Dissolved Solids	110000		1	10000	10000	NE	ug/L	SM 2540C	
Zinc - Total	11.0		1	3.80	10.0	10	ug/L	EPA 6010C	

Client ID: 9231-MW6Ad **Lab ID: C106912-02**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Antimony - Total	4.88	J	1	0.220	2.00	6	ug/L	EPA 6020A	
Barium - Total	14.9	J	1	1.00	10.0	100	ug/L	EPA 6010C	
Beryllium - Total	0.128	J	1	0.100	1.00	1	ug/L	EPA 6010C	
Chloride	5000		1	290	5000	NE	ug/L	EPA 300.0	
Copper - Total	1.82	J	1	1.60	10.0	10	ug/L	EPA 6010C	
Iron - Total	161	J	1	22.0	50.0	300	ug/L	EPA 6010C	
Lead - Total	4.04	J	1	1.90	10.0	10	ug/L	EPA 6010C	
Manganese - Total	15.1	J	1	1.10	10.0	50	ug/L	EPA 6010C	
Sulfate	1600	J	1	70	5000	250000	ug/L	EPA 300.0	
Total Alkalinity as CaCO3	27000		1	12000	15000	NE	ug/L	EPA 310.2	
Total Dissolved Solids	76000		1	10000	10000	NE	ug/L	SM 2540C	

Client ID: 9231-MW7As **Lab ID: C106912-03**

Analyte	Results	Flag	DF	MDL	MRL	NC SWSL	Units	Method	Notes
Antimony - Total	0.276	J	1	0.220	2.00	6	ug/L	EPA 6020A	
Arsenic - Total	3.92	J	1	2.80	10.0	10	ug/L	EPA 6010C	
Barium - Total	51.7	J	1	1.00	10.0	100	ug/L	EPA 6010C	
Beryllium - Total	1.05		1	0.100	1.00	1	ug/L	EPA 6010C	
Chloride	4600	J	1	290	5000	NE	ug/L	EPA 300.0	
Chromium - Total	1.80	J	1	1.00	10.0	10	ug/L	EPA 6010C	
Cobalt - Total	2.57	J	1	1.10	10.0	10	ug/L	EPA 6010C	
Copper - Total	6.54	J	1	1.60	10.0	10	ug/L	EPA 6010C	
Iron - Total	4360		1	22.0	50.0	300	ug/L	EPA 6010C	
Lead - Total	6.51	J	1	1.90	10.0	10	ug/L	EPA 6010C	
Manganese - Total	219		1	1.10	10.0	50	ug/L	EPA 6010C	
Nickel - Total	2.05	J	1	1.80	10.0	50	ug/L	EPA 6010C	
Sulfate	4700	J	1	70	5000	250000	ug/L	EPA 300.0	
Total Alkalinity as CaCO3	25000		1	12000	15000	NE	ug/L	EPA 310.2	
Total Dissolved Solids	86000		1	10000	10000	NE	ug/L	SM 2540C	
Vanadium - Total	5.90	J	1	1.40	10.0	25	ug/L	EPA 6010C	
Zinc - Total	27.4		1	3.80	10.0	10	ug/L	EPA 6010C	

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Client ID: 9231-MW7Ad				Lab ID: C106912-04					
Analyte	**Results**	**Flag**	**DF**	**MDL**	**MRL**	**NC SWSL**	**Units**	**Method**	**Notes**
Barium - Total	38.6	J	1	1.00	10.0	100	ug/L	EPA 6010C	
Beryllium - Total	0.834	J	1	0.100	1.00	1	ug/L	EPA 6010C	
Chloride	4200	J	1	290	5000	NE	ug/L	EPA 300.0	
Chromium - Total	1.37	J	1	1.00	10.0	10	ug/L	EPA 6010C	
Cobalt - Total	1.47	J	1	1.10	10.0	10	ug/L	EPA 6010C	
Copper - Total	4.98	J	1	1.60	10.0	10	ug/L	EPA 6010C	
Iron - Total	2860		1	22.0	50.0	300	ug/L	EPA 6010C	
Lead - Total	5.03	J	1	1.90	10.0	10	ug/L	EPA 6010C	
Manganese - Total	88.4		1	1.10	10.0	50	ug/L	EPA 6010C	
Nickel - Total	2.58	J	1	1.80	10.0	50	ug/L	EPA 6010C	
Sulfate	3900	J	1	70	5000	250000	ug/L	EPA 300.0	
Total Alkalinity as CaCO3	15000		1	12000	15000	NE	ug/L	EPA 310.2	
Total Dissolved Solids	94000		1	10000	10000	NE	ug/L	SM 2540C	
Vanadium - Total	5.58	J	1	1.40	10.0	25	ug/L	EPA 6010C	
Zinc - Total	8.94	J	1	3.80	10.0	10	ug/L	EPA 6010C	

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ANALYTICAL RESULTS

Description: 9231-MW6As (MS/MSD) **Lab Sample ID:** C106912-01 **Received:** 06/16/11 18:15

Matrix: Ground Water **Sampled:** 06/16/11 13:33 **Work Order:** C106912

Project: WCA- Material Recovery, LLC **Sampled By:** Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.90	U	ug/L	1	0.90	1.0	5	EPA 8260B	06/22/11 13:16	JKG	
1,1,1-Trichloroethane [71-55-6] ^	0.65	U	ug/L	1	0.65	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.75	U	ug/L	1	0.75	1.0	3	EPA 8260B	06/22/11 13:16	JKG	
1,1,2-Trichloroethane [79-00-5] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
1,1-Dichloroethane [75-34-3] ^	0.080	U	ug/L	1	0.080	1.0	5	EPA 8260B	06/22/11 13:16	JKG	
1,1-Dichloroethene [75-35-4] ^	0.60	U	ug/L	1	0.60	1.0	5	EPA 8260B	06/22/11 13:16	JKG	
1,2,3-Trichloropropane [96-18-4] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	06/22/11 13:16	JKG	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
1,2-Dichlorobenzene [95-50-1] ^	0.11	U	ug/L	1	0.11	1.0	5	EPA 8260B	06/22/11 13:16	JKG	
1,2-Dichloroethane [107-06-2] ^	0.47	U	ug/L	1	0.47	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
1,2-Dichloropropane [78-87-5] ^	0.59	U	ug/L	1	0.59	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
1,4-Dichlorobenzene [106-46-7] ^	0.79	U	ug/L	1	0.79	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	06/22/11 13:16	JKG	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	06/22/11 13:16	JKG	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	06/22/11 13:16	JKG	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	06/22/11 13:16	JKG	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	06/22/11 13:16	JKG	
Benzene [71-43-2] ^	0.68	U	ug/L	1	0.68	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
Bromochloromethane [74-97-5] ^	0.87	U	ug/L	1	0.87	1.0	3	EPA 8260B	06/22/11 13:16	JKG	
Bromodichloromethane [75-27-4] ^	0.75	U	ug/L	1	0.75	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
Bromoform [75-25-2] ^	0.68	U	ug/L	1	0.68	1.0	3	EPA 8260B	06/22/11 13:16	JKG	
Bromomethane [74-83-9] ^	0.58	U	ug/L	1	0.58	1.0	10	EPA 8260B	06/22/11 13:16	JKG	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	06/22/11 13:16	JKG	
Carbon tetrachloride [56-23-5] ^	0.69	U	ug/L	1	0.69	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
Chlorobenzene [108-90-7] ^	0.74	U	ug/L	1	0.74	1.0	3	EPA 8260B	06/22/11 13:16	JKG	
Chloroethane [75-00-3] ^	0.75	U	ug/L	1	0.75	1.0	10	EPA 8260B	06/22/11 13:16	JKG	
Chloroform [67-66-3] ^	0.70	U	ug/L	1	0.70	1.0	5	EPA 8260B	06/22/11 13:16	JKG	
Chloromethane [74-87-3] ^	0.55	U	ug/L	1	0.55	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
cis-1,2-Dichloroethene [156-59-2] ^	0.72	U	ug/L	1	0.72	1.0	5	EPA 8260B	06/22/11 13:16	JKG	
cis-1,3-Dichloropropene [10061-01-5] ^	0.075	U	ug/L	1	0.075	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
Dibromochloromethane [124-48-1] ^	0.63	U	ug/L	1	0.63	1.0	3	EPA 8260B	06/22/11 13:16	JKG	
Dibromomethane [74-95-3] ^	0.90	U	ug/L	1	0.90	1.0	10	EPA 8260B	06/22/11 13:16	JKG	
Ethylbenzene [100-41-4] ^	0.62	U	ug/L	1	0.62	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	06/22/11 13:16	JKG	
Methylene chloride [75-09-2] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
Styrene [100-42-5] ^	0.053	U	ug/L	1	0.053	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
Tetrachloroethene [127-18-4] ^	0.73	U	ug/L	1	0.73	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0	NE	EPA 8260B	06/22/11 13:16	JKG	
Toluene [108-88-3] ^	0.85	U	ug/L	1	0.85	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
trans-1,2-Dichloroethene [156-60-5] ^	0.12	U	ug/L	1	0.12	1.0	5	EPA 8260B	06/22/11 13:16	JKG	
trans-1,3-Dichloropropene [10061-02-6] ^	0.50	U	ug/L	1	0.50	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	06/22/11 13:16	JKG	

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Description: 9231-MW6As (MS/MSD) **Lab Sample ID:** C106912-01 **Received:** 06/16/11 18:15

Matrix: Ground Water **Sampled:** 06/16/11 13:33 **Work Order:** C106912

Project: WCA- Material Recovery, LLC **Sampled By:** Brent Freyer

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Trichloroethene [79-01-6] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
Trichlorofluoromethane [75-69-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	06/22/11 13:16	JKG	
Vinyl chloride [75-01-4] ^	0.60	U	ug/L	1	0.60	1.0	1	EPA 8260B	06/22/11 13:16	JKG	
Xylenes (Total) [1330-20-7] ^	2.1	U	ug/L	1	2.1	3.0	5	EPA 8260B	06/22/11 13:16	JKG	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*49*	*1*	*50.0*	*97 %*	*51-122*	*1F22004*	*EPA 8260B*	*06/22/11 13:16*	*JKG*	
Dibromofluoromethane	*58*	*1*	*50.0*	*116 %*	*68-117*	*1F22004*	*EPA 8260B*	*06/22/11 13:16*	*JKG*	
Toluene-d8	*50*	*1*	*50.0*	*99 %*	*69-110*	*1F22004*	*EPA 8260B*	*06/22/11 13:16*	*JKG*	

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Description:	9231-MW6As (MS/MSD)	**Lab Sample ID:**	C106912-01	**Received:**	06/16/11 18:15
Matrix:	Ground Water	**Sampled:**	06/16/11 13:33	**Work Order:**	C106912
Project:	WCA- Material Recovery, LLC	**Sampled By:**	Brent Freyer		

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	06/17/11 16:45	JDH	

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Description: 9231-MW6As (MS/MSD) **Lab Sample ID:** C106912-01 **Received:** 06/16/11 18:15

Matrix: Ground Water **Sampled:** 06/16/11 13:33 **Work Order:** C106912

Project: WCA- Material Recovery, LLC **Sampled By:** Brent Freyer

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

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	06/20/11 11:09	VLO	
Arsenic [7440-38-2] ^	2.80	U	ug/L	1	2.80	10.0	10	EPA 6010C	06/21/11 10:41	JDH	
Barium [7440-39-3] ^	**32.5**	J	ug/L	1	1.00	10.0	100	EPA 6010C	06/21/11 10:41	JDH	
Beryllium [7440-41-7] ^	**0.177**	J	ug/L	1	0.100	1.00	1	EPA 6010C	06/21/11 10:41	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	06/21/11 10:41	JDH	
Chromium [7440-47-3] ^	**1.33**	J	ug/L	1	1.00	10.0	10	EPA 6010C	06/21/11 10:41	JDH	
Cobalt [7440-48-4] ^	**1.65**	J	ug/L	1	1.10	10.0	10	EPA 6010C	06/21/11 10:41	JDH	
Copper [7440-50-8] ^	1.60	U	ug/L	1	1.60	10.0	10	EPA 6010C	06/21/11 10:41	JDH	
Iron [7439-89-6] ^	**970**		ug/L	1	22.0	50.0	300	EPA 6010C	06/21/11 10:41	JDH	
Lead [7439-92-1] ^	**1.97**	J	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:41	JDH	
Manganese [7439-96-5] ^	**1230**		ug/L	1	1.10	10.0	50	EPA 6010C	06/21/11 10:41	JDH	
Nickel [7440-02-0] ^	**2.00**	J	ug/L	1	1.80	10.0	50	EPA 6010C	06/21/11 10:41	JDH	
Selenium [7782-49-2] ^	0.830	U	ug/L	1	0.830	1.00	10	EPA 6020A	06/20/11 11:09	VLO	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:41	JDH	
Thallium [7440-28-0] ^	0.110	U	ug/L	1	0.110	1.00	5.5	EPA 6020A	06/20/11 11:09	VLO	
Vanadium [7440-62-2] ^	1.40	U	ug/L	1	1.40	10.0	25	EPA 6010C	06/21/11 10:41	JDH	
Zinc [7440-66-6] ^	**11.0**		ug/L	1	3.80	10.0	10	EPA 6010C	06/21/11 10:41	JDH	

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Description: 9231-MW6As (MS/MSD) **Lab Sample ID:** C106912-01 **Received:** 06/16/11 18:15

Matrix: Ground Water **Sampled:** 06/16/11 13:33 **Work Order:** C106912

Project: WCA- Material Recovery, LLC **Sampled By:** Brent Freyer

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Total Alkalinity as CaCO3 [471-34-1] ^	**14000**	J	ug/L	1	12000	15000	NE	EPA 310.2	06/21/11 09:30	CCB	
Total Dissolved Solids [ECL-0156] ^	**110000**		ug/L	1	10000	10000	NE	SM 2540C	06/17/11 10:58	KER	

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Description: 9231-MW6As (MS/MSD) **Lab Sample ID:** C106912-01 **Received:** 06/16/11 18:15

Matrix: Ground Water **Sampled:** 06/16/11 13:33 **Work Order:** C106912

Project: WCA- Material Recovery, LLC **Sampled By:** Brent Freyer

Classical Chemistry Parameters

^ - ENCO Orlando certified analyte [NC 424]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Chloride [16887-00-6] ^	**3600**	J	ug/L	1	290	5000	NE	EPA 300.0	06/30/11 05:23	RSA	
Sulfate [14808-79-8] ^	**6300**	J	ug/L	1	70	5000	250000	EPA 300.0	06/30/11 05:23	RSA	

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Description: 9231-MW6Ad
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-02
Sampled: 06/16/11 14:02
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.90	U	ug/L	1	0.90	1.0	5	EPA 8260B	06/22/11 13:46	JKG	
1,1,1-Trichloroethane [71-55-6] ^	0.65	U	ug/L	1	0.65	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.75	U	ug/L	1	0.75	1.0	3	EPA 8260B	06/22/11 13:46	JKG	
1,1,2-Trichloroethane [79-00-5] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
1,1-Dichloroethane [75-34-3] ^	0.080	U	ug/L	1	0.080	1.0	5	EPA 8260B	06/22/11 13:46	JKG	
1,1-Dichloroethene [75-35-4] ^	0.60	U	ug/L	1	0.60	1.0	5	EPA 8260B	06/22/11 13:46	JKG	
1,2,3-Trichloropropane [96-18-4] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	06/22/11 13:46	JKG	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
1,2-Dichlorobenzene [95-50-1] ^	0.11	U	ug/L	1	0.11	1.0	5	EPA 8260B	06/22/11 13:46	JKG	
1,2-Dichloroethane [107-06-2] ^	0.47	U	ug/L	1	0.47	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
1,2-Dichloropropane [78-87-5] ^	0.59	U	ug/L	1	0.59	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
1,4-Dichlorobenzene [106-46-7] ^	0.79	U	ug/L	1	0.79	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	06/22/11 13:46	JKG	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	06/22/11 13:46	JKG	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	06/22/11 13:46	JKG	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	06/22/11 13:46	JKG	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	06/22/11 13:46	JKG	
Benzene [71-43-2] ^	0.68	U	ug/L	1	0.68	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
Bromochloromethane [74-97-5] ^	0.87	U	ug/L	1	0.87	1.0	3	EPA 8260B	06/22/11 13:46	JKG	
Bromodichloromethane [75-27-4] ^	0.75	U	ug/L	1	0.75	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
Bromoform [75-25-2] ^	0.68	U	ug/L	1	0.68	1.0	3	EPA 8260B	06/22/11 13:46	JKG	
Bromomethane [74-83-9] ^	0.58	U	ug/L	1	0.58	1.0	10	EPA 8260B	06/22/11 13:46	JKG	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	06/22/11 13:46	JKG	
Carbon tetrachloride [56-23-5] ^	0.69	U	ug/L	1	0.69	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
Chlorobenzene [108-90-7] ^	0.74	U	ug/L	1	0.74	1.0	3	EPA 8260B	06/22/11 13:46	JKG	
Chloroethane [75-00-3] ^	0.75	U	ug/L	1	0.75	1.0	10	EPA 8260B	06/22/11 13:46	JKG	
Chloroform [67-66-3] ^	0.70	U	ug/L	1	0.70	1.0	5	EPA 8260B	06/22/11 13:46	JKG	
Chloromethane [74-87-3] ^	0.55	U	ug/L	1	0.55	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
cis-1,2-Dichloroethene [156-59-2] ^	0.72	U	ug/L	1	0.72	1.0	5	EPA 8260B	06/22/11 13:46	JKG	
cis-1,3-Dichloropropene [10061-01-5] ^	0.075	U	ug/L	1	0.075	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
Dibromochloromethane [124-48-1] ^	0.63	U	ug/L	1	0.63	1.0	3	EPA 8260B	06/22/11 13:46	JKG	
Dibromomethane [74-95-3] ^	0.90	U	ug/L	1	0.90	1.0	10	EPA 8260B	06/22/11 13:46	JKG	
Ethylbenzene [100-41-4] ^	0.62	U	ug/L	1	0.62	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	06/22/11 13:46	JKG	
Methylene chloride [75-09-2] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
Styrene [100-42-5] ^	0.053	U	ug/L	1	0.053	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
Tetrachloroethene [127-18-4] ^	0.73	U	ug/L	1	0.73	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0	NE	EPA 8260B	06/22/11 13:46	JKG	
Toluene [108-88-3] ^	0.85	U	ug/L	1	0.85	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
trans-1,2-Dichloroethene [156-60-5] ^	0.12	U	ug/L	1	0.12	1.0	5	EPA 8260B	06/22/11 13:46	JKG	
trans-1,3-Dichloropropene [10061-02-6] ^	0.50	U	ug/L	1	0.50	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	06/22/11 13:46	JKG	
Trichloroethene [79-01-6] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
Trichlorofluoromethane [75-69-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	06/22/11 13:46	JKG	

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Description: 9231-MW6Ad
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-02
Sampled: 06/16/11 14:02
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.60	U	ug/L	1	0.60	1.0	1	EPA 8260B	06/22/11 13:46	JKG	
Xylenes (Total) [1330-20-7] ^	2.1	U	ug/L	1	2.1	3.0	5	EPA 8260B	06/22/11 13:46	JKG	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*48*	*1*	*50.0*	*96 %*	*51-122*	*1F22004*	*EPA 8260B*	*06/22/11 13:46*	*JKG*	
Dibromofluoromethane	*59*	*1*	*50.0*	*117 %*	*68-117*	*1F22004*	*EPA 8260B*	*06/22/11 13:46*	*JKG*	
Toluene-d8	*51*	*1*	*50.0*	*102 %*	*69-110*	*1F22004*	*EPA 8260B*	*06/22/11 13:46*	*JKG*	

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Description: 9231-MW6Ad
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-02
Sampled: 06/16/11 14:02
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	06/17/11 17:00	JDH	

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Description: 9231-MW6Ad
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-02
Sampled: 06/16/11 14:02
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

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

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	**4.88**	J	ug/L	1	0.220	2.00	6	EPA 6020A	06/20/11 11:35	VLO	
Arsenic [7440-38-2] ^	2.80	U	ug/L	1	2.80	10.0	10	EPA 6010C	06/21/11 10:59	JDH	
Barium [7440-39-3] ^	**14.9**	J	ug/L	1	1.00	10.0	100	EPA 6010C	06/21/11 10:59	JDH	
Beryllium [7440-41-7] ^	**0.128**	J	ug/L	1	0.100	1.00	1	EPA 6010C	06/21/11 10:59	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	06/21/11 10:59	JDH	
Chromium [7440-47-3] ^	1.00	U	ug/L	1	1.00	10.0	10	EPA 6010C	06/21/11 10:59	JDH	
Cobalt [7440-48-4] ^	1.10	U	ug/L	1	1.10	10.0	10	EPA 6010C	06/21/11 10:59	JDH	
Copper [7440-50-8] ^	**1.82**	J	ug/L	1	1.60	10.0	10	EPA 6010C	06/21/11 10:59	JDH	
Iron [7439-89-6] ^	**161**	J	ug/L	1	22.0	50.0	300	EPA 6010C	06/21/11 10:59	JDH	
Lead [7439-92-1] ^	**4.04**	J	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:59	JDH	
Manganese [7439-96-5] ^	**15.1**	J	ug/L	1	1.10	10.0	50	EPA 6010C	06/21/11 10:59	JDH	
Nickel [7440-02-0] ^	1.80	U	ug/L	1	1.80	10.0	50	EPA 6010C	06/21/11 10:59	JDH	
Selenium [7782-49-2] ^	0.830	U	ug/L	1	0.830	1.00	10	EPA 6020A	06/20/11 11:35	VLO	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 10:59	JDH	
Thallium [7440-28-0] ^	0.110	U	ug/L	1	0.110	1.00	5.5	EPA 6020A	06/20/11 11:35	VLO	
Vanadium [7440-62-2] ^	1.40	U	ug/L	1	1.40	10.0	25	EPA 6010C	06/21/11 10:59	JDH	
Zinc [7440-66-6] ^	3.80	U	ug/L	1	3.80	10.0	10	EPA 6010C	06/21/11 10:59	JDH	

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Description: 9231-MW6Ad
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-02
Sampled: 06/16/11 14:02
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Total Alkalinity as CaCO3 [471-34-1] ^	**27000**		ug/L	1	12000	15000	NE	EPA 310.2	06/21/11 09:34	CCB	
Total Dissolved Solids [ECL-0156] ^	**76000**		ug/L	1	10000	10000	NE	SM 2540C	06/17/11 10:58	KER	

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Description: 9231-MW6Ad
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-02
Sampled: 06/16/11 14:02
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

Classical Chemistry Parameters

^ - ENCO Orlando certified analyte [NC 424]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Chloride [16887-00-6] ^	**5000**		ug/L	1	290	5000	NE	EPA 300.0	06/30/11 05:39	RSA	
Sulfate [14808-79-8] ^	**1600**	J	ug/L	1	70	5000	250000	EPA 300.0	06/30/11 05:39	RSA	

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Description: 9231-MW7As
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-03
Sampled: 06/16/11 15:26
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.90	U	ug/L	1	0.90	1.0	5	EPA 8260B	06/22/11 14:16	JKG	
1,1,1-Trichloroethane [71-55-6] ^	0.65	U	ug/L	1	0.65	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.75	U	ug/L	1	0.75	1.0	3	EPA 8260B	06/22/11 14:16	JKG	
1,1,2-Trichloroethane [79-00-5] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
1,1-Dichloroethane [75-34-3] ^	0.080	U	ug/L	1	0.080	1.0	5	EPA 8260B	06/22/11 14:16	JKG	
1,1-Dichloroethene [75-35-4] ^	0.60	U	ug/L	1	0.60	1.0	5	EPA 8260B	06/22/11 14:16	JKG	
1,2,3-Trichloropropane [96-18-4] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	06/22/11 14:16	JKG	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
1,2-Dichlorobenzene [95-50-1] ^	0.11	U	ug/L	1	0.11	1.0	5	EPA 8260B	06/22/11 14:16	JKG	
1,2-Dichloroethane [107-06-2] ^	0.47	U	ug/L	1	0.47	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
1,2-Dichloropropane [78-87-5] ^	0.59	U	ug/L	1	0.59	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
1,4-Dichlorobenzene [106-46-7] ^	0.79	U	ug/L	1	0.79	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	06/22/11 14:16	JKG	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	06/22/11 14:16	JKG	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	06/22/11 14:16	JKG	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	06/22/11 14:16	JKG	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	06/22/11 14:16	JKG	
Benzene [71-43-2] ^	0.68	U	ug/L	1	0.68	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
Bromochloromethane [74-97-5] ^	0.87	U	ug/L	1	0.87	1.0	3	EPA 8260B	06/22/11 14:16	JKG	
Bromodichloromethane [75-27-4] ^	0.75	U	ug/L	1	0.75	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
Bromoform [75-25-2] ^	0.68	U	ug/L	1	0.68	1.0	3	EPA 8260B	06/22/11 14:16	JKG	
Bromomethane [74-83-9] ^	0.58	U	ug/L	1	0.58	1.0	10	EPA 8260B	06/22/11 14:16	JKG	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	06/22/11 14:16	JKG	
Carbon tetrachloride [56-23-5] ^	0.69	U	ug/L	1	0.69	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
Chlorobenzene [108-90-7] ^	0.74	U	ug/L	1	0.74	1.0	3	EPA 8260B	06/22/11 14:16	JKG	
Chloroethane [75-00-3] ^	0.75	U	ug/L	1	0.75	1.0	10	EPA 8260B	06/22/11 14:16	JKG	
Chloroform [67-66-3] ^	0.70	U	ug/L	1	0.70	1.0	5	EPA 8260B	06/22/11 14:16	JKG	
Chloromethane [74-87-3] ^	0.55	U	ug/L	1	0.55	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
cis-1,2-Dichloroethene [156-59-2] ^	0.72	U	ug/L	1	0.72	1.0	5	EPA 8260B	06/22/11 14:16	JKG	
cis-1,3-Dichloropropene [10061-01-5] ^	0.075	U	ug/L	1	0.075	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
Dibromochloromethane [124-48-1] ^	0.63	U	ug/L	1	0.63	1.0	3	EPA 8260B	06/22/11 14:16	JKG	
Dibromomethane [74-95-3] ^	0.90	U	ug/L	1	0.90	1.0	10	EPA 8260B	06/22/11 14:16	JKG	
Ethylbenzene [100-41-4] ^	0.62	U	ug/L	1	0.62	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	06/22/11 14:16	JKG	
Methylene chloride [75-09-2] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
Styrene [100-42-5] ^	0.053	U	ug/L	1	0.053	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
Tetrachloroethene [127-18-4] ^	0.73	U	ug/L	1	0.73	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0	NE	EPA 8260B	06/22/11 14:16	JKG	
Toluene [108-88-3] ^	0.85	U	ug/L	1	0.85	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
trans-1,2-Dichloroethene [156-60-5] ^	0.12	U	ug/L	1	0.12	1.0	5	EPA 8260B	06/22/11 14:16	JKG	
trans-1,3-Dichloropropene [10061-02-6] ^	0.50	U	ug/L	1	0.50	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	06/22/11 14:16	JKG	
Trichloroethene [79-01-6] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
Trichlorofluoromethane [75-69-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	06/22/11 14:16	JKG	

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Description: 9231-MW7As
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-03
Sampled: 06/16/11 15:26
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.60	U	ug/L	1	0.60	1.0	1	EPA 8260B	06/22/11 14:16	JKG	
Xylenes (Total) [1330-20-7] ^	2.1	U	ug/L	1	2.1	3.0	5	EPA 8260B	06/22/11 14:16	JKG	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*48*	*1*	*50.0*	*97 %*	*51-122*	*1F22004*	*EPA 8260B*	*06/22/11 14:16*	*JKG*	
Dibromofluoromethane	*59*	*1*	*50.0*	*118 %*	*68-117*	*1F22004*	*EPA 8260B*	*06/22/11 14:16*	*JKG*	*QS-03*
Toluene-d8	*52*	*1*	*50.0*	*103 %*	*69-110*	*1F22004*	*EPA 8260B*	*06/22/11 14:16*	*JKG*	

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Description:	9231-MW7As	**Lab Sample ID:**	C106912-03	**Received:**	06/16/11 18:15
Matrix:	Ground Water	**Sampled:**	06/16/11 15:26	**Work Order:**	C106912
Project:	WCA- Material Recovery, LLC	**Sampled By:**	Brent Freyer		

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	06/17/11 17:02	JDH	

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Description: 9231-MW7As
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-03
Sampled: 06/16/11 15:26
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

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

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	**0.276**	J	ug/L	1	0.220	2.00	6	EPA 6020A	06/20/11 11:39	VLO	
Arsenic [7440-38-2] ^	**3.92**	J	ug/L	1	2.80	10.0	10	EPA 6010C	06/21/11 11:01	JDH	
Barium [7440-39-3] ^	**51.7**	J	ug/L	1	1.00	10.0	100	EPA 6010C	06/21/11 11:01	JDH	
Beryllium [7440-41-7] ^	**1.05**		ug/L	1	0.100	1.00	1	EPA 6010C	06/21/11 11:01	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	06/21/11 11:01	JDH	
Chromium [7440-47-3] ^	**1.80**	J	ug/L	1	1.00	10.0	10	EPA 6010C	06/21/11 11:01	JDH	
Cobalt [7440-48-4] ^	**2.57**	J	ug/L	1	1.10	10.0	10	EPA 6010C	06/21/11 11:01	JDH	
Copper [7440-50-8] ^	**6.54**	J	ug/L	1	1.60	10.0	10	EPA 6010C	06/21/11 11:01	JDH	
Iron [7439-89-6] ^	**4360**		ug/L	1	22.0	50.0	300	EPA 6010C	06/21/11 11:01	JDH	
Lead [7439-92-1] ^	**6.51**	J	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 11:01	JDH	
Manganese [7439-96-5] ^	**219**		ug/L	1	1.10	10.0	50	EPA 6010C	06/21/11 11:01	JDH	
Nickel [7440-02-0] ^	**2.05**	J	ug/L	1	1.80	10.0	50	EPA 6010C	06/21/11 11:01	JDH	
Selenium [7782-49-2] ^	0.830	U	ug/L	1	0.830	1.00	10	EPA 6020A	06/20/11 11:39	VLO	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 11:01	JDH	
Thallium [7440-28-0] ^	0.110	U	ug/L	1	0.110	1.00	5.5	EPA 6020A	06/20/11 11:39	VLO	
Vanadium [7440-62-2] ^	**5.90**	J	ug/L	1	1.40	10.0	25	EPA 6010C	06/21/11 11:01	JDH	
Zinc [7440-66-6] ^	**27.4**		ug/L	1	3.80	10.0	10	EPA 6010C	06/21/11 11:01	JDH	

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Description: 9231-MW7As
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-03
Sampled: 06/16/11 15:26
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Total Alkalinity as CaCO3 [471-34-1] ^	**25000**		ug/L	1	12000	15000	NE	EPA 310.2	06/21/11 09:35	CCB	
Total Dissolved Solids [ECL-0156] ^	**86000**		ug/L	1	10000	10000	NE	SM 2540C	06/17/11 10:58	KER	

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Description:	9231-MW7As	**Lab Sample ID:**	C106912-03	**Received:**	06/16/11 18:15
Matrix:	Ground Water	**Sampled:**	06/16/11 15:26	**Work Order:**	C106912
Project:	WCA- Material Recovery, LLC	**Sampled By:**	Brent Freyer		

Classical Chemistry Parameters

^ - ENCO Orlando certified analyte [NC 424]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Chloride [16887-00-6] ^	**4600**	J	ug/L	1	290	5000	NE	EPA 300.0	06/30/11 05:56	RSA	
Sulfate [14808-79-8] ^	**4700**	J	ug/L	1	70	5000	250000	EPA 300.0	06/30/11 05:56	RSA	

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Description: 9231-MW7Ad
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-04
Sampled: 06/16/11 16:04
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.90	U	ug/L	1	0.90	1.0	5	EPA 8260B	06/22/11 14:45	JKG	
1,1,1-Trichloroethane [71-55-6] ^	0.65	U	ug/L	1	0.65	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.75	U	ug/L	1	0.75	1.0	3	EPA 8260B	06/22/11 14:45	JKG	
1,1,2-Trichloroethane [79-00-5] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
1,1-Dichloroethane [75-34-3] ^	0.080	U	ug/L	1	0.080	1.0	5	EPA 8260B	06/22/11 14:45	JKG	
1,1-Dichloroethene [75-35-4] ^	0.60	U	ug/L	1	0.60	1.0	5	EPA 8260B	06/22/11 14:45	JKG	
1,2,3-Trichloropropane [96-18-4] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	06/22/11 14:45	JKG	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
1,2-Dichlorobenzene [95-50-1] ^	0.11	U	ug/L	1	0.11	1.0	5	EPA 8260B	06/22/11 14:45	JKG	
1,2-Dichloroethane [107-06-2] ^	0.47	U	ug/L	1	0.47	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
1,2-Dichloropropane [78-87-5] ^	0.59	U	ug/L	1	0.59	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
1,4-Dichlorobenzene [106-46-7] ^	0.79	U	ug/L	1	0.79	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	06/22/11 14:45	JKG	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	06/22/11 14:45	JKG	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	06/22/11 14:45	JKG	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	06/22/11 14:45	JKG	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	06/22/11 14:45	JKG	
Benzene [71-43-2] ^	0.68	U	ug/L	1	0.68	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
Bromochloromethane [74-97-5] ^	0.87	U	ug/L	1	0.87	1.0	3	EPA 8260B	06/22/11 14:45	JKG	
Bromodichloromethane [75-27-4] ^	0.75	U	ug/L	1	0.75	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
Bromoform [75-25-2] ^	0.68	U	ug/L	1	0.68	1.0	3	EPA 8260B	06/22/11 14:45	JKG	
Bromomethane [74-83-9] ^	0.58	U	ug/L	1	0.58	1.0	10	EPA 8260B	06/22/11 14:45	JKG	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	06/22/11 14:45	JKG	
Carbon tetrachloride [56-23-5] ^	0.69	U	ug/L	1	0.69	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
Chlorobenzene [108-90-7] ^	0.74	U	ug/L	1	0.74	1.0	3	EPA 8260B	06/22/11 14:45	JKG	
Chloroethane [75-00-3] ^	0.75	U	ug/L	1	0.75	1.0	10	EPA 8260B	06/22/11 14:45	JKG	
Chloroform [67-66-3] ^	0.70	U	ug/L	1	0.70	1.0	5	EPA 8260B	06/22/11 14:45	JKG	
Chloromethane [74-87-3] ^	0.55	U	ug/L	1	0.55	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
cis-1,2-Dichloroethene [156-59-2] ^	0.72	U	ug/L	1	0.72	1.0	5	EPA 8260B	06/22/11 14:45	JKG	
cis-1,3-Dichloropropene [10061-01-5] ^	0.075	U	ug/L	1	0.075	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
Dibromochloromethane [124-48-1] ^	0.63	U	ug/L	1	0.63	1.0	3	EPA 8260B	06/22/11 14:45	JKG	
Dibromomethane [74-95-3] ^	0.90	U	ug/L	1	0.90	1.0	10	EPA 8260B	06/22/11 14:45	JKG	
Ethylbenzene [100-41-4] ^	0.62	U	ug/L	1	0.62	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	06/22/11 14:45	JKG	
Methylene chloride [75-09-2] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
Styrene [100-42-5] ^	0.053	U	ug/L	1	0.053	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
Tetrachloroethene [127-18-4] ^	0.73	U	ug/L	1	0.73	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0	NE	EPA 8260B	06/22/11 14:45	JKG	
Toluene [108-88-3] ^	0.85	U	ug/L	1	0.85	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
trans-1,2-Dichloroethene [156-60-5] ^	0.12	U	ug/L	1	0.12	1.0	5	EPA 8260B	06/22/11 14:45	JKG	
trans-1,3-Dichloropropene [10061-02-6] ^	0.50	U	ug/L	1	0.50	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	06/22/11 14:45	JKG	
Trichloroethene [79-01-6] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
Trichlorofluoromethane [75-69-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	06/22/11 14:45	JKG	

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Description: 9231-MW7Ad
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-04
Sampled: 06/16/11 16:04
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.60	U	ug/L	1	0.60	1.0	1	EPA 8260B	06/22/11 14:45	JKG	
Xylenes (Total) [1330-20-7] ^	2.1	U	ug/L	1	2.1	3.0	5	EPA 8260B	06/22/11 14:45	JKG	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*49*	*1*	*50.0*	*97 %*	*51-122*	*1F22004*	*EPA 8260B*	*06/22/11 14:45*	*JKG*	
Dibromofluoromethane	*60*	*1*	*50.0*	*119 %*	*68-117*	*1F22004*	*EPA 8260B*	*06/22/11 14:45*	*JKG*	*QS-03*
Toluene-d8	*51*	*1*	*50.0*	*102 %*	*69-110*	*1F22004*	*EPA 8260B*	*06/22/11 14:45*	*JKG*	

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Description: 9231-MW7Ad
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-04
Sampled: 06/16/11 16:04
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

Metals by EPA 6000/7000 Series Methods

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Mercury [7439-97-6] ^	0.170	U	ug/L	1	0.170	0.200	0.2	EPA 7470A	06/17/11 17:05	JDH	

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Description: 9231-MW7Ad
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-04
Sampled: 06/16/11 16:04
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

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

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Antimony [7440-36-0] ^	0.220	U	ug/L	1	0.220	2.00	6	EPA 6020A	06/20/11 11:43	VLO	
Arsenic [7440-38-2] ^	2.80	U	ug/L	1	2.80	10.0	10	EPA 6010C	06/21/11 11:03	JDH	
Barium [7440-39-3] ^	**38.6**	J	ug/L	1	1.00	10.0	100	EPA 6010C	06/21/11 11:03	JDH	
Beryllium [7440-41-7] ^	**0.834**	J	ug/L	1	0.100	1.00	1	EPA 6010C	06/21/11 11:03	JDH	
Cadmium [7440-43-9] ^	0.360	U	ug/L	1	0.360	1.00	1	EPA 6010C	06/21/11 11:03	JDH	
Chromium [7440-47-3] ^	**1.37**	J	ug/L	1	1.00	10.0	10	EPA 6010C	06/21/11 11:03	JDH	
Cobalt [7440-48-4] ^	**1.47**	J	ug/L	1	1.10	10.0	10	EPA 6010C	06/21/11 11:03	JDH	
Copper [7440-50-8] ^	**4.98**	J	ug/L	1	1.60	10.0	10	EPA 6010C	06/21/11 11:03	JDH	
Iron [7439-89-6] ^	**2860**		ug/L	1	22.0	50.0	300	EPA 6010C	06/21/11 11:03	JDH	
Lead [7439-92-1] ^	**5.03**	J	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 11:03	JDH	
Manganese [7439-96-5] ^	**88.4**		ug/L	1	1.10	10.0	50	EPA 6010C	06/21/11 11:03	JDH	
Nickel [7440-02-0] ^	**2.58**	J	ug/L	1	1.80	10.0	50	EPA 6010C	06/21/11 11:03	JDH	
Selenium [7782-49-2] ^	0.830	U	ug/L	1	0.830	1.00	10	EPA 6020A	06/20/11 11:43	VLO	
Silver [7440-22-4] ^	1.90	U	ug/L	1	1.90	10.0	10	EPA 6010C	06/21/11 11:03	JDH	
Thallium [7440-28-0] ^	0.110	U	ug/L	1	0.110	1.00	5.5	EPA 6020A	06/20/11 11:43	VLO	
Vanadium [7440-62-2] ^	**5.58**	J	ug/L	1	1.40	10.0	25	EPA 6010C	06/21/11 11:03	JDH	
Zinc [7440-66-6] ^	**8.94**	J	ug/L	1	3.80	10.0	10	EPA 6010C	06/21/11 11:03	JDH	

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Description: 9231-MW7Ad
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-04
Sampled: 06/16/11 16:04
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

Classical Chemistry Parameters

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Total Alkalinity as CaCO3 [471-34-1] ^	**15000**		ug/L	1	12000	15000	NE	EPA 310.2	06/21/11 09:36	CCB	
Total Dissolved Solids [ECL-0156] ^	**94000**		ug/L	1	10000	10000	NE	SM 2540C	06/17/11 10:58	KER	

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Description: 9231-MW7Ad
Matrix: Ground Water
Project: WCA- Material Recovery, LLC

Lab Sample ID: C106912-04
Sampled: 06/16/11 16:04
Sampled By: Brent Freyer

Received: 06/16/11 18:15
Work Order: C106912

Classical Chemistry Parameters

^ - ENCO Orlando certified analyte [NC 424]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Chloride [16887-00-6] ^	**4200**	J	ug/L	1	290	5000	NE	EPA 300.0	06/30/11 06:12	RSA	
Sulfate [14808-79-8] ^	**3900**	J	ug/L	1	70	5000	250000	EPA 300.0	06/30/11 06:12	RSA	

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Description: Trip Blank | **Lab Sample ID:** C106912-05 | **Received:** 06/16/11 18:15

Matrix: Water | **Sampled:** 06/16/11 13:33 | **Work Order:** C106912

Project: WCA- Material Recovery, LLC | **Sampled By:** ENCO

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6] ^	0.90	U	ug/L	1	0.90	1.0	5	EPA 8260B	06/22/11 15:15	JKG	
1,1,1-Trichloroethane [71-55-6] ^	0.65	U	ug/L	1	0.65	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
1,1,2,2-Tetrachloroethane [79-34-5] ^	0.75	U	ug/L	1	0.75	1.0	3	EPA 8260B	06/22/11 15:15	JKG	
1,1,2-Trichloroethane [79-00-5] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
1,1-Dichloroethane [75-34-3] ^	0.080	U	ug/L	1	0.080	1.0	5	EPA 8260B	06/22/11 15:15	JKG	
1,1-Dichloroethene [75-35-4] ^	0.60	U	ug/L	1	0.60	1.0	5	EPA 8260B	06/22/11 15:15	JKG	
1,2,3-Trichloropropane [96-18-4] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
1,2-Dibromo-3-chloropropane [96-12-8] ^	0.48	U	ug/L	1	0.48	1.0	13	EPA 8260B	06/22/11 15:15	JKG	
1,2-Dibromoethane [106-93-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
1,2-Dichlorobenzene [95-50-1] ^	0.11	U	ug/L	1	0.11	1.0	5	EPA 8260B	06/22/11 15:15	JKG	
1,2-Dichloroethane [107-06-2] ^	0.47	U	ug/L	1	0.47	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
1,2-Dichloropropane [78-87-5] ^	0.59	U	ug/L	1	0.59	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
1,4-Dichlorobenzene [106-46-7] ^	0.79	U	ug/L	1	0.79	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
2-Butanone [78-93-3] ^	1.3	U	ug/L	1	1.3	5.0	100	EPA 8260B	06/22/11 15:15	JKG	
2-Hexanone [591-78-6] ^	0.88	U	ug/L	1	0.88	5.0	50	EPA 8260B	06/22/11 15:15	JKG	
4-Methyl-2-pentanone [108-10-1] ^	1.1	U	ug/L	1	1.1	5.0	100	EPA 8260B	06/22/11 15:15	JKG	
Acetone [67-64-1] ^	1.2	U	ug/L	1	1.2	5.0	100	EPA 8260B	06/22/11 15:15	JKG	
Acrylonitrile [107-13-1] ^	3.5	U	ug/L	1	3.5	10	200	EPA 8260B	06/22/11 15:15	JKG	
Benzene [71-43-2] ^	0.68	U	ug/L	1	0.68	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
Bromochloromethane [74-97-5] ^	0.87	U	ug/L	1	0.87	1.0	3	EPA 8260B	06/22/11 15:15	JKG	
Bromodichloromethane [75-27-4] ^	0.75	U	ug/L	1	0.75	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
Bromoform [75-25-2] ^	0.68	U	ug/L	1	0.68	1.0	3	EPA 8260B	06/22/11 15:15	JKG	
Bromomethane [74-83-9] ^	0.58	U	ug/L	1	0.58	1.0	10	EPA 8260B	06/22/11 15:15	JKG	
Carbon disulfide [75-15-0] ^	1.5	U	ug/L	1	1.5	5.0	100	EPA 8260B	06/22/11 15:15	JKG	
Carbon tetrachloride [56-23-5] ^	0.69	U	ug/L	1	0.69	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
Chlorobenzene [108-90-7] ^	0.74	U	ug/L	1	0.74	1.0	3	EPA 8260B	06/22/11 15:15	JKG	
Chloroethane [75-00-3] ^	0.75	U	ug/L	1	0.75	1.0	10	EPA 8260B	06/22/11 15:15	JKG	
Chloroform [67-66-3] ^	0.70	U	ug/L	1	0.70	1.0	5	EPA 8260B	06/22/11 15:15	JKG	
Chloromethane [74-87-3] ^	0.55	U	ug/L	1	0.55	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
cis-1,2-Dichloroethene [156-59-2] ^	0.72	U	ug/L	1	0.72	1.0	5	EPA 8260B	06/22/11 15:15	JKG	
cis-1,3-Dichloropropene [10061-01-5] ^	0.075	U	ug/L	1	0.075	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
Dibromochloromethane [124-48-1] ^	0.63	U	ug/L	1	0.63	1.0	3	EPA 8260B	06/22/11 15:15	JKG	
Dibromomethane [74-95-3] ^	0.90	U	ug/L	1	0.90	1.0	10	EPA 8260B	06/22/11 15:15	JKG	
Ethylbenzene [100-41-4] ^	0.62	U	ug/L	1	0.62	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
Iodomethane [74-88-4] ^	1.7	U	ug/L	1	1.7	5.0	10	EPA 8260B	06/22/11 15:15	JKG	
Methylene chloride [75-09-2] ^	0.14	U	ug/L	1	0.14	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
Styrene [100-42-5] ^	0.053	U	ug/L	1	0.053	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
Tetrachloroethene [127-18-4] ^	0.73	U	ug/L	1	0.73	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
Tetrahydrofuran [109-99-9] ^	0.80	U	ug/L	1	0.80	1.0	NE	EPA 8260B	06/22/11 15:15	JKG	
Toluene [108-88-3] ^	0.85	U	ug/L	1	0.85	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
trans-1,2-Dichloroethene [156-60-5] ^	0.12	U	ug/L	1	0.12	1.0	5	EPA 8260B	06/22/11 15:15	JKG	
trans-1,3-Dichloropropene [10061-02-6] ^	0.50	U	ug/L	1	0.50	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
trans-1,4-Dichloro-2-butene [110-57-6] ^	0.70	U	ug/L	1	0.70	1.0	100	EPA 8260B	06/22/11 15:15	JKG	
Trichloroethene [79-01-6] ^	0.72	U	ug/L	1	0.72	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
Trichlorofluoromethane [75-69-4] ^	0.66	U	ug/L	1	0.66	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
Vinyl acetate [108-05-4] ^	0.95	U	ug/L	1	0.95	5.0	50	EPA 8260B	06/22/11 15:15	JKG	

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Description: Trip Blank | **Lab Sample ID:** C106912-05 | **Received:** 06/16/11 18:15

Matrix: Water | **Sampled:** 06/16/11 13:33 | **Work Order:** C106912

Project: WCA- Material Recovery, LLC | **Sampled By:** ENCO

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	MRL	NC SWSL	Method	Analyzed	By	Notes
Vinyl chloride [75-01-4] ^	0.60	U	ug/L	1	0.60	1.0	1	EPA 8260B	06/22/11 15:15	JKG	
Xylenes (Total) [1330-20-7] ^	2.1	U	ug/L	1	2.1	3.0	5	EPA 8260B	06/22/11 15:15	JKG	

Surrogates	*Results*	*DF*	*Spike Lvl*	*% Rec*	*% Rec Limits*	*Batch*	*Method*	*Analyzed*	*By*	Notes
4-Bromofluorobenzene	*49*	*1*	*50.0*	*98 %*	*51-122*	*1F22004*	*EPA 8260B*	*06/22/11 15:15*	*JKG*	
Dibromofluoromethane	*61*	*1*	*50.0*	*122 %*	*68-117*	*1F22004*	*EPA 8260B*	*06/22/11 15:15*	*JKG*	*QS-03*
Toluene-d8	*51*	*1*	*50.0*	*102 %*	*69-110*	*1F22004*	*EPA 8260B*	*06/22/11 15:15*	*JKG*	

QUALITY CONTROL

Volatile Organic Compounds by GCMS - Quality Control

Batch 1F22004 - EPA 5030B_MS

Blank (1F22004-BLK1) Prepared: 06/22/2011 08:22 Analyzed: 06/22/2011 10:48

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1,1,2-Tetrachloroethane	0.90	U	1.0	ug/L							
1,1,1-Trichloroethane	0.65	U	1.0	ug/L							
1,1,2,2-Tetrachloroethane	0.75	U	1.0	ug/L							
1,1,2-Trichloroethane	0.66	U	1.0	ug/L							
1,1-Dichloroethane	0.080	U	1.0	ug/L							
1,1-Dichloroethene	0.60	U	1.0	ug/L							
1,2,3-Trichloropropane	0.72	U	1.0	ug/L							
1,2-Dibromo-3-chloropropane	0.48	U	1.0	ug/L							
1,2-Dibromoethane	0.66	U	1.0	ug/L							
1,2-Dichlorobenzene	0.11	U	1.0	ug/L							
1,2-Dichloroethane	0.47	U	1.0	ug/L							
1,2-Dichloropropane	0.59	U	1.0	ug/L							
1,4-Dichlorobenzene	0.79	U	1.0	ug/L							
2-Butanone	1.3	U	5.0	ug/L							
2-Hexanone	0.88	U	5.0	ug/L							
4-Methyl-2-pentanone	1.1	U	5.0	ug/L							
Acetone	1.2	U	5.0	ug/L							
Acrylonitrile	3.5	U	10	ug/L							
Benzene	0.68	U	1.0	ug/L							
Bromochloromethane	0.87	U	1.0	ug/L							
Bromodichloromethane	0.75	U	1.0	ug/L							
Bromoform	0.68	U	1.0	ug/L							
Bromomethane	0.58	U	1.0	ug/L							
Carbon disulfide	1.5	U	5.0	ug/L							
Carbon tetrachloride	0.69	U	1.0	ug/L							
Chlorobenzene	0.74	U	1.0	ug/L							
Chloroethane	0.75	U	1.0	ug/L							
Chloroform	0.70	U	1.0	ug/L							
Chloromethane	0.55	U	1.0	ug/L							
cis-1,2-Dichloroethene	0.72	U	1.0	ug/L							
cis-1,3-Dichloropropene	0.075	U	1.0	ug/L							
Dibromochloromethane	0.63	U	1.0	ug/L							
Dibromomethane	0.90	U	1.0	ug/L							
Ethylbenzene	0.62	U	1.0	ug/L							
Iodomethane	1.7	U	5.0	ug/L							
Methylene chloride	0.14	U	1.0	ug/L							
Styrene	0.053	U	1.0	ug/L							
Tetrachloroethene	0.73	U	1.0	ug/L							
Tetrahydrofuran	0.80	U	1.0	ug/L							
Toluene	0.85	U	1.0	ug/L							
trans-1,2-Dichloroethene	0.12	U	1.0	ug/L							
trans-1,3-Dichloropropene	0.50	U	1.0	ug/L							
trans-1,4-Dichloro-2-butene	0.70	U	1.0	ug/L							
Trichloroethene	0.72	U	1.0	ug/L							
Trichlorofluoromethane	0.66	U	1.0	ug/L							
Vinyl acetate	0.95	U	5.0	ug/L							
Vinyl chloride	0.60	U	1.0	ug/L							
Xylenes (Total)	2.1	U	3.0	ug/L							

QUALITY CONTROL

Volatile Organic Compounds by GCMS - Quality Control

Batch 1F22004 - EPA 5030B_MS

Blank (1F22004-BLK1) Continued Prepared: 06/22/2011 08:22 Analyzed: 06/22/2011 10:48

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Surrogate: 4-Bromofluorobenzene	*49*			*ug/L*	*50.0*		*97*	*51-122*			
Surrogate: Dibromofluoromethane	*59*			*ug/L*	*50.0*		*118*	*68-117*			
Surrogate: Toluene-d8	*50*			*ug/L*	*50.0*		*100*	*69-110*			

LCS (1F22004-BS1) Prepared: 06/22/2011 08:22 Analyzed: 06/22/2011 11:18

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	22		1.0	ug/L	20.0		111	75-133			
Benzene	22		1.0	ug/L	20.0		109	81-134			
Chlorobenzene	21		1.0	ug/L	20.0		103	83-117			
Toluene	22		1.0	ug/L	20.0		112	71-118			
Trichloroethene	21		1.0	ug/L	20.0		106	75-115			

Matrix Spike (1F22004-MS1) Prepared: 06/22/2011 08:22 Analyzed: 06/22/2011 11:48

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	25		1.0	ug/L	20.0	0.60 U	124	75-133			
Benzene	23		1.0	ug/L	20.0	0.68 U	115	81-134			
Chlorobenzene	22		1.0	ug/L	20.0	0.74 U	111	83-117			
Toluene	24		1.0	ug/L	20.0	0.85 U	122	71-118			QM-07
Trichloroethene	24		1.0	ug/L	20.0	0.72 U	118	75-115			QM-07

Matrix Spike Dup (1F22004-MSD1) Prepared: 06/22/2011 08:22 Analyzed: 06/22/2011 12:17

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1-Dichloroethene	24		1.0	ug/L	20.0	0.60 U	119	75-133	4	20	
Benzene	22		1.0	ug/L	20.0	0.68 U	111	81-134	3	17	
Chlorobenzene	21		1.0	ug/L	20.0	0.74 U	105	83-117	5	16	
Toluene	23		1.0	ug/L	20.0	0.85 U	114	71-118	7	17	
Trichloroethene	22		1.0	ug/L	20.0	0.72 U	109	75-115	7	18	

Metals by EPA 6000/7000 Series Methods - Quality Control

Batch 1F17010 - EPA 245.1

Blank (1F17010-BLK1) Prepared: 06/17/2011 08:48 Analyzed: 06/17/2011 16:33

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	0.170	U	0.200	ug/L							

LCS (1F17010-BS1) Prepared: 06/17/2011 08:48 Analyzed: 06/17/2011 16:42

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	5.15		0.200	ug/L	5.00		103	85-115			

QUALITY CONTROL

Metals by EPA 6000/7000 Series Methods - Quality Control

Batch 1F17010 - EPA 245.1

Matrix Spike (1F17010-MS1) Prepared: 06/17/2011 08:48 Analyzed: 06/17/2011 16:48

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	5.12		0.200	ug/L	5.00	0.170 U	102	85-115			

Matrix Spike Dup (1F17010-MSD1) Prepared: 06/17/2011 08:48 Analyzed: 06/17/2011 16:51

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	5.34		0.200	ug/L	5.00	0.170 U	107	85-115	4	15	

Post Spike (1F17010-PS1) Prepared: 06/17/2011 08:48 Analyzed: 06/17/2011 16:54

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Mercury	4.33		0.200	ug/L	5.00	-0.0454	87	75-125			

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

Batch 1F17024 - EPA 3005A

Blank (1F17024-BLK1) Prepared: 06/17/2011 11:06 Analyzed: 06/21/2011 10:37

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	2.80	U	10.0	ug/L							
Barium	1.00	U	10.0	ug/L							
Beryllium	0.100	U	1.00	ug/L							
Cadmium	0.360	U	1.00	ug/L							
Chromium	1.00	U	10.0	ug/L							
Cobalt	1.10	U	10.0	ug/L							
Copper	1.60	U	10.0	ug/L							
Iron	22.0	U	50.0	ug/L							
Lead	1.90	U	10.0	ug/L							
Manganese	1.10	U	10.0	ug/L							
Nickel	1.80	U	10.0	ug/L							
Silver	1.90	U	10.0	ug/L							
Vanadium	1.40	U	10.0	ug/L							
Zinc	3.80	U	10.0	ug/L							

LCS (1F17024-BS1) Prepared: 06/17/2011 11:06 Analyzed: 06/21/2011 10:39

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	576		10.0	ug/L	500		115	80-120			
Barium	571		10.0	ug/L	500		114	80-120			
Beryllium	294		1.00	ug/L	250		117	80-120			
Cadmium	283		1.00	ug/L	250		113	80-120			
Chromium	569		10.0	ug/L	500		114	80-120			
Cobalt	586		10.0	ug/L	500		117	80-120			
Copper	286		10.0	ug/L	250		115	80-120			
Iron	5670		50.0	ug/L	5000		113	80-120			

QUALITY CONTROL

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

Batch 1F17024 - EPA 3005A

LCS (1F17024-BS1) Continued Prepared: 06/17/2011 11:06 Analyzed: 06/21/2011 10:39

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Lead	577		10.0	ug/L	500		115	80-120			
Manganese	284		10.0	ug/L	250		113	80-120			
Nickel	570		10.0	ug/L	500		114	80-120			
Silver	276		10.0	ug/L	250		110	80-120			
Vanadium	289		10.0	ug/L	250		115	80-120			
Zinc	571		10.0	ug/L	500		114	80-120			

Matrix Spike (1F17024-MS1) Prepared: 06/17/2011 11:06 Analyzed: 06/21/2011 10:50

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	518		10.0	ug/L	500	2.80 U	104	75-125			
Barium	555		10.0	ug/L	500	32.5	105	75-125			
Beryllium	270		1.00	ug/L	250	0.177	108	75-125			
Cadmium	258		1.00	ug/L	250	0.360 U	103	75-125			
Chromium	523		10.0	ug/L	500	1.33	104	75-125			
Cobalt	538		10.0	ug/L	500	1.65	107	75-125			
Copper	261		10.0	ug/L	250	1.60 U	104	75-125			
Iron	6280		50.0	ug/L	5000	970	106	75-125			
Lead	525		10.0	ug/L	500	1.97	105	75-125			
Manganese	1460		10.0	ug/L	250	1230	92	75-125			
Nickel	521		10.0	ug/L	500	2.00	104	75-125			
Silver	261		10.0	ug/L	250	1.90 U	104	75-125			
Vanadium	266		10.0	ug/L	250	1.40 U	106	75-125			
Zinc	533		10.0	ug/L	500	11.0	104	75-125			

Matrix Spike Dup (1F17024-MSD1) Prepared: 06/17/2011 11:06 Analyzed: 06/21/2011 10:52

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	556		10.0	ug/L	500	2.80 U	111	75-125	7	20	
Barium	592		10.0	ug/L	500	32.5	112	75-125	6	20	
Beryllium	286		1.00	ug/L	250	0.177	114	75-125	6	20	
Cadmium	276		1.00	ug/L	250	0.360 U	111	75-125	7	20	
Chromium	568		10.0	ug/L	500	1.33	113	75-125	8	20	
Cobalt	553		10.0	ug/L	500	1.65	110	75-125	3	20	
Copper	285		10.0	ug/L	250	1.60 U	114	75-125	9	20	
Iron	6660		50.0	ug/L	5000	970	114	75-125	6	20	
Lead	560		10.0	ug/L	500	1.97	112	75-125	6	20	
Manganese	1490		10.0	ug/L	250	1230	105	75-125	2	20	
Nickel	555		10.0	ug/L	500	2.00	111	75-125	6	20	
Silver	272		10.0	ug/L	250	1.90 U	109	75-125	4	20	
Vanadium	288		10.0	ug/L	250	1.40 U	115	75-125	8	20	
Zinc	569		10.0	ug/L	500	11.0	112	75-125	7	20	

Post Spike (1F17024-PS1) Prepared: 06/17/2011 11:06 Analyzed: 06/21/2011 10:54

Source: C106912-01

QUALITY CONTROL

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

Batch 1F17024 - EPA 3005A

Post Spike (1F17024-PS1) Continued Prepared: 06/17/2011 11:06 Analyzed: 06/21/2011 10:54

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Arsenic	1.03		0.0100	mg/L	1.00	0.00209	102	80-120			
Barium	1.07		0.0100	mg/L	1.00	0.0325	104	80-120			
Beryllium	0.531		0.00100	mg/L	0.500	0.000177	106	80-120			
Cadmium	0.512		0.00100	mg/L	0.500	2.03E-5	102	80-120			
Chromium	1.05		0.0100	mg/L	1.00	0.00133	105	80-120			
Cobalt	1.02		0.0100	mg/L	1.00	0.00165	102	80-120			
Copper	0.525		0.0100	mg/L	0.500	0.00133	105	80-120			
Iron	11.4		0.0500	mg/L	10.0	0.970	104	80-120			
Lead	1.02		0.0100	mg/L	1.00	0.00197	102	80-120			
Manganese	1.71		0.0100	mg/L	0.500	1.23	95	80-120			
Nickel	1.03		0.0100	mg/L	1.00	0.00200	102	80-120			
Silver	0.527		0.0100	mg/L	0.500	0.000706	105	80-120			
Vanadium	0.533		0.0100	mg/L	0.500	0.00139	106	80-120			
Zinc	1.05		0.0100	mg/L	1.00	0.0110	103	80-120			

Batch 1F17026 - EPA 200.8

Blank (1F17026-BLK1) Prepared: 06/17/2011 11:15 Analyzed: 06/20/2011 11:02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	0.220	U	2.00	ug/L							
Selenium	0.830	U	1.00	ug/L							
Thallium	0.110	U	1.00	ug/L							

LCS (1F17026-BS1) Prepared: 06/17/2011 11:15 Analyzed: 06/20/2011 11:06

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	23.8		2.00	ug/L	25.0		95	80-120			
Selenium	24.3		1.00	ug/L	25.0		97	80-120			
Thallium	23.7		1.00	ug/L	25.0		95	80-120			

Matrix Spike (1F17026-MS1) Prepared: 06/17/2011 11:15 Analyzed: 06/20/2011 11:13

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	24.0		2.00	ug/L	25.0	0.220 U	96	80-120			
Selenium	24.0		1.00	ug/L	25.0	0.830 U	96	80-120			
Thallium	23.7		1.00	ug/L	25.0	0.110 U	95	80-120			

Matrix Spike Dup (1F17026-MSD1) Prepared: 06/17/2011 11:15 Analyzed: 06/20/2011 11:17

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	23.5		2.00	ug/L	25.0	0.220 U	94	80-120	2	20	
Selenium	24.6		1.00	ug/L	25.0	0.830 U	98	80-120	2	20	
Thallium	23.7		1.00	ug/L	25.0	0.110 U	95	80-120	0.05	20	

QUALITY CONTROL

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

Batch 1F17026 - EPA 200.8

Post Spike (1F17026-PS1) Prepared: 06/17/2011 11:15 Analyzed: 06/20/2011 11:28

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Antimony	23.3		2.00	ug/L	25.0	0.0440	93	80-120			
Selenium	24.0		1.00	ug/L	25.0	0.319	95	80-120			
Thallium	23.5		1.00	ug/L	25.0	-0.987	98	80-120			

Classical Chemistry Parameters - Quality Control

Batch 1F17005 - NO PREP

Blank (1F17005-BLK1) Prepared & Analyzed: 06/17/2011 10:58

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Dissolved Solids	10000	U	10000	ug/L							

LCS (1F17005-BS1) Prepared & Analyzed: 06/17/2011 10:58

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Dissolved Solids	300		10	mg/L	300		101	90-110			

Duplicate (1F17005-DUP1) Prepared & Analyzed: 06/17/2011 10:58

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Dissolved Solids	280000		10000	ug/L		330000			17	10	QM-12

Duplicate (1F17005-DUP2) Prepared & Analyzed: 06/17/2011 10:58

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Dissolved Solids	54000		10000	ug/L		110000			70	10	QR-04

Batch 1F21006 - NO PREP

Blank (1F21006-BLK1) Prepared: 06/21/2011 08:37 Analyzed: 06/21/2011 09:21

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	12000	U	15000	ug/L							

LCS (1F21006-BS1) Prepared: 06/21/2011 08:37 Analyzed: 06/21/2011 09:22

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	97		15	mg/L	100		97	80-120			

Matrix Spike (1F21006-MS1) Prepared: 06/21/2011 08:37 Analyzed: 06/21/2011 09:25

Source: C106225-02

QUALITY CONTROL

Classical Chemistry Parameters - Quality Control

Batch 1F21006 - NO PREP

Matrix Spike (1F21006-MS1) Continued Prepared: 06/21/2011 08:37 Analyzed: 06/21/2011 09:25

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	39		15	mg/L	40.5	12	66	80-120			QM-05

Matrix Spike (1F21006-MS2) Prepared: 06/21/2011 08:37 Analyzed: 06/21/2011 09:31

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	57		15	mg/L	40.5	14	106	80-120			

Matrix Spike Dup (1F21006-MSD1) Prepared: 06/21/2011 08:37 Analyzed: 06/21/2011 09:26

Source: C106225-02

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	44		15	mg/L	40.5	12	78	80-120	11	25	QM-05

Matrix Spike Dup (1F21006-MSD2) Prepared: 06/21/2011 08:37 Analyzed: 06/21/2011 09:31

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Total Alkalinity as CaCO3	52		15	mg/L	40.5	14	96	80-120	8	25	

QUALITY CONTROL

Classical Chemistry Parameters - Quality Control

Batch 1F29020 - NO PREP

Blank (1F29020-BLK1) Prepared: 06/29/2011 11:59 Analyzed: 06/30/2011 03:46

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Chloride	290	U	5000	ug/L							
Sulfate	66	U	5000	ug/L							

LCS (1F29020-BS1) Prepared: 06/29/2011 11:59 Analyzed: 06/30/2011 04:34

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Chloride	51000		5000	ug/L	50000		101	90-110			
Sulfate	51000		5000	ug/L	50000		101	90-110			

Matrix Spike (1F29020-MS1) Prepared: 06/29/2011 11:59 Analyzed: 06/30/2011 04:51

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Chloride	53000		5000	ug/L	50000	3600	99	90-110			
Sulfate	57000		5000	ug/L	50000	6300	101	90-110			

Matrix Spike Dup (1F29020-MSD1) Prepared: 06/29/2011 11:59 Analyzed: 06/30/2011 05:07

QUALITY CONTROL

Classical Chemistry Parameters - Quality Control

Batch 1F29020 - NO PREP

Matrix Spike Dup (1F29020-MSD1) Continued Prepared: 06/29/2011 11:59 Analyzed: 06/30/2011 05:07

Source: C106912-01

Analyte	Result	Flag	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Chloride	53000		5000	ug/L	50000	3600	99	90-110	0.7	10	
Sulfate	57000		5000	ug/L	50000	6300	101	90-110	0.7	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.
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.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QM-12	Precision between duplicate samples was outside acceptance limits.
QR-04	Duplicate precision outside acceptance limits due to low analyte concentration.
QS-03	Surrogate recovery outside acceptance limits

ENVIRONMENTAL CONSERVATION LABORATORIES CHAIN-OF-CUSTODY RECORD

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10775 Central Port Dr.
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4810 Executive Park Court, Suite 211
Jacksonville, FL 32216-6069
(904) 296-3007 Fax (904) 296-6210

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

Page ____ of ____

Client Name: Golder Associates, Inc. (GO007)	Project Number: 073-9602411.600
Address: 5B Oak Branch Drive	Project Name/Desc: WCA- Material Recovery, LLC
City/ST/Zip: Greensboro, NC 27407	PO # / Billing Info:
Tel: (336) 852-4903 / Fax: (336) 852-4904	Reporting Contact: Dusty Reedy
Sampler(s) Name, Affiliation (Print): Brent Freyer, Golder Associates	Billing Contact: Dennis Gehle
Sampler(s) Signature: Brt Fry	Site Location / Time Zone: WCA-Wake / Eastern

Requested Turnaround Times

Note : Rush requests subject to acceptance by the facility

X Standard

___ Expedited

Due __/__/__

Lab Workorder: C106912

Requested Analyses

Preservation (See Codes) (Combine as necessary)

Item #	Sample ID (Field Identification)	Collection Date	Collection Time	Comp / Grab	Matrix (see codes)	Total # of Containers	8260B Appendix 1,8260B Extended	Ag,As,Ba,Be,Cd,Co,Cr,Cu,Fe,Mn,Ni,Pb,Sb,Se,Tl,V,Zn	Alkalinity 310.2,Chloride 300,TDS SM2540C	Hg	Sulfate 300						Sample Comments
	9231-MW6As (MS/MSD)	6-16-11	1333	G	GW	8	X	X	X	X	X						
	9231-MW6Ad	6-16-11	1402	|	GW	5	X	X	X	X	X						
	9231-MW7As	6-16-11	1526	|	GW	5	X	X	X	X	X						
	9231-MW7Ad	6-16-11	1604	|	GW	5	X	X	X	X	X						
	Trip Blank	~~6-16-11~~	~~1612~~		WA	2	X										

<-- Total # of Containers

Sample Kit Prepared By: LAB	Date/Time: 6/10/11	Relinquished By: Brt Fry	Date/Time: 6-16-11 1810	Received By: [signature]	Date/Time: 6/16/11 1815
Comments/Special Reporting Requirements: -please provide level 2 data report		Relinquished By	Date/Time	Received By	Date/Time
		Relinquished By	Date/Time	Received By	Date/Time
		Cooler #'s & Temps on Receipt: L-836 2.6°C		Condition Upon Receipt: ✓ Acceptable ___ Unacceptable	

Matrix : **GW**-Groundwater **SO**-Soil **DW**-Drinking Water **SE**-Sediment **SW**-Surface Water **WW**-Wastewater **A**-Air **O**-Other (detail in comments) **Preservation:** I-Ice H-HCl N-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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WORK ORDER

Printed: 6/30/2011 3:36:11PM

C106912

ENCO Cary

Sample Receipt Conditions

Client:	**Golder Associates, Inc. (GO007)**	**Lab Project Mgr:**	**Stephanie Franz**
Project:	**WCA- Material Recovery, LLC**	**Project Number:**	**073-9602411.600**
PO #:			

Report To:

Golder Associates, Inc. (GO007)
Dusty Reedy
5B Oak Branch Drive
Greensboro, NC 27407
Phone: (336) 852-4903
Fax: (336) 852-4904

Invoice To:

Waste Corporation of America - Wake (WA033)
Dennis Gehle
2600 Brown-Field Road
Raleigh, NC 27610
Phone :(919) 838-6973
Fax:

Received By:	James G. Thadani	Date Received:	16-Jun-11 18:15
Logged In By:	James G. Thadani	Date Logged In:	16-Jun-11 18:40

Work Order Comments:

C-836 received at 2.6°C

Containers Intact	Y	Containers Properly Preserved	Y	Proper Containers Received	Y	All Samples in PreLog Received	Y	COC/Labels Agree	Y
Custody Seals Intact	Y	Volatile Containers Preserved	Y	Volatile Containers Headspace Free	Y	Aqueous Samples Checked for Residual Cl	N	Received On Ice	Y

Project Name: WCA – Material Recovery C&D Landfill –Background Monitoring

Project Reference Number: 073-9602411.600

Sampling Event Date: June 16, 2011

Review Date: September 7, 2011 *Initials:* KS

Report #: C106912

Person(s) performing the review are to initial each item on this form as acknowledgement of data acceptance, or as acknowledgement of a review issue. In the case of the latter, a brief explanation should follow the applicable item.

Golder Associates Inc. has reviewed the laboratory certificates of analysis, chain-of-custody form, and laboratory provided sample group quality assurance and quality control data for the above referenced sample group to identify potential bias or inaccuracy, in general accordance with the following United States Environmental Protection Agency documents:

- Region III Modifications to Functional Guidelines for Organic Data Review Multi-Media, Multi-Concentration, September 1994;
- Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses, April 1993; and
- Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses, July 1998.

COMPLIANCE ANALYTE LIST(S) (check all that apply)

___ NC Closed Facility List (.500 Rules)

X NC C & D List (New Rules)

___ NC Appendix I

___ NC Appendix I + Detects

___ NC Appendix II

___ NC Subtitle D Leachate List

Other: _____

1.0 CHAIN OF CUSTODY (COC) REVIEW

X COC was properly signed by all parties.

X Correct project name and number are on the form.

X Sample receipt condition at laboratory was acceptable.

X Each sample and blank submitted for analysis appears in the report.

2.0 SAMPLE HOLDING TIMES

X Holding times for extraction and/or analysis were met for each analytical Method (see below for reference).

Notes: _____

Review Criteria		
Method	**Analytes**	**Holding Time**
SW-846 Method 8260 and 8011	VOCs	14 days
SW-846 Methods 8270, 8080, 8081, 8082, and 8151	SVOCs, PCBs, pesticides and herbicides	7 days for extraction, 40 days from extraction for analysis
SW-846 Methods 6000 and 7000 Series	Metals except mercury	6 months (no temperature requirements)
SW-846 Method 7470	Mercury	28 days
SW-846 Method 376.1	Sulfide	7 days
SW-846 Method 9010	Cyanide	14 days
EPA Method 300	Nitrate/Sulfate	48 hours/28 days
EPA Method 405.1	BOD	48 hours
EPA Method 410.4	COD	28 days
EPA Method 365.4	Phosphorous	28 days

3.0 LABORATORY QUALITY CONTROL REVIEW

X Laboratory analyzed at least one internal blank for each method, where applicable.

X Laboratory blank is interference-free.

X Surrogate recoveries are provided for each analytical method, where applicable.

X Surrogate recoveries for each method are within the acceptable limits (i.e., at least 50% of the surrogates were within range).

- **Surrogate spike recovery of dibromofluoromethane was outside control limits for MW-7As, MW-7Ad, and the trip blank.**

X MS/MSD/LCS data results are provided for each analytical method.

X MS/MSD/LCS recoveries for each method are within the acceptable limits (i.e., at least 1 of the 3 were within range).

- ***The spike recoveries of toluene and trichloroethene were outside of control limits for the MS sample. The spike recoveries of alkalinity were outside control limits for the MS and MSD samples. The QC batches were approved based on acceptable LCS recovery of these analytes.***

- ***The precision between duplicate analyses for TDS was outside of control limits for two of the duplicates reported. The QC batch was approved based on acceptable LCS recovery of this analyte.***

4.0 ANALYTE LISTS/METHODS

X The proper number of constituents are present for each analyte list as identified above (including detects where applicable).

X Proper EPA SW-846 analytical methods were used for analysis.

5.0 DATA REPORTING

X All analytical reporting associated with the event was performed by the contracted lab.

X Trip, field and/or equipment, and laboratory blank results have all been reported. All detects for blanks are listed below by constituent. All laboratory method blanks, if any, have been 'flagged' with a 'B' where detected in other samples as appropriate and a laboratory narrative was provided. If the sample was flagged by the laboratory and is not within 5X of the concentration in the blank (or 10X for commonly detected laboratory contaminants-acetone, methylene chloride and phthalates), list below with explanation if flags should be removed. If flags need to be added for samples, also list below.

X It is clear from the laboratory report that samples have or have not been diluted during analysis, and if the samples have been diluted, the result is reported as a multiple of the dilution (e.g., a sample diluted 10x resulting in an analytical detection of 1.0 should be reported as 10). Those that have been diluted are listed below with the dilution factor.

X The report provides the reporting limit for each constituent.

X The results were reported at or below their proper reporting limits (i.e., MDLs with SWSLs reported). Those that are not reported correctly are listed below (by constituent) with the proper reporting limit listed beside them. State if the reporting limit error is due to dilutions.

X No organic constituents were reported above their respective SWSLs, and no inorganic or organic constituents were reported above their respective NC 2L Drinking Water Standards/GWPS in wells, or field/equipment/trip blanks, or above applicable surface water standards in surface water points.

Organic SWSL exceedances:

None

Inorganic/Organic NC2L or GWPS exceedances:

MW-6As: ***Cobalt @ 1.65 ug/L (J) (GWPS = 1 ug/L)***
Iron @ 970 ug/L (NC 2L = 300 ug/L)
Manganese @ 1230 ug/L (NC 2L = 50 ug/L)
MW-6Ad: ***Antimony @ 4.88 ug/L(J) (GWPS = 1 ug/L)***
MW-7As: ***Cobalt @ 2.57 ug/L (J) (GWPS = 1 ug/L)***
Iron @ 4360 ug/L (NC 2L = 300 ug/L)
Manganese @ 219 ug/L (NC 2L = 50 ug/L)
Vanadium @ 5.90 ug/L (J) (GWPS = 0.3 ug/L)
MW-7Ad: ***Cobalt @ 1.47 ug/L (J) (NC 2L = 1.0 ug/L)***
Iron @ 2860 ug/L (NC 2L = 300 ug/L)
Manganese @ 88.4 ug/L (NC 2L = 50 ug/L)
Vanadium @ 5.58 ug/L (J) (GWPS = 0.3 ug/L)

X No inorganic and organic constituents were detected in a well or surface water point at concentrations outside of their historical range (more than 5X previous concentrations or first-time detections).

First-time detections:

- ***Background sampling event all are first detections.***

X Other report issues/Communications with laboratory/etc.:

At Golder Associates we strive to be the most respected global group of companies specializing in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organizational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

Africa	+ 27 11 254 4800
Asia	+ 852 2562 3658
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 55 21 3095 9500

solutions@golder.com
www.golder.com

Golder Associates NC, Inc.
5B Oak Branch Drive
Greensboro, NC 27407 USA
(336) 852-4903 - Phone
(336) 852-4904 - Fax

Golder Associates