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February 14, 2012

Don Heardon
Compliance Unit
NCDENR-DVM, Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699-1646



**RE: Facility Permit # 4203
Low Ground Landfill Semi-annual Environmental Monitoring Report
Roanoke Rapids, NC**

Dear Mr. Heardon;

On behalf of International Paper, Premier Environmental PC (Premier) is submitting the attached Semi-annual Environmental Monitoring Report for the November 2011 sampling event at the above referenced site. Also enclosed is the North Carolina (NC) Solid Waste Section summary table along with the laboratory report from Columbia Analytical Services, and the Premier Quality Assurance Review of the laboratory data.

The November 2011 sampling activities were conducted by Premier. Depth to groundwater measurements were obtained from the five site monitoring wells (MWLG-1, MWLG-3, MWLG-5, MWLG-6, and MWLG-7), and the monitoring wells were then purged and sampled according to EPA protocol. Copies of the field sampling forms and field notes completed by Premier personnel are attached to this report. The groundwater samples were preserved according to EPA protocol and shipped to Columbia Analytical Services Laboratory in Jacksonville, FL, a North Carolina certified laboratory. The analytical results for this sampling event are attached.

With the exception of iron, manganese and sulfate, the laboratory analysis of samples collected from site monitoring wells were below the applicable NC 2L standards.

- The results of three groundwater samples (MW-LG1, MW-LG5, MW-LG6 and MW-LG7) exceeded the NC 2L standard of 300 ug/L for iron.
- The results of five groundwater samples (MW-LG1, MW-LG3, MW-LG5, MW-LG6 and MW-LG7) exceeded the NC 2L standard of 50 ug/L for manganese.
- The result of one groundwater sample (MW-LG6) exceeded the NC 2L standard of 250 mg/L for sulfate.

The detected manganese, iron and sulfate concentrations in site wells are reported within the range of background concentrations for this site. The Solid Waste Section has waived the requirement to prepare a Water Quality Assessment Plan for this site. Premier continues to

concur with this waiver and does not recommend any changes to the monitoring program at this time.

If you have any questions on this report feel free to call at 770-973-2100.

Sincerely,



Patrick Kelley, CHMM
Senior Scientist



Peter Ramsey, PG
Senior Geologist

cc: Phil Slowiak, International Paper

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):

Premier Environmental Services, PC

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

Name: Patrick Kelley Phone: 678-569-2860
 E-mail: pkelley@earthcon.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Low Ground Landfill Roanoke Rapids, NC	Kapstone Mill 100 Gaston Road Roanoke Rapids, NC	42 03	.0500	November 17, 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 Methane gas monitoring data
 Groundwater monitoring data from private water supply wells Corrective action data (specify) _____
 Leachate monitoring data Other(specify) _____
 Surface water monitoring data

Notification attached?

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

Certification

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

Peter E. Ramsey Senior Geologist 678-569-2882
 Facility Representative Name (Print) Title (Area Code) Telephone Number
 Affix NC Licensed/ Professional Geologist Seal

Peter E. Ramsey 2/14/12
 Signature Date
 1800 West Oak Parkway, Bldg 100, Suite 106
 Marietta, Georgia 30062

Facility Representative Address

NC PE Firm License Number (if applicable effective May 1, 2009)



International Paper
Roanoke Rapids Mill

100 Gaston Road Low Ground Landfill
Roanoke Rapids, NC Monitoring Wells

samples collected on 11/17/11 by Tamar Banks of Premier Environmental PC | Contact: Patrick Kelley, Premier Environmental PC

NC Cert. #E-5271 | Phone 770-973-2100 #2860 or email p.kelley@premiercorp-usa.com

FACILITY PERMIT	SAMPLE ID	CAS Number	SWS ID	PARAMETER	RESULT	UNITS	LAB QUALIFIER	DILUTION FACTOR	COLLECT DATE	EXTRACTION DATE	ANALYSIS DATE
42-03	MW-LG 1	7440-38-2	14	Arsenic	1.0	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 1	7440-39-3	15	Barium	108	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 1	316	316	Biochemical Oxygen Demand	2.0	mg/L	U	1.0	11/17/11	NA	11/18/11
42-03	MW-LG 1	7440-43-9	34	Cadmium	0.34	ug/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 1	317	317	Chemical Oxygen Demand	2.42	mg/L	U	1.0	11/17/11	NA	11/22/11
42-03	MW-LG 1	16887-00-6	301	Chloride	3.2	ug/L	U	1.0	11/17/11	NA	11/18/11
42-03	MW-LG 1	7440-47-3	51	Chromium	7.6	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 1	7440-50-8	54	Copper	0.15	ug/L	J	1.0	11/17/11	NA	11/18/11
42-03	MW-LG 1	16984-48-8	312	Fluoride	4.27	mg/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 1	7439-89-6	340	Iron	4.4	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 1	7439-92-1	131	Lead	283	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 1	7439-96-5	342	Manganese	0.03	ug/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 1	7439-97-6	132	Mercury	0.20	ug/L	U	1.0	11/17/11	NA	11/18/11
42-03	MW-LG 1	14797-55-8	303	Nitrate	6.54	mg/L	J	1.0	11/17/11	NA	11/18/11
42-03	MW-LG 1	321	321	pH - Lab	2.0	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 1	7782-49-2	183	Selenium	0.04	ug/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 1	7440-22-4	184	Silver	17.5	mg/L	U	1.0	11/17/11	NA	11/18/11
42-03	MW-LG 1	14808-79-8	315	Sulfate	123	mg/L	U	1.0	11/17/11	NA	11/18/11
42-03	MW-LG 1	311	311	Total Dissolved Solids	3.7	mg/L	U	1.0	11/17/11	NA	11/29/11
42-03	MW-LG 1	E-10195	357	Total Organic Carbon	14.9	mg/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 1	7440-66-6	213	Zinc	0.19	mg/L	U	1.0	11/17/11	NA	12/2/11
42-03	MW-LG 3	7440-38-2	14	Arsenic	1.0	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 3	7440-39-3	15	Barium	59.7	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 3	316	316	Biochemical Oxygen Demand	2.0	mg/L	U	1.0	11/17/11	NA	11/18/11
42-03	MW-LG 3	7440-43-9	34	Cadmium	0.40	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 3	317	317	Chemical Oxygen Demand	4.2	mg/L	U	1.0	11/17/11	NA	11/22/11
42-03	MW-LG 3	16887-00-6	301	Chloride	71.5	mg/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 3	7440-47-3	51	Chromium	0.5	ug/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 3	7440-50-8	54	Copper	0.7	ug/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 3	16984-48-8	312	Fluoride	0.26	mg/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 3	7439-89-6	340	Iron	0.25	mg/L	U	1.0	11/17/11	NA	11/18/11
42-03	MW-LG 3	7439-92-1	131	Lead	0.50	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 3	7439-96-5	342	Manganese	1550	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 3	7439-97-6	132	Mercury	0.10	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 3	14797-55-8	303	Nitrate	10.6	mg/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 3	321	321	pH - Lab	7.02	mg/L	J	1.0	11/17/11	NA	11/18/11
42-03	MW-LG 3	7782-49-2	183	Selenium	1.30	ug/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 3	7440-22-4	184	Silver	0.50	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 3	14808-79-8	315	Sulfate	184	mg/L	U	1.0	11/17/11	NA	11/18/11
42-03	MW-LG 3	311	311	Total Dissolved Solids	1300	mg/L	U	2.0	11/17/11	NA	11/22/11
42-03	MW-LG 3	E-10195	357	Total Organic Carbon	9.7	mg/L	J	1.0	11/17/11	NA	11/29/11
42-03	MW-LG 3	7440-66-6	213	Zinc	2.2	ug/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG 3			Total Organic Halides	0.763	mg/L	U	1.0	11/17/11	NA	12/2/11

International Paper
Roanoke Rapids Mill

100 Gaston Road Low Ground Landfill

Roanoke Rapids, NC Monitoring Wells

samples collected on 11/17/11 by Tamar Banks of Premier Environmental PC (Contact: Patrick Kelley, Premier Environmental PC

Samples were analyzed by CAS, Inc. NC Cert. #: 527 | Phone 770-973-2100 #2860 or email: p.kelley@premiercorp-usa.com

FACILITY PERMIT	SAMPLE ID	CAS Number	SWS ID	PARAMETER	RESULT	UNITS	LAB QUALIFIER	DILUTION FACTOR	COLLECT DATE	EXTRACTION DATE	ANALYSIS DATE
42-03	MW-LG5	7440-38-2	14	Arsenic	1.5	ug/L		1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG5	7440-39-3	15	Barium	107	mg/L		1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG5	316	316	Biochemical Oxygen Demand	2.2	mg/L		1.0	11/17/11	NA	11/18/11
42-03	MW-LG5	7440-43-9	34	Cadmium	0.6	ug/L		1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG5	317	317	Chemical Oxygen Demand	3.12	mg/L		1.0	11/17/11	NA	11/18/11
42-03	MW-LG5	16887-00-6	301	Chloride	3.0	ug/L		1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG5	7440-47-3	51	Chromium	3.2	ug/L		1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG5	7440-50-8	54	Copper	0.17	mg/L	J	1.0	11/17/11	NA	11/18/11
42-03	MW-LG5	16984-48-8	312	Fluoride	6.38	mg/L		1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG5	7439-89-6	340	Iron	0.13	ug/L		1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG5	7439-96-5	131	Lead	10800	ug/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG5	7439-97-6	132	Manganese	0.1	ug/L		1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG5	14797-55-8	303	Mercury	0.20	mg/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG5	321	321	Nitrate	6.39	mg/L	U	1.0	11/17/11	NA	11/18/11
42-03	MW-LG5	7782-49-2	183	pH - Lab	2.0	pH UNITS		1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG5	7440-22-4	184	Selenium	0.030	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG5	14808-79-8	315	Silver	176	mg/L	J	2.0	11/17/11	NA	11/18/11
42-03	MW-LG5	311	311	Sulfate	540	mg/L		1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG5	E-10195	357	Total Dissolved Solids	12.1	mg/L		1.0	11/17/11	NA	11/22/11
42-03	MW-LG5	7440-66-6	213	Total Organic Carbon	14.9	mg/L		1.0	11/17/11	NA	11/29/11
42-03	MW-LG5			Zinc	0.41	mg/L		1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG5			Total Organic Halides	0.41	mg/L		1.0	11/17/11	NA	12/2/11
42-03	MW-LG6	7440-38-2	14	Arsenic	1.0	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG6	7440-39-3	15	Barium	521	ug/L		1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG6	316	316	Biochemical Oxygen Demand	7.5	mg/L		1.0	11/17/11	NA	11/18/11
42-03	MW-LG6	7440-43-9	34	Cadmium	0.40	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG6	317	317	Chemical Oxygen Demand	94	mg/L		1.0	11/17/11	NA	11/22/11
42-03	MW-LG6	16887-00-6	301	Chloride	25.1	mg/L		1.0	11/17/11	NA	11/22/11
42-03	MW-LG6	7440-47-3	51	Chromium	5.1	ug/L		1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG6	7440-50-8	54	Copper	0.29	mg/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG6	16984-48-8	312	Fluoride	0.35	mg/L		1.0	11/17/11	NA	11/18/11
42-03	MW-LG6	7439-89-6	340	Iron	0.14	ug/L		1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG6	7439-96-5	131	Lead	120	ug/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG6	7439-97-6	132	Manganese	0.10	ug/L		1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG6	14797-55-8	303	Mercury	0.19	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG6	321	321	Nitrate	7.55	pH UNITS	J	1.0	11/17/11	NA	11/18/11
42-03	MW-LG6	7782-49-2	183	pH - Lab	2.0	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG6	7440-22-4	184	Selenium	0.50	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG6	14808-79-8	315	Silver	271	mg/L		2.0	11/17/11	NA	11/22/11
42-03	MW-LG6	311	311	Sulfate	2500	mg/L		4.0	11/17/11	NA	11/22/11
42-03	MW-LG6	E-10195	357	Total Dissolved Solids	21.9	mg/L		1.0	11/17/11	NA	11/29/11
42-03	MW-LG6	7440-66-6	213	Total Organic Carbon	2.2	ug/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG6			Zinc	0.852	mg/L		1.0	11/17/11	NA	12/2/11
42-03	MW-LG6			Total Organic Halides	0.852	mg/L		1.0	11/17/11	NA	12/2/11

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 100 Gaston Road Low Ground Landfill
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samples collected on 11/17/11 by Tamar Banks of Premier Environmental PC (Contact: Patrick Kelley, Premier Environmental PC

Samples were analyzed by CAS, Inc. NC Cert. #: 527 | Phone 770-973-2100 #2860 or email, pkelley@premiercorp-usa.com

FACILITY PERMIT	SAMPLE ID	CAS Number	SWS ID	PARAMETER	RESULT	UNITS	LAB QUALIFIER	DILUTION FACTOR	COLLECT DATE	EXTRACTION DATE	ANALYSIS DATE
42-03	MW-LG7	7440-38-2	14	Arsenic	1.0	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG7	7440-39-3	15	Barium	92.1	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG7	316	316	Biochemical Oxygen Demand	2.0	mg/L	U	1.0	11/17/11	NA	11/18/11
42-03	MW-LG7	7440-43-9	34	Cadmium	0.30	ug/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG7	317	317	Chemical Oxygen Demand	29	mg/L	U	1.0	11/17/11	NA	11/22/11
42-03	MW-LG7	16887-00-6	301	Chloride	20.6	mg/L	J	1.0	11/17/11	NA	11/22/11
42-03	MW-LG7	7440-47-3	51	Chromium	0.50	ug/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG7	7440-50-8	54	Copper	4.0	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG7	16984-48-8	312	Fluoride	0.23	mg/L	U	1.0	11/17/11	NA	11/18/11
42-03	MW-LG7	7439-89-6	340	Iron	0.96	mg/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG7	7439-92-1	131	Lead	1.21	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG7	7439-96-5	342	Manganese	0.1	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG7	7439-97-6	132	Mercury	465	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG7	14797-55-8	303	Nitrate	0.1	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG7	321	321	pH - Lab	0.20	mg/L	J	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG7	7782-49-2	183	Selenium	7.47	ug/L	J	1.0	11/17/11	NA	11/18/11
42-03	MW-LG7	7440-22-4	184	Silver	2.0	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG7	14808-79-8	315	Sulfate	0.50	ug/L	U	1.0	11/17/11	11/21/11	11/22/11
42-03	MW-LG7	311	311	Total Dissolved Solids	131	mg/L	U	1.0	11/17/11	NA	11/18/11
42-03	MW-LG7	E:10195	357	Total Organic Carbon	1420	mg/L	U	2.0	11/17/11	NA	11/22/11
42-03	MW-LG7	7440-66-6	213	Zinc	5.8	mg/L	J	1.0	11/17/11	NA	11/29/11
42-03	MW-LG7			Total Organic Halides	3.7	ug/L	J	1.0	11/17/11	11/21/11	11/22/11
					0.337	mg/L		1.0	11/17/11	NA	12/2/11

U - Undetected above the MRL/MDL

J - Estimated value

INTERNATIONAL PAPER

Groundwater Sampling Field Form

WELL No. LG-6 **PROJECT NUMBER** 209383.11 **LOCATION** Kaanoke Rapids NC **DATE** 11/17/11
SAMPLE No. LG-6 **PROJECT NAME** I.P. - Kaanoke **FIELD TEAM** T. Banks, J. Hughes, C. Newcomb
SAMPLE TIME: 0955 **SITE** Rapids **INSTRUMENT CALIBRATION DATE** 11/17/11

WELL CONDITION: POOR **SATISFACTORY** **NEW** (if poor, explain) _____
FIELD CONDITIONS/ WEATHER: RAIN 50°
EQUIPMENT DECONTAMINATION: Liguonox w/ Distilled final Rinse w/ DI H₂O

Casing Diameter: (circle one) 2" 4" _____ 6" Other _____
Casing Volume Calculation: $(\pi r^2 h) (7.48 \text{ gal/ft}^3)$
Casing Volume (gallons/ft): for 2" = 0.163 4" = 0.653; 6" = 1.47

Depth to Water (feet): 10.83 **Measuring Point Elevation (feet):** TOC
Depth of Well (feet): 18.70 **Groundwater Surface Elevation:** _____
Water Column (feet): 7.87 **Sheen / LNAPL / DNAPL present:** NO
Casing Volume (gallons): 1.28 **Other Remarks:** _____
Calculated Purge Volume (gallons): 3.84
Actual Purge Volume (gallons): 4.0 Liters

DTW
10.81
12.21
12.45
12.63
2.80

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMP (°C)	pH	CONDUCTIVITY (µS/cm 25° C)	DISSOLVED OXYGEN (ppm)	ORP EH	TURBIDITY (NTU)	ODOR / COLOR/ REMARKS
0925	0							
0935	1.0 Lit	17.98	6.76	3741	0.52	-94.3	1.9	PURGE START
0940	2.0 L	17.92	6.79	3762	0.42	-111.9	2.2	clear
0945	3.6 L	17.97	6.79	3754	0.34	-127.8	1.6	"
0950	4.3 L	17.84	6.79	3755	0.25	-139.9	2.1	"

LG-6 Sampled @ 0955

Purging Equipment: Peristaltic pump VSI 6920 + w/ 1/2" tubing
Sampling Equipment: Lamotte 2020
Sample Intake Depth: 16.70

SAMPLE NUMBER	TAG NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
LG-6		TOC	2-40ml VOA w/ HCl	
LG-6		COD	1-125ml HDPE w/ H ₂ SO ₄	
LG-6		Metals	1-250ml HDPE w/ HNO ₃	
LG-6		COND, TDS, DOB, PH, SO ₄ , NO ₃ , F, Cl	1-500ml HDPE w/ No pres.	
LG-6		TOX	2-1 L Amber w/ H ₂ SO ₄	

INTERNATIONAL  PAPER

Groundwater Sampling Field Form

WELL No. LG-5 PROJECT NUMBER 209383.11 LOCATION Roanoke Rapids NC DATE 11/17/11
 SAMPLE No. LG-5 PROJECT NAME RIP-Roanoke FIELD TEAM T. Banks, J. Hughes, C. Newcomb
 SAMPLE TIME: 1130 OFFICE Rapids INSTRUMENT CALIBRATION DATE 11/17/11

WELL CONDITION: POOR SATISFACTORY NEW (if poor, explain) _____
 FIELD CONDITIONS/ WEATHER: Raining Hard 49°
 EQUIPMENT DECONTAMINATION: Liquinox w/ Distilled final Rinse w/ DI H2O

Casing Diameter: (circle one) 2 4" 6" Other _____
 Casing Volume Calculation: $(\pi r^2 h)(7.48 \text{ gal/ft}^3)$
 Casing Volume (gallons/ft) for 2" = 0.163; 4" = 0.653; 6" = 1.47

Depth to Water (feet): 11.30 Measuring Point Elevation (feet): TOC
 Depth of Well (feet): 18.97 Groundwater Surface Elevation: _____
 Water Column (feet): 7.67 Sheen / LNAPL / DNAPL present: NO
 Casing Volume (gallons): 1.25 Other Remarks: _____
 Calculated Purge Volume (gallons): 3.75
 Actual Purge Volume (gallons): 4.0 Liters

DTW
 12.11
 12.38
 12.70
 12.91
 13.15

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMP (°C)	pH	CONDUCTIVITY (µS/cm 25° C)	DISSOLVED OXYGEN (ppm)	ORP Eh	TURBIDITY (NTU)	ODOR / COLOR / REMARKS
1058	0							
1106	1.0 Liter	16.76	5.95	713	0.46	24.2	45.0	PURGE START
1111	1.5 L	16.86	5.95	685	0.41	18.2	24.0	cloudy
1116	2.25 L	17.08	5.94	673	0.35	18.4	13.0	clearing up
1121	3.0 L	17.39	5.93	671	0.26	20.7	12.0	"
1124	3.7 L	17.45	5.93	680	0.28	20.3	8.5	clear

LG-5 Sampled @ 1130

Geopump w/ Purging Equipment: Dedicated tubing Sampling Equipment: YSI 6920 Sample Intake Depth: 17'

SAMPLE NUMBER	TAG NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES.	QA REMARKS
LG-5		TOC	2-40ml Voa w/ HCL	
LG-5		COD	1-125ml HDPE w/ H2SO4	
LG-5		metals	1-250ml HDPE w/ HNO3	
LG-5		COND, TDS, BOD, pH, SO4, NO3, F, Cl	1-500ml HDPE w/ No pres	
LG-5		TOX	2-1L Amber w/ H2SO4	

INTERNATIONAL PAPER

Groundwater Sampling Field Form

WELL No. LG-3 PROJECT NUMBER 209383.11 LOCATION Roanoke Rapids NC DATE 11/17/11
 SAMPLE No. LG-3 PROJECT NAME FP- Roanoke FIELD TEAM T. Banks, J. Hughes, C. Newcomb
 SAMPLE TIME: 1345 SITE Rapids INSTRUMENT CALIBRATION DATE 11/17/11

WELL CONDITION: POOR SATISFACTORY NEW (if poor, explain) _____
 FIELD CONDITIONS/ WEATHER: 5° Cloudy mist
 EQUIPMENT DECONTAMINATION: 1/2 gallon w/ Distilled final Rinse w/ DI H₂O

Casing Diameter: (circle one)
 2" 4" 6" Other _____

Casing Volume Calculation: $(\pi r^2 h)$ (7.48 gal/ft³)
 Casing Volume (gallons/ft) for 2" = 0.163; 4" = 0.653; 6" = 1.47

Depth to Water (feet): 2.65 Measuring Point Elevation (feet): 700
 Depth of Well (feet): 19.85 Groundwater Surface Elevation: _____
 Water Column (feet): 11.2 Sheen / LNAPL / DNAPL present: ND
 Casing Volume (gallons): 1.82 Other Remarks: _____
 Calculated Purge Volume (gallons): 5.46
 Actual Purge Volume (gallons): 4.0 Liters

DTW
 9.28
 9.37
 9.47
 9.55
 9.62

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMP (°C)	pH	CONDUCTIVITY (µS/cm 25°C)	DISSOLVED OXYGEN (ppm)	ORP (mV)	TURBIDITY (NTU)	ODOR / COLOR / REMARKS
1317	0							
1323	1.0L	16.08	6.39	2063	0.58	128.9	4.4	PURGE START
1328	1.75L	16.20	6.40	2064	0.58	131.3	2.8	clear
1333	2.75L	16.36	6.40	2077	0.47	135.1	3.4	clear
1338	3.25L	16.44	6.40	2081	0.45	138.9	2.8	clear
1343	4.0L	16.65	6.40	2102	0.41	142.4	1.7	"

[LG-3 Sampled @ 1345]

Geo-pump w/ Dedicated Purging Equipment poly tubing Sampling Equipment VS16920 annette 2020 Sample Intake Depth: 18.5

SAMPLE NUMBER	TAG NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
LG-3		TOC	2-40ml VOA w/ H ₂ O	
LG-3		COD	1-125ml HDPE w/ H ₂ SO ₄	
LG-3		Metals	1-250ml HDPE w/ HNO ₃	
LG-3		COND, TDS, BOD ₅ , pH, SO ₄ , NO ₃ , F, Cl	1-500ml HDPE w/ NO pres.	
LG-3		TOX	2-1L Amber w/ H ₂ SO ₄	

INTERNATIONAL PAPER

Groundwater Sampling Field Form

WELL No. <u>LG-7</u>	PROJECT NUMBER <u>209383-11</u>	LOCATION <u>Roanoke Rapids, NC</u>	DATE <u>11/17/11</u>
SAMPLE No. <u>LG-7</u>	PROJECT NAME <u>IP-Roanoke Rapids</u>	FIELD TEAM <u>T. Banks, J. Hughes, C. Newcomb</u>	
SAMPLE TIME: <u>1505</u>		INSTRUMENT CALIBRATION DATE <u>11/17/11</u>	

WELL CONDITION: POOR SATISFACTORY NEW (if poor, explain)

FIELD CONDITIONS/ WEATHER: cloudy misty 45°

EQUIPMENT DECONTAMINATION: Liquinex w/ distilled final Rinse w/ DI H2O

Casing Diameter: (circle one) 2 4" 6" Other _____

Casing Volume Calculation: $(\pi r^2 h) (7.48 \text{ gal/ft}^3)$
 Casing Volume (gallons/ft) for 2" = 0.163; 4" = 0.653; 6" = 1.47

Depth to Water (feet): 11.07 Measuring Point Elevation (feet): TOC

Depth of Well (feet): 16.85 Groundwater Surface Elevation: _____

Water Column (feet): 5.78 Sheen / LNAPL / DNAPL present: No

Casing Volume (gallons): 0.94 Other Remarks: _____

Calculated Purge Volume (gallons): 2.82 * flooded at around well - could be

Actual Purge Volume (gallons): 5.0 L but turbidity down due to flooding

DTW

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMP (°C)	pH	CONDUCTIVITY (µS/cm 25°C)	DISSOLVED OXYGEN (ppm)	ORP EH	TURBIDITY (NTU)	ODOR / COLOR/ REMARKS
<u>11.07</u>	<u>0</u>							
<u>11.50</u>	<u>1.06</u>	<u>15.24</u>	<u>6.97</u>	<u>2293</u>	<u>5.52</u>	<u>155.4</u>	<u>6.1</u>	<u>PURGE START</u>
<u>11.61</u>	<u>2.0</u>	<u>15.48</u>	<u>6.97</u>	<u>2308</u>	<u>5.42</u>	<u>160.9</u>	<u>9.4</u>	<u>Clear</u>
<u>11.73</u>	<u>3.0</u>	<u>15.72</u>	<u>6.97</u>	<u>2314</u>	<u>5.17</u>	<u>164.9</u>	<u>7.1</u>	<u>"</u>
<u>11.81</u>	<u>4.0</u>	<u>15.88</u>	<u>6.95</u>	<u>2314</u>	<u>4.95</u>	<u>166.4</u>	<u>5.9</u>	<u>"</u>
<u>11.81</u>	<u>5.0 L</u>	<u>15.99</u>	<u>6.94</u>	<u>2314</u>	<u>4.81</u>	<u>168.3</u>	<u>6.2</u>	<u>"</u>

Purging Equipment: Dedicated 1/2" Poly Tubing Sampling Equipment: VSL 6920 amate 2026 Sample Intake Depth: 15'

SAMPLE NUMBER	TAG NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES	QA REMARKS
<u>LG-7</u>		<u>TOC</u>	<u>2-40ml VOA w/ HCL</u>	
<u>LG-7</u>		<u>COD</u>	<u>1-125ml HDPE w/ H2SO4</u>	
<u>LG-7</u>		<u>metals</u>	<u>1-250ml HDPE w/ HNO3</u>	
<u>LG-7</u>		<u>COND, TDS, BOD, pH, SO4, NO3, F, Cl</u>	<u>1-500ml HDPE w/ No pres.</u>	
<u>LG-7</u>		<u>TOX</u>	<u>2-16 Amber w/ H2SO4</u>	

Groundwater Sampling Field Form

Dup-01

WELL No. <u>LG-1</u>	PROJECT NUMBER <u>209383.11</u>	LOCATION <u>Roanoke Rapids, NC</u>	DATE <u>11/17/11</u>
SAMPLE No. <u>LG-1</u>	PROJECT NAME <u>IP - Roanoke Rapids</u>	FIELD TEAM <u>T. Banks, J. Hughes, C. Newcomb</u>	
SAMPLE TIME: <u>1640</u>		INSTRUMENT CALIBRATION DATE <u>11/17/11</u>	

WELL CONDITION: POOR SATISFACTORY NEW (if poor, explain)

FIELD CONDITIONS/ WEATHER: cloudy 45°

EQUIPMENT DECONTAMINATION: Liquinox (w) distilled final rinse w/ DI H₂O

Casing Diameter: (circle one)
2 4"
6" Other _____

Casing Volume Calculation: $(\pi r^2 h) (7.48 \text{ gal/ft}^3)$
Casing Volume (gallons/ft) for: 2" = 0.163; 4" = 0.653; 6" = 1.47

Depth to Water (feet): 8.09 Measuring Point Elevation (feet): TOC

Depth of Well (feet): 16.37 Groundwater Surface Elevation: _____

Water Column (feet): 8.28 Sheen / LNAPL / DNAPL present: No

Casing Volume (gallons): 1.34 Other Remarks: * Flooded all around

Calculated Purge Volume (gallons): 402.6 gallons Well LG-1 - could not get

Actual Purge Volume (gallons): 5.0 Liters turbidity down due to flooding.

DTW

TIME 2400 hrs	CUMULATIVE VOLUME (gal)	TEMP (°C)	pH	CONDUCTIVITY (µS/cm 25° C)	DISSOLVED OXYGEN (ppm)	ORP mV	TURBIDITY (NTU)	ODOR / COLOR/ REMARKS
8.09	0							
9.02	1.0 L	14.78	5.94	208	0.37	25.01	900	PURGE START
9.30	1.5 L	15.20	5.90	185	0.35	31.7	550	cloudy
9.31	3.0 L	15.41	5.88	176	0.37	10.9	360	cloudy
10.11	4.0 L	15.55	5.88	174	0.34	-9.6	280	111 f.
10.29	4.5 L	15.64	5.88	174	0.33	-25.9	240	11
10.41	5.0	15.67	5.88	175	0.30	-34.4	210	11
LG-1 sampled @ 1640 Dup-01 sampled @ 1640								

Purge pump w/ Dedicated Purging Equipment: YSI 6920 poly tubing Sampling Equipment: amette 2020 Sample Intake Depth: 14.5"

SAMPLE NUMBER	TAG NUMBER	ANALYTICAL METHOD	BOTTLE TYPE/ PRESERVATIVES.	QA REMARKS
Dup-01+	LG-1	TOC	2-40ml VOA w/ HCL	
Dup-01+	LG-1	COD	1-125ml HDPE w/ H ₂ SO ₄	
Dup-01+	LG-1	metals	1-250ml HDPE w/ HNO ₃	Dup-01
Dup-01+	LG-1	COND, TDS, BOD, PH, SO ₄ , NO ₃ , F, Cl	1-500ml HDPE w/ NO PRES	taken on LG-1
Dup-01+	LG-1	TOX	2-1L Amber w/ H ₂ SO ₄	

December 15, 2011

Service Request No: J1105196

Mr. Pat Kelley
EarthCon Consultants Inc
1880 West Oak Parkway
Building 100, Suite 106
Marietta, GA 30062

Laboratory Results for: IP-Roanoke Rapids/209383.11

Dear Mr. Kelley:

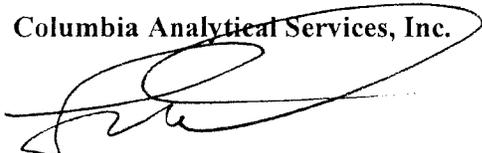
Enclosed are the results of the sample(s) submitted to our laboratory on November 18, 2011. For your reference, these analyses have been assigned our service request number **J1105196**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. If required, the laboratory can provide uncertainty measurements for each method employed in sample analysis; this uncertainty measurement would be generated using method validation studies and the laboratory's quality control data.

Please contact me if you have any questions. My extension is 4410. You may also contact me via email at JAllen@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.



Jerry Allen
Project Manager

COLUMBIA ANALYTICAL SERVICES, INC.

Client: EarthCon Site Services Inc Service Request No.: J1105196
Project: IP-Roanoke Rapids Date Received: 11/18/11
Sample Matrix: Water

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables, including results of QC samples analyzed from this delivery group. When appropriate to the procedure, method blank results have been reported with each analytical test. Analytical procedures performed by the lab are validated in accordance with NELAC standards. Parameters that are included in the NELAC Fields of Testing but are not included in the lab's NELAC accreditation are identified in the discussion of each analytical procedure.

Sample Receipt

Six water samples were received for analysis at Columbia Analytical Services on 11/18/11. The samples were received in good condition and consistent with the accompanying chain of custody form. Samples are refrigerated at $\leq 6^{\circ}\text{C}$ upon receipt at the lab except for aqueous samples designated for metals analyses, which were stored at room temperature.

Metals Analyses:

No significant data anomalies were noted with this analysis.

General Chemistry Analyses:

Method 9040B: All samples were received past the recommended holding time. The analysis was performed as soon as possible after receipt by the laboratory. The data is flagged to indicate the holding time violation.

Subcontracted Analytical Parameters:

The samples were delivered to Test America in Nashville, TN on 11/21/11 for method 9020B determination. The certified analytical report has been included in its entirety in Appendix A: Subcontracted Analytical Results.

Approved by



Date

12/15/11

Data Qualifiers

Inorganic Data

- * The result is an outlier. See case narrative.
- # The control limit criteria are not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- E The result is an estimated amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- Z Too many colonies were present (TNTC). The numeric value represents the filtration volume.
- i The MRL/MDL has been elevated due to matrix interference.
- X See case narrative.

Metals Data

- * The result is an outlier. See case narrative.
- # The control limit criteria are not applicable. See case narrative.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- E The reported value is estimated because of the presence of matrix interference.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The result was determined by Method of Standard Additions (MSA).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL has been elevated due to matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

Organic Data

- * The result is an outlier. See case narrative.
- # The control limit criteria are not applicable. See case narrative.
- A The tentatively identified compound is a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria were exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides)
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

Petroleum Hydrocarbon Specific

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client: EarthCon Consultants Inc
Project: IP-Roanoke Rapids/209383.11

Service Request: J1105196

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
J1105196-001	LG-6	11/17/11	09:55
J1105196-002	LG-5	11/17/11	11:30
J1105196-003	LG-3	11/17/11	13:45
J1105196-004	LG-7	11/17/11	15:05
J1105196-005	LG-1	11/17/11	16:40
J1105196-006	DUP-01	11/17/11	00:00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: LG-1
Lab Code: J1105196-005

Service Request: J1105196
Date Collected: 11/17/11 1640
Date Received: 11/18/11

Basis: NA

Inorganic Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Arsenic, Total Recoverable	6020	ND	U	µg/L	1.0	0.5	1	11/21/11	11/22/11 15:56	
Barium, Total Recoverable	6020	108		µg/L	2.0	0.4	1	11/21/11	11/22/11 15:56	
Cadmium, Total Recoverable	6020	0.34	J	µg/L	0.40	0.12	1	11/21/11	11/22/11 15:56	
Chromium, Total Recoverable	6020	3.2		µg/L	1.0	0.2	1	11/21/11	11/22/11 15:56	
Copper, Total Recoverable	6020	7.6		µg/L	1.0	0.2	1	11/21/11	11/22/11 15:56	
Iron, Total Recoverable	6010B	4270		µg/L	100	20	1	11/21/11	11/22/11 21:16	
Lead, Total Recoverable	6020	4.40		µg/L	0.50	0.06	1	11/21/11	11/22/11 15:56	
Manganese, Total Recoverable	6020	283		µg/L	2.0	0.2	1	11/21/11	11/22/11 15:56	
Mercury, Total	7470A	0.03	J	µg/L	0.10	0.02	1	11/21/11	11/22/11 15:38	
Selenium, Total Recoverable	6020	ND	U	µg/L	2.0	1.1	1	11/21/11	11/22/11 15:56	
Silver, Total Recoverable	6020	0.04	J	µg/L	0.50	0.03	1	11/21/11	11/22/11 15:56	
Zinc, Total Recoverable	6020	14.9		µg/L	5.0	0.9	1	11/21/11	11/22/11 15:56	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: LG-1
Lab Code: J1105196-005

Service Request: J1105196
Date Collected: 11/17/11 1640
Date Received: 11/18/11

Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	405.1	ND	U	mg/L	2.0	2.0	1	NA	11/18/11 14:00	
Carbon, Total Organic (TOC)	415.1	3.7		mg/L	1.0	0.2	1	NA	11/29/11 14:28	
Chemical Oxygen Demand, Total	SM21 5220 D	21		mg/L	20	8	1	11/22/11	11/22/11 16:29	
Chloride	300.0	2.42		mg/L	0.50	0.07	1	NA	11/18/11 18:11	
Conductivity at 25 Degrees Celsius	120.1	172		µMHOS/cm	1.0	1.0	1	NA	11/18/11 18:29	
Fluoride	300.0	0.15	J	mg/L	0.20	0.02	1	NA	11/18/11 18:11	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	11/18/11 18:11	
pH	9040B	6.54		pH Units			1	NA	11/18/11 11:15	H
Solids, Total Dissolved (TDS)	160.1	123		mg/L	10	10	1	NA	11/22/11 12:27	
Sulfate	300.0	17.5		mg/L	0.50	0.20	1	NA	11/18/11 18:11	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: LG-3
Lab Code: J1105196-003

Service Request: J1105196
Date Collected: 11/17/11 1345
Date Received: 11/18/11

Basis: NA

Inorganic Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Arsenic, Total Recoverable	6020	ND	U	µg/L	1.0	0.5	1	11/21/11	11/22/11 15:49	
Barium, Total Recoverable	6020	59.7		µg/L	2.0	0.4	1	11/21/11	11/22/11 15:49	
Cadmium, Total Recoverable	6020	ND	U	µg/L	0.40	0.12	1	11/21/11	11/22/11 15:49	
Chromium, Total Recoverable	6020	0.5	J	µg/L	1.0	0.2	1	11/21/11	11/22/11 15:49	
Copper, Total Recoverable	6020	0.7	J	µg/L	1.0	0.2	1	11/21/11	11/22/11 15:49	
Iron, Total Recoverable	6010B	250		µg/L	100	20	1	11/21/11	11/22/11 21:00	
Lead, Total Recoverable	6020	ND	U	µg/L	0.50	0.06	1	11/21/11	11/22/11 15:49	
Manganese, Total Recoverable	6020	1550		µg/L	2.0	0.2	1	11/21/11	11/22/11 15:49	
Mercury, Total	7470A	ND	U	µg/L	0.10	0.02	1	11/21/11	11/22/11 15:34	
Selenium, Total Recoverable	6020	1.3	J	µg/L	2.0	1.1	1	11/21/11	11/22/11 15:49	
Silver, Total Recoverable	6020	ND	U	µg/L	0.50	0.03	1	11/21/11	11/22/11 15:49	
Zinc, Total Recoverable	6020	2.2	J	µg/L	5.0	0.9	1	11/21/11	11/22/11 15:49	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: LG-3
Lab Code: J1105196-003

Service Request: J1105196
Date Collected: 11/17/11 13:45
Date Received: 11/18/11

Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	405.1	ND	U	mg/L	2.0	2.0	1	NA	11/18/11 14:00	
Carbon, Total Organic (TOC)	415.1	9.7		mg/L	1.0	0.2	1	NA	11/29/11 13:14	
Chemical Oxygen Demand, Total	SM21 5220 D	42		mg/L	20	8	1	11/22/11	11/22/11 16:28	
Chloride	300.0	71.5		mg/L	0.50	0.07	1	NA	11/18/11 17:41	
Conductivity at 25 Degrees Celsius	120.1	1990		µMHOS/cm	1.0	1.0	1	NA	11/18/11 18:22	
Fluoride	300.0	0.26		mg/L	0.20	0.02	1	NA	11/18/11 17:41	
Nitrate as Nitrogen	300.0	10.6		mg/L	0.20	0.03	1	NA	11/18/11 17:41	
pH	9040B	7.02		pH Units			1	NA	11/18/11 11:15	H
Solids, Total Dissolved (TDS)	160.1	1300		mg/L	20	20	2	NA	11/22/11 12:27	
Sulfate	300.0	184		mg/L	0.50	0.20	1	NA	11/18/11 17:41	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: LG-5
Lab Code: J1105196-002

Service Request: J1105196
Date Collected: 11/17/11 1130
Date Received: 11/18/11

Basis: NA

Inorganic Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Arsenic, Total Recoverable	6020	1.5		µg/L	1.0	0.5	1	11/21/11	11/22/11 15:46	
Barium, Total Recoverable	6020	107		µg/L	2.0	0.4	1	11/21/11	11/22/11 15:46	
Cadmium, Total Recoverable	6020	0.60		µg/L	0.40	0.12	1	11/21/11	11/22/11 15:46	
Chromium, Total Recoverable	6020	3.0		µg/L	1.0	0.2	1	11/21/11	11/22/11 15:46	
Copper, Total Recoverable	6020	3.2		µg/L	1.0	0.2	1	11/21/11	11/22/11 15:46	
Iron, Total Recoverable	6010B	6380		µg/L	100	20	1	11/21/11	11/22/11 20:56	
Lead, Total Recoverable	6020	0.13	J	µg/L	0.50	0.06	1	11/21/11	11/22/11 15:46	
Manganese, Total Recoverable	6020	10800		µg/L	40	4	20	11/21/11	11/29/11 13:27	
Mercury, Total	7470A	ND	U	µg/L	0.10	0.02	1	11/21/11	11/22/11 15:32	
Selenium, Total Recoverable	6020	ND	U	µg/L	2.0	1.1	1	11/21/11	11/22/11 15:46	
Silver, Total Recoverable	6020	0.03	J	µg/L	0.50	0.03	1	11/21/11	11/22/11 15:46	
Zinc, Total Recoverable	6020	14.9		µg/L	5.0	0.9	1	11/21/11	11/22/11 15:46	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: LG-5
Lab Code: J1105196-002

Service Request: J1105196
Date Collected: 11/17/11 11:30
Date Received: 11/18/11

Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	405.1	2.2		mg/L	2.0	2.0	1	NA	11/18/11 14:00	
Carbon, Total Organic (TOC)	415.1	12.1		mg/L	1.0	0.2	1	NA	11/29/11 12:28	
Chemical Oxygen Demand, Total	SM21 5220 D	56		mg/L	20	8	1	11/22/11	11/22/11 16:28	
Chloride	300.0	3.12		mg/L	0.50	0.07	1	NA	11/18/11 17:26	
Conductivity at 25 Degrecs Cclsius	120.1	701		µMHOS/cm	1.0	1.0	1	NA	11/18/11 18:19	
Fluoride	300.0	0.17	J	mg/L	0.20	0.02	1	NA	11/18/11 17:26	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	11/18/11 17:26	
pH	9040B	6.39		pH Units			1	NA	11/18/11 11:15	H
Solids, Total Dissolved (TDS)	160.1	540		mg/L	10	10	1	NA	11/22/11 12:27	
Sulfate	300.0	176		mg/L	0.50	0.20	1	NA	11/18/11 17:26	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: LG-6
Lab Code: J1105196-001

Service Request: J1105196
Date Collected: 11/17/11 0955
Date Received: 11/18/11

Basis: NA

Inorganic Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Arsenic, Total Recoverable	6020	ND	U	µg/L	1.0	0.5	1	11/21/11	11/22/11 15:43	
Barium, Total Recoverable	6020	521		µg/L	2.0	0.4	1	11/21/11	11/22/11 15:43	
Cadmium, Total Recoverable	6020	ND	U	µg/L	0.40	0.12	1	11/21/11	11/22/11 15:43	
Chromium, Total Recoverable	6020	5.1		µg/L	1.0	0.2	1	11/21/11	11/22/11 15:43	
Copper, Total Recoverable	6020	0.7	J	µg/L	1.0	0.2	1	11/21/11	11/22/11 15:43	
Iron, Total Recoverable	6010B	350		µg/L	100	20	1	11/21/11	11/22/11 20:48	
Lead, Total Recoverable	6020	0.14	J	µg/L	0.50	0.06	1	11/21/11	11/22/11 15:43	
Manganese, Total Recoverable	6020	1120		µg/L	2.0	0.2	1	11/21/11	11/22/11 15:43	
Mercury, Total	7470A	ND	U	µg/L	0.10	0.02	1	11/21/11	11/22/11 15:30	
Selenium, Total Recoverable	6020	ND	U	µg/L	2.0	1.1	1	11/21/11	11/22/11 15:43	
Silver, Total Recoverable	6020	ND	U	µg/L	0.50	0.03	1	11/21/11	11/22/11 15:43	
Zinc, Total Recoverable	6020	2.2	J	µg/L	5.0	0.9	1	11/21/11	11/22/11 15:43	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: LG-6
Lab Code: J1105196-001

Service Request: J1105196
Date Collected: 11/17/11 0955
Date Received: 11/18/11

Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	405.1	7.5		mg/L	2.0	2.0	1	NA	11/18/11 14:00	
Carbon, Total Organic (TOC)	415.1	21.9		mg/L	1.0	0.2	1	NA	11/29/11 12:09	
Chemical Oxygen Demand, Total	SM21 5220 D	94		mg/L	20	8	1	11/22/11	11/22/11 16:25	
Chloride	300.0	25.1		mg/L	2.5	0.4	5	NA	11/22/11 16:57	
Conductivity at 25 Degrees Celsius	120.1	3430		µMHOS/cm	1.0	1.0	1	NA	11/18/11 18:10	
Fluoride	300.0	0.29		mg/L	0.20	0.02	1	NA	11/18/11 16:41	
Nitrate as Nitrogen	300.0	0.19	J	mg/L	0.20	0.03	1	NA	11/18/11 16:41	
pH	9040B	7.55		pH Units			1	NA	11/18/11 11:15	H
Solids, Total Dissolved (TDS)	160.1	2500		mg/L	40	40	4	NA	11/22/11 12:27	
Sulfate	300.0	271		mg/L	2.5	1.0	5	NA	11/22/11 16:57	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: LG-7
Lab Code: J1105196-004

Service Request: J1105196
Date Collected: 11/17/11 1505
Date Received: 11/18/11

Basis: NA

Inorganic Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Arsenic, Total Recoverable	6020	ND	U	µg/L	1.0	0.5	1	11/21/11	11/22/11 15:53	
Barium, Total Recoverable	6020	92.1		µg/L	2.0	0.4	1	11/21/11	11/22/11 15:53	
Cadmium, Total Recoverable	6020	0.30	J	µg/L	0.40	0.12	1	11/21/11	11/22/11 15:53	
Chromium, Total Recoverable	6020	0.5	J	µg/L	1.0	0.2	1	11/21/11	11/22/11 15:53	
Copper, Total Recoverable	6020	4.0		µg/L	1.0	0.2	1	11/21/11	11/22/11 15:53	
Iron, Total Recoverable	6010B	960		µg/L	100	20	1	11/21/11	11/22/11 21:08	
Lead, Total Recoverable	6020	1.21		µg/L	0.50	0.06	1	11/21/11	11/22/11 15:53	
Manganese, Total Recoverable	6020	465		µg/L	2.0	0.2	1	11/21/11	11/22/11 15:53	
Mercury, Total	7470A	ND	U	µg/L	0.10	0.02	1	11/21/11	11/22/11 15:36	
Selenium, Total Recoverable	6020	ND	U	µg/L	2.0	1.1	1	11/21/11	11/22/11 15:53	
Silver, Total Recoverable	6020	ND	U	µg/L	0.50	0.03	1	11/21/11	11/22/11 15:53	
Zinc, Total Recoverable	6020	3.7	J	µg/L	5.0	0.9	1	11/21/11	11/22/11 15:53	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
 Project: IP-Roanoke Rapids/209383.11
 Sample Matrix: Water
 Sample Name: LG-7
 Lab Code: J1105196-004

Service Request: J1105196
 Date Collected: 11/17/11 1505
 Date Received: 11/18/11

Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	405.1	ND	U	mg/L	2.0	2.0	1	NA	11/18/11 14:00	
Carbon, Total Organic (TOC)	415.1	5.8		mg/L	1.0	0.2	1	NA	11/29/11 13:27	
Chemical Oxygen Demand, Total	SM21 5220 D	29		mg/L	20	8	1	11/22/11	11/22/11 16:28	
Chloride	300.0	20.6		mg/L	1.0	0.2	2	NA	11/22/11 17:42	
Conductivity at 25 Degrees Celsius	120.1	2120		µMHOS/cm	1.0	1.0	1	NA	11/18/11 18:25	
Fluoride	300.0	0.23		mg/L	0.20	0.02	1	NA	11/18/11 17:56	
Nitrate as Nitrogen	300.0	0.20	J	mg/L	0.20	0.03	1	NA	11/18/11 17:56	
pH	9040B	7.47		pH Units			1	NA	11/18/11 11:15	H
Solids, Total Dissolved (TDS)	160.1	1420		mg/L	40	40	4	NA	11/22/11 12:27	
Sulfate	300.0	131		mg/L	0.50	0.20	1	NA	11/18/11 17:56	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: DUP-01
Lab Code: J1105196-006

Service Request: J1105196
Date Collected: 11/17/11 0000
Date Received: 11/18/11

Basis: NA

Inorganic Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Arsenic, Total Recoverable	6020	0.5	J	µg/L	1.0	0.5	1	11/21/11	11/22/11 16:17	
Barium, Total Recoverable	6020	106		µg/L	2.0	0.4	1	11/21/11	11/22/11 16:17	
Cadmium, Total Recoverable	6020	0.32	J	µg/L	0.40	0.12	1	11/21/11	11/22/11 16:17	
Chromium, Total Recoverable	6020	3.4		µg/L	1.0	0.2	1	11/21/11	11/22/11 16:17	
Copper, Total Recoverable	6020	7.3		µg/L	1.0	0.2	1	11/21/11	11/22/11 16:17	
Iron, Total Recoverable	6010B	4190		µg/L	100	20	1	11/21/11	11/22/11 21:20	
Lead, Total Recoverable	6020	4.50		µg/L	0.50	0.06	1	11/21/11	11/22/11 16:17	
Manganese, Total Recoverable	6020	288		µg/L	2.0	0.2	1	11/21/11	11/22/11 16:17	
Mercury, Total	7470A	0.03	J	µg/L	0.10	0.02	1	11/21/11	11/22/11 15:39	
Selenium, Total Recoverable	6020	1.5	J	µg/L	2.0	1.1	1	11/21/11	11/22/11 16:17	
Silver, Total Recoverable	6020	ND	U	µg/L	0.50	0.03	1	11/21/11	11/22/11 16:17	
Zinc, Total Recoverable	6020	15.2		µg/L	5.0	0.9	1	11/21/11	11/22/11 16:17	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: DUP-01
Lab Code: J1105196-006

Service Request: J1105196
Date Collected: 11/17/11 0000
Date Received: 11/18/11

Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	405.1	ND U	mg/L	2.0	2.0	1	NA	11/18/11 14:00	
Carbon, Total Organic (TOC)	415.1	3.6	mg/L	1.0	0.2	1	NA	11/29/11 14:43	
Chemical Oxygen Demand, Total	SM21 5220 D	20	mg/L	20	8	1	11/22/11	11/22/11 16:30	
Chloride	300.0	2.40	mg/L	0.50	0.07	1	NA	11/18/11 18:26	
Conductivity at 25 Degrees Celsius	120.1	171	µMHOS/cm	1.0	1.0	1	NA	11/18/11 18:31	
Fluoride	300.0	0.14 J	mg/L	0.20	0.02	1	NA	11/18/11 18:26	
Nitrate as Nitrogen	300.0	ND U	mg/L	0.20	0.03	1	NA	11/18/11 18:26	
pH	9040B	6.48	pH Units			1	NA	11/18/11 11:15	H
Solids, Total Dissolved (TDS)	160.1	117	mg/L	10	10	1	NA	11/23/11 16:03	
Sulfate	300.0	17.5	mg/L	0.50	0.20	1	NA	11/18/11 18:26	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: Method Blank
Lab Code: J1105196-MB

Service Request: J1105196
Date Collected: NA
Date Received: NA

Basis: NA

Inorganic Parameters

Analyte Name	Method	Result Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Arsenic, Total Recoverable	6020	ND U	µg/L	1.0	0.5	1	11/21/11	11/22/11 15:31	
Barium, Total Recoverable	6020	ND U	µg/L	2.0	0.4	1	11/21/11	11/22/11 15:31	
Cadmium, Total Recoverable	6020	ND U	µg/L	0.40	0.12	1	11/21/11	11/22/11 15:31	
Chromium, Total Recoverable	6020	ND U	µg/L	1.0	0.2	1	11/21/11	11/22/11 15:31	
Copper, Total Recoverable	6020	ND U	µg/L	1.0	0.2	1	11/21/11	11/22/11 15:31	
Iron, Total Recoverable	6010B	ND U	µg/L	100	20	1	11/21/11	11/22/11 18:17	
Lead, Total Recoverable	6020	ND U	µg/L	0.50	0.06	1	11/21/11	11/22/11 15:31	
Manganese, Total Recoverable	6020	ND U	µg/L	2.0	0.2	1	11/21/11	11/22/11 15:31	
Mercury, Total	7470A	ND U	µg/L	0.10	0.02	1	11/21/11	11/22/11 14:56	
Selenium, Total Recoverable	6020	ND U	µg/L	2.0	1.1	1	11/21/11	11/22/11 15:31	
Silver, Total Recoverable	6020	ND U	µg/L	0.50	0.03	1	11/21/11	11/22/11 15:31	
Zinc, Total Recoverable	6020	ND U	µg/L	5.0	0.9	1	11/21/11	11/22/11 15:31	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: Method Blank
Lab Code: J1105196-MB1

Service Request: J1105196
Date Collected: NA
Date Received: NA

Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	405.1	ND U	mg/L	2.0	2.0	1	NA	11/18/11 11:00	
Carbon, Total Organic (TOC)	415.1	0.3 J	mg/L	1.0	0.2	1	NA	11/29/11 10:51	
Chemical Oxygen Demand, Total	SM21 5220 D	ND U	mg/L	20	8	1	11/22/11	11/22/11 16:24	
Chloride	300.0	ND U	mg/L	0.50	0.07	1	NA	11/18/11 15:39	
Conductivity at 25 Degrees Celsius	120.1	ND U	µMHOS/cm	1.0	1.0	1	NA	11/18/11 18:05	
Fluoride	300.0	ND U	mg/L	0.20	0.02	1	NA	11/18/11 15:39	
Nitrate as Nitrogen	300.0	ND U	mg/L	0.20	0.03	1	NA	11/18/11 15:39	
Solids, Total Dissolved (TDS)	160.1	ND U	mg/L	10	10	1	NA	11/22/11 12:27	
Sulfate	300.0	ND U	mg/L	0.50	0.20	1	NA	11/18/11 15:39	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: Method Blank
Lab Code: J1105196-MB2

Service Request: J1105196
Date Collected: NA
Date Received: NA
Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Chloride	300.0	ND U	mg/L	0.50	0.07	1	NA	11/22/11 12:57	
Solids, Total Dissolved (TDS)	160.1	ND U	mg/L	10	10	1	NA	11/23/11 16:03	
Sulfate	300.0	ND U	mg/L	0.50	0.20	1	NA	11/22/11 12:57	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EarthCon Site Services Inc
 Project: IP-Roanoke Rapids/209383.11
 Sample Matrix: Water

Service Request: J1105196
 Date Collected: 11/17/11
 Date Received: 11/18/11
 Date Analyzed: 11/22/11

Matrix Spike Summary
 Inorganic Parameters

Sample Name: LG-1
 Lab Code: J1105196-005

Units: µg/L
 Basis: NA

Analytical Method: 6020
 Prep Method: EPA 3005A

Analyte Name	Sample Result	LG-IMS Matrix Spike J1105196-005MS			LG-1DMS Duplicate Matrix Spike J1105196-005DMS			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Arsenic, Total Recoverable	ND	51.7	50.0	103	51.1	50.0	102	75 - 125	1	20
Barium, Total Recoverable	108	155	50.0	95	156	50.0	96	75 - 125	<1	20
Cadmium, Total Recoverable	0.34	50.9	50.0	101	52.3	50.0	104	75 - 125	3	20
Chromium, Total Recoverable	3.2	52.3	50.0	98	52.6	50.0	99	75 - 125	<1	20
Copper, Total Recoverable	7.6	56.0	50.0	97	56.4	50.0	98	75 - 125	<1	20
Lead, Total Recoverable	4.40	53.9	50.0	99	54.2	50.0	100	75 - 125	<1	20
Manganese, Total Recoverable	283	332	50.0	98 #	333	50.0	100 #	75 - 125	<1	20
Selenium, Total Recoverable	ND	50.7	50.0	101	48.7	50.0	97	75 - 125	4	20
Silver, Total Recoverable	0.04	48.9	50.0	98	50.1	50.0	100	75 - 125	2	20
Zinc, Total Recoverable	14.9	114	100	99	114	100	99	75 - 125	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water

Service Request: J1105196
Date Analyzed: 11/22/11

**Lab Control Sample Summary
 Inorganic Parameters**

Units: µg/L
Basis: NA

Lab Control Sample
 J1105196-LCS

Analyte Name	Method	Result	Spike		% Rec Limits
			Amount	% Rec	
Arsenic, Total Recoverable	6020	51.5	50.0	103	80 - 120
Barium, Total Recoverable	6020	50.8	50.0	102	80 - 120
Cadmium, Total Recoverable	6020	52.2	50.0	104	80 - 120
Chromium, Total Recoverable	6020	49.9	50.0	100	80 - 120
Copper, Total Recoverable	6020	50.5	50.0	101	80 - 120
Iron, Total Recoverable	6010B	5000	5000	100	91 - 113
Lead, Total Recoverable	6020	49.7	50.0	99	80 - 120
Manganese, Total Recoverable	6020	50.7	50.0	101	80 - 120
Mercury, Total	7470A	1.28	1.25	102	80 - 120
Selenium, Total Recoverable	6020	52.3	50.0	105	80 - 120
Silver, Total Recoverable	6020	50.5	50.0	101	80 - 120
Zinc, Total Recoverable	6020	101	100	101	80 - 120

Results flagged with an asterisk (*) indicate values outside control criteria.

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EarthCon Site Services Inc
 Project: IP-Roanoke Rapids/209383.11
 Sample Matrix: Water

Service Request: J1105196
 Date Collected: 11/17/11
 Date Received: 11/18/11
 Date Analyzed: 11/18/11 -
 11/22/11

Matrix Spike Summary
 General Chemistry Parameters

Sample Name: LG-6
 Lab Code: J1105196-001

Units: mg/L
 Basis: NA

LG-6MS
 Matrix Spike
 J1105196-001MS

Analyte Name	Method	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Chemical Oxygen Demand, Total	SM21 5220 D	94	582	500	98	90 - 110
Chloride	300.0	25.1	273	250	99	90 - 110
Fluoride	300.0	0.29	5.11	5.00	96	90 - 110
Nitrate as Nitrogen	300.0	0.19	4.93	5.00	95	90 - 110
Sulfate	300.0	271	515	250	97	90 - 110

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EarthCon Site Services Inc
 Project: IP-Roanoke Rapids/209383.11
 Sample Matrix: Water

Service Request: J1105196
 Date Collected: 11/17/11
 Date Received: 11/18/11
 Date Analyzed: 11/18/11 -
 11/22/11

Replicate Sample Summary
 General Chemistry Parameters

Sample Name: LG-6
 Lab Code: J1105196-001

Units: mg/L
 Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	I.G-6DUP Duplicate Sample		RPD	RPD Limit
					J1105196-001DUP1	Average		
Chemical Oxygen Demand, Total	SM21 5220 D	20	8	94	96	94.9	2	20
Chloride	300.0	2.5	0.4	25.1	25.0	25.0	<1	20
Fluoride	300.0	0.20	0.02	0.29	0.29	0.288	<1	20
Nitrate as Nitrogen	300.0	0.20	0.03	0.19 J	0.19 J	0.188	<1	20
Sulfate	300.0	2.5	1.0	271	271	271	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water

Service Request: J1105196
Date Collected: 11/17/11
Date Received: 11/18/11
Date Analyzed: 11/18/11 -
 11/22/11

**Replicate Sample Summary
 General Chemistry Parameters**

Sample Name: LG-6
Lab Code: J1105196-001

Units: pH Units
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	LG-6DUP Duplicate Sample		RPD	RPD Limit
					J1105196-001DUP1 Result	Average		
pH	9040B	-		7.55	7.57	7.56	<1	20

~~Results flagged with an asterisk (*) indicate values outside control criteria.~~

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water

Service Request: J1105196
Date Collected: 11/17/11
Date Received: 11/18/11
Date Analyzed: 11/18/11 -
 11/22/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: LG-6
Lab Code: J1105196-001

Units: μMHOS/cm
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	LG-6DUP		RPD	RPD Limit
					Duplicate Sample Result	Average		
Conductivity at 25 Degrees Celsius	120.1	1.0	1.0	3430	J1105196-001DUP1 3410	3420	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water

Service Request: J1105196
Date Collected: 11/17/11
Date Received: 11/18/11
Date Analyzed: 11/22/11

**Replicate Sample Summary
 General Chemistry Parameters**

Sample Name: LG-3
Lab Code: J1105196-003

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	LG-3DUP Duplicate Sample		RPD	RPD Limit
					J1105196-003DUP2 Result	Average		
Solids, Total Dissolved (TDS)	160.1	20	20	1300	1320	1310	1	20

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Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EarthCon Site Services Inc
 Project: IP-Roanoke Rapids/209383.11
 Sample Matrix: Water

Service Request: J1105196
 Date Collected: 11/17/11
 Date Received: 11/18/11
 Date Analyzed: 11/22/11

Replicate Sample Summary
 General Chemistry Parameters

Sample Name: LG-1 Units: mg/L
 Lab Code: J1105196-005 Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	LG-1DUP Duplicate Sample		RPD	RPD Limit
					J1105196-005DUP3 Result	Average		
Solids, Total Dissolved (TDS)	160.1	10	10	123	113	118	8	20

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water

Service Request: J1105196
Date Analyzed: 11/18/11 -
 11/29/11

**Lab Control Sample Summary
 General Chemistry Parameters**

Units: mg/L
Basis: NA

Lab Control Sample J1105196-LCS1					
Analyte Name	Method	Result	Spike		% Rec Limits
			Amount	% Rec	
Biochemical Oxygen Demand (BOD)	405.1	197	198	100	84.6 - 115.
Carbon, Total Organic (TOC)	415.1	47.9	50.0	96	90 - 110
Chemical Oxygen Demand, Total	SM21 5220 D	494	500	99	95 - 105
Chloride	300.0	50.7	50.0	101	90 - 110
Fluoride	300.0	5.09	5.00	102	90 - 110
Nitrate as Nitrogen	300.0	4.97	5.00	99	90 - 110
Solids, Total Dissolved (TDS)	160.1	298	300	99	85 - 115
Sulfate	300.0	51.4	50.0	103	90 - 110

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water

Service Request: J1105196
Date Analyzed: 11/18/11 -
11/29/11

Lab Control Sample Summary
General Chemistry Parameters

Units: μ MHOS/cm
Basis: NA

Lab Control Sample					
J1105196-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Conductivity at 25 Degrees Celsius	120.1	973	1000	97	90 - 110

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water

Service Request: J1105196
Date Analyzed: 11/22/11 -
 11/23/11

**Lab Control Sample Summary
 General Chemistry Parameters**

Units: mg/L
Basis: NA

Lab Control Sample J1105196-LCS2					
Analyte Name	Method	Result	Spike		% Rec Limits
			Amount	% Rec	
Chloride	300.0	49.5	50.0	99	90 - 110
Solids, Total Dissolved (TDS)	160.1	311	300	104	85 - 115
Sulfate	300.0	50.3	50.0	101	90 - 110

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: EarthCON Service Request #: J1103196
 Project: IP-Roanoke Rapids
 Cooler received on 11/18/11 and opened on 11/18/11 by KK
 COURIER: CAS UPS FEDEX Client Other _____ Airbill # 870079554370

- 1 Were custody seals on outside of cooler? Yes No
If yes, how many and where? #: 1 on lid other _____
- 2 Were seals intact and signature and date correct? Yes No N/A
- 3 Were custody papers properly filled out? Yes No N/A
- 4 Temperature of cooler(s) upon receipt (Should be > 0°C and < 6°C) 1.7°C 2.6°C
- 5 Thermometer ID T71 T13
- 6 Temperature Blank Present? Yes No
- 7 Were Ice or Ice Packs present Ice Ice Packs No
- 8 Did all bottles arrive in good condition (unbroken, etc....)? Yes No N/A
- 9 Type of packing material present Netting Vial Holder Bubble Wrap
 Paper Styrofoam Other N/A
- 10 Were all bottle labels complete (sample ID, preservation, etc....)? Yes No N/A
- 11 Did all bottle labels and tags agree with custody papers? Yes No N/A
- 12 Were the correct bottles used for the tests indicated? Yes No N/A
- 13 Were all of the preserved bottles received with the appropriate preservative?
 HNO3 pH<2 H2SO4 pH<2 ZnAc2/NaOH pH>9 NaOH pH>12 HCl pH<2
Preservative additions noted below
- 14 Were all samples received within analysis holding times? Yes No N/A
- 15 Were all VOA vials free of air bubbles? If present, note below Yes No N/A
- 16 Where did the bottles originate? CAS Client

Sample ID	Reagent	Lot #	ml added	Initials	Date/Time
LG-6	HNO3	Mct-12-74E	2mL	KK	11-18-11 1105
LG-3	↓	↓	1mL		
LG-7	↓	↓	1mL		↓
LG-6	H2SO4	Gms585-87H	2mL		1110
LG-6	↓	↓	↓		↓
LG-7	↓	↓	1mL		↓

Additional comments and/or explanation of all discrepancies noted above:

pH received out of hold.

Client approval to run samples if discrepancies noted:

Date: 32



CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

9143 Phillips Highway, Ste 200 • Jacksonville, FL 32256 (904) 739-2277 • 800-695-7222 x06 • FAX (904) 739-2011 PAGE 1 OF 1

SR # J1105196

Project Name: TIP-Roanoke Rapids
 Project Manager: Pat Kelley
 Company Address: Earlison Consultants
1880 West Oak Pkwy Bld 100 Suite 106
Marietta, GA 30062
 Phone #: 770-973-2100
 Sample Signature: [Signature]
 Project Number: 209383-11
 E-mail Address: [Redacted]
 FAX#: 770-973-7395
 Sample Printed Name: Tamar Banks

ANALYSIS REQUESTED (Include Method Number and Concentration)
 PRESERVATIVE: 1 3 2 0 3
TOC
COD
Metals
COND TOX
PHS TOX
TOX

NUMBER OF CONTAINERS: 7 2
 PRESERVATIVE KEY:
 0. NONE
 1. HCL
 2. HNO3
 3. H2SO4
 4. NaOH
 5. Zn Acetate
 6. MeOH
 7. NaHSO4
 8. Other _____

CLIENT SAMPLE ID	LAB ID	SAMPLING DATE	TIME	MATRIX
LG-6		11/17/11	0955	GW
LG-5			1130	GW
LG-3			1345	GW
LG-7			1505	GW
LG-1			1640	GW
Dup-01				GW

SPECIAL INSTRUCTIONS/COMMENTS:
1.7% 2.6%
711 713
BOD + Nitrate
have 48 holding time

TURNAROUND REQUIREMENTS:
 STANDARD
 RUSH (SURCHARGES APPLY)
 REQUESTED FAX DATE: _____
 REQUESTED REPORT DATE: _____

REPORT REQUIREMENTS:
 I. Results Only
 II. Results + QC Summaries (LCS, DUP MS, MSD as required)
 III. Results + QC and Calibrator Summaries
 IV. Data Validator Report with Raw Data
 V. Speciated Forms / Custom Report
 Ecata Yes ___ No ___

RECEIVED BY: [Signature]
 Signature: _____
 Printed Name: Kristie Kelly
 Firm: CFAS
 Date/Time: 11/11/11 10:15

RELINQUISHED BY: [Signature]
 Signature: _____
 Printed Name: _____
 Firm: _____
 Date/Time: _____

CUSTODY SEALS: Y N
 RELINQUISHED BY: FedEx
 Signature: _____
 Printed Name: _____
 Firm: _____
 Date/Time: _____



Columbia Analytical Services
9143 Philips Highway, Suite 200
Jacksonville, FL 32256
Tel 904-739-2277
Fax 904-739-2011

Appendix A

Subcontracted Analytical Results

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Nashville
2960 Foster Creighton Road
Nashville, TN 37204
Tel: 800-765-0980

TestAmerica Job ID: NUK3193
Client Project/Site: [none]
Client Project Description: Columbia Analytical Services

For:
Columbia Analytical Services (9477)
9143 Philips Highway, Suite 200
Jacksonville, FL 32256

Attn: Jerry Allen

Madonna Myers

Authorized for release by:
12/14/2011 4:25:49 PM

Madonna Myers
Project Manager
madonna.myers@testamericainc.com

LINKS

Review your project
results through
Total Access

Have a Question?

**Ask
The
Expert**

Visit us at:
www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Certification Summary	16
Chain of Custody	17

Sample Summary

Client: Columbia Analytical Services (9477)
Project/Site: [none]

TestAmerica Job ID: NUK3193

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
NUK3193-01	LG-6	Water	11/17/11 09:55	11/22/11 09:45
NUK3193-02	LG-5	Water	11/17/11 11:30	11/22/11 09:45
NUK3193-03	LG-3	Water	11/17/11 13:45	11/22/11 09:45
NUK3193-04	LG-7	Water	11/17/11 15:05	11/22/11 09:45
NUK3193-05	LG-1	Water	11/17/11 16:40	11/22/11 09:45
NUK3193-06	DUP-01	Water	11/17/11 00:01	11/22/11 09:45

Definitions/Glossary

Client: Columbia Analytical Services (9477)

TestAmerica Job ID: NUK3193

Project/Site: [none]

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
D	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)



Client Sample Results

Client: Columbia Analytical Services (9477)
Project/Site: [none]

TestAmerica Job ID: NUK3193

Client Sample ID: LG-6

Lab Sample ID: NUK3193-01

Date Collected: 11/17/11 09:55

Matrix: Water

Date Received: 11/22/11 09:45

Method: SW846 9020B - General Chemistry Parameters

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Halides	0.852		0.120	0.0720	mg/L		12/01/11 09:14	12/02/11 11:09	1.00

5

Client Sample Results

Client: Columbia Analytical Services (9477)
Project/Site: [none]

TestAmerica Job ID: NUK3193

Client Sample ID: LG-5

Lab Sample ID: NUK3193-02

Date Collected: 11/17/11 11:30

Matrix: Water

Date Received: 11/22/11 09:45

Method: SW846 9020B - General Chemistry Parameters

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Halides	0.410		0.120	0.0720	mg/L		12/01/11 09:14	12/02/11 11:09	1.00

5

Client Sample Results

Client: Columbia Analytical Services (9477)
Project/Site: [none]

TestAmerica Job ID: NUK3193

Client Sample ID: LG-3

Lab Sample ID: NUK3193-03

Date Collected: 11/17/11 13:45

Matrix: Water

Date Received: 11/22/11 09:45

Method: SW846 9020B - General Chemistry Parameters

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Halides	0.763		0.0300	0.0180	mg/L		12/01/11 09:14	12/02/11 11:09	1.00

5

Client Sample Results

Client: Columbia Analytical Services (9477)
Project/Site: [none]

TestAmerica Job ID: NUK3193

Client Sample ID: LG-7
Date Collected: 11/17/11 15:05
Date Received: 11/22/11 09:45

Lab Sample ID: NUK3193-04
Matrix: Water

Method: SW846 9020B - General Chemistry Parameters

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Halides	0.337		0.0300	0.0180	mg/L		12/01/11 09:14	12/02/11 11:09	1.00

5

Client Sample Results

Client: Columbia Analytical Services (9477)
Project/Site: [none]

TestAmerica Job ID: NUK3193

Client Sample ID: LG-1

Lab Sample ID: NUK3193-05

Date Collected: 11/17/11 16:40

Matrix: Water

Date Received: 11/22/11 09:45

Method: SW846 9020B - General Chemistry Parameters

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Halides	0.190		0.0600	0.0360	mg/L		12/01/11 09:14	12/02/11 11:09	1.00

5

Client Sample Results

Client: Columbia Analytical Services (9477)
Project/Site: [none]

TestAmerica Job ID: NUK3193

Client Sample ID: DUP-01

Lab Sample ID: NUK3193-06

Date Collected: 11/17/11 00:01

Matrix: Water

Date Received: 11/22/11 09:45

Method: SW846 9020B - General Chemistry Parameters

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Halides	0.188		0.0600	0.0360	mg/L		12/01/11 09:14	12/02/11 11:09	1.00

5

QC Sample Results

Client: Columbia Analytical Services (9477)
 Project/Site: [none]

TestAmerica Job ID: NUK3193

Method: SW846 9020B - General Chemistry Parameters

Lab Sample ID: 11L0040-BLK1
 Matrix: Water
 Analysis Batch: 11L0040

Client Sample ID: Method Blank
 Prep Type: Total
 Prep Batch: 11L0040_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Halides	ND		0.0300	0.0180	mg/L		12/01/11 09:14	12/02/11 11:09	1.00

Lab Sample ID: 11L0040-BS1
 Matrix: Water
 Analysis Batch: 11L0040

Client Sample ID: Lab Control Sample
 Prep Type: Total
 Prep Batch: 11L0040_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Organic Halides	0.250	0.258		mg/L		103	90 - 120

Lab Sample ID: 11L0040-BSD1
 Matrix: Water
 Analysis Batch: 11L0040

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total
 Prep Batch: 11L0040_P

Analyte	Spike Added	LCS Dup Result	LCS Dup Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Total Organic Halides	0.250	0.243		mg/L		97	90 - 120	6	20

QC Association Summary

Client: Columbia Analytical Services (9477)
 Project/Site: [none]

TestAmerica Job ID: NUK3193

WetChem

Analysis Batch: 11L0040

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11L0040-BLK1	Method Blank	Total	Water	SW846 9020B	11L0040_P
11L0040-BS1	Lab Control Sample	Total	Water	SW846 9020B	11L0040_P
11L0040-BSD1	Lab Control Sample Dup	Total	Water	SW846 9020B	11L0040_P
NUK3193-01	LG-6	Total	Water	SW846 9020B	11L0040_P
NUK3193-02	LG-5	Total	Water	SW846 9020B	11L0040_P
NUK3193-03	LG-3	Total	Water	SW846 9020B	11L0040_P
NUK3193-04	LG-7	Total	Water	SW846 9020B	11L0040_P
NUK3193-05	LG-1	Total	Water	SW846 9020B	11L0040_P
NUK3193-06	DUP-01	Total	Water	SW846 9020B	11L0040_P



Prep Batch: 11L0040_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11L0040-BLK1	Method Blank	Total	Water	NO PREP	
11L0040-BS1	Lab Control Sample	Total	Water	NO PREP	
11L0040-BSD1	Lab Control Sample Dup	Total	Water	NO PREP	
NUK3193-01	LG-6	Total	Water	NO PREP	
NUK3193-02	LG-5	Total	Water	NO PREP	
NUK3193-03	LG-3	Total	Water	NO PREP	
NUK3193-04	LG-7	Total	Water	NO PREP	
NUK3193-05	LG-1	Total	Water	NO PREP	
NUK3193-06	DUP-01	Total	Water	NO PREP	

Lab Chronicle

Client: Columbia Analytical Services (9477)
Project/Site: [none]

TestAmerica Job ID: NUK3193

Client Sample ID: LG-6

Date Collected: 11/17/11 09:55
Date Received: 11/22/11 09:45

Lab Sample ID: NUK3193-01

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	NO PREP		4.00	11L0040_P	12/01/11 09:14	SHJ	TAL NSH
Total	Analysis	SW846 9020B		1.00	11L0040	12/02/11 11:09	SHJ	TAL NSH

Client Sample ID: LG-5

Date Collected: 11/17/11 11:30
Date Received: 11/22/11 09:45

Lab Sample ID: NUK3193-02

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	NO PREP		4.00	11L0040_P	12/01/11 09:14	SHJ	TAL NSH
Total	Analysis	SW846 9020B		1.00	11L0040	12/02/11 11:09	SHJ	TAL NSH

Client Sample ID: LG-3

Date Collected: 11/17/11 13:45
Date Received: 11/22/11 09:45

Lab Sample ID: NUK3193-03

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	NO PREP		1.00	11L0040_P	12/01/11 09:14	SHJ	TAL NSH
Total	Analysis	SW846 9020B		1.00	11L0040	12/02/11 11:09	SHJ	TAL NSH

Client Sample ID: LG-7

Date Collected: 11/17/11 15:05
Date Received: 11/22/11 09:45

Lab Sample ID: NUK3193-04

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	NO PREP		1.00	11L0040_P	12/01/11 09:14	SHJ	TAL NSH
Total	Analysis	SW846 9020B		1.00	11L0040	12/02/11 11:09	SHJ	TAL NSH

Client Sample ID: LG-1

Date Collected: 11/17/11 16:40
Date Received: 11/22/11 09:45

Lab Sample ID: NUK3193-05

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	NO PREP		2.00	11L0040_P	12/01/11 09:14	SHJ	TAL NSH
Total	Analysis	SW846 9020B		1.00	11L0040	12/02/11 11:09	SHJ	TAL NSH

Client Sample ID: DUP-01

Date Collected: 11/17/11 00:01
Date Received: 11/22/11 09:45

Lab Sample ID: NUK3193-06

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	NO PREP		2.00	11L0040_P	12/01/11 09:14	SHJ	TAL NSH
Total	Analysis	SW846 9020B		1.00	11L0040	12/02/11 11:09	SHJ	TAL NSH

Lab Chronicle

Client: Columbia Analytical Services (9477)
Project/Site: [none]

TestAmerica Job ID: NUK3193

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Road, Nashville, TN 37204, TEL 800-765-0980

8

Method Summary

Client: Columbia Analytical Services (9477)
Project/Site: [none]

TestAmerica Job ID: NUK3193

Method	Method Description	Protocol	Laboratory
SW846 9020B	General Chemistry Parameters		TAL NSH

Protocol References:

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Road, Nashville, TN 37204. TEL 800-765-0980



Certification Summary

Client: Columbia Analytical Services (9477)
 Project/Site: [none]

TestAmerica Job ID: NUK3193

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Nashville		ACIL		393
TestAmerica Nashville	A2LA	ISO/IEC 17025		0453.07
TestAmerica Nashville	A2LA	WY UST		453.07
TestAmerica Nashville	AIHA - LAP	IHLAP		100790
TestAmerica Nashville	Alabama	State Program	4	41150
TestAmerica Nashville	Alaska	Alaska UST	10	UST-087
TestAmerica Nashville	Arizona	State Program	9	AZ0473
TestAmerica Nashville	Arkansas	State Program	6	88-0737
TestAmerica Nashville	California	NELAC	9	1168CA
TestAmerica Nashville	Canada (CALA)	Canada (CALA)		3744
TestAmerica Nashville	Colorado	State Program	8	N/A
TestAmerica Nashville	Connecticut	State Program	1	PH-0220
TestAmerica Nashville	Florida	NELAC	4	E87358
TestAmerica Nashville	Illinois	NELAC	5	200010
TestAmerica Nashville	Iowa	State Program	7	131
TestAmerica Nashville	Kansas	NELAC	7	E-10229
TestAmerica Nashville	Kentucky	Kentucky UST	4	19
TestAmerica Nashville	Kentucky	State Program	4	90038
TestAmerica Nashville	Louisiana	NELAC	6	30613
TestAmerica Nashville	Louisiana	NELAC	6	LA100011
TestAmerica Nashville	Maryland	State Program	3	316
TestAmerica Nashville	Massachusetts	State Program	1	M-TN032
TestAmerica Nashville	Minnesota	NELAC	5	047-999-345
TestAmerica Nashville	Mississippi	State Program	4	N/A
TestAmerica Nashville	Montana	MT DEQ UST	8	NA
TestAmerica Nashville	New Hampshire	NELAC	1	2963
TestAmerica Nashville	New Jersey	NELAC	2	TN965
TestAmerica Nashville	New York	NELAC	2	11342
TestAmerica Nashville	North Carolina	North Carolina DENR	4	387
TestAmerica Nashville	North Dakota	State Program	8	R-146
TestAmerica Nashville	Ohio	OVAP	5	CL0033
TestAmerica Nashville	Oklahoma	State Program	6	9412
TestAmerica Nashville	Oregon	NELAC	10	TN200001
TestAmerica Nashville	Pennsylvania	NELAC	3	68-00585
TestAmerica Nashville	Rhode Island	State Program	1	LAO00268
TestAmerica Nashville	South Carolina	State Program	4	84009
TestAmerica Nashville	South Carolina	State Program	4	84009
TestAmerica Nashville	Tennessee	State Program	4	2008
TestAmerica Nashville	Texas	NELAC	6	T104704077-09-TX
TestAmerica Nashville	USDA	USDA		S-48469
TestAmerica Nashville	Utah	NELAC	8	TAN
TestAmerica Nashville	Virginia	NELAC Secondary AB	3	460152
TestAmerica Nashville	Virginia	State Program	3	00323
TestAmerica Nashville	Washington	State Program	10	C789
TestAmerica Nashville	West Virginia	West Virginia DEP	3	219
TestAmerica Nashville	Wisconsin	State Program	5	998020430

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN



COOLER RECEIPT

NUK3193

Cooler Received/Opened On: 11.22.11 @ 0945

1. Tracking # 1ZK5W0900140109715 (last 4 digits, FedEx)

Courier: UPS IR Gun ID 94660220

2. Temperature of rep. sample or temp blank when opened: 1.4 Degrees Celsius

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO: NA

4. Were custody seals on outside of cooler? YES NO...NA

If yes, how many and where: (1) Front

5. Were the seals intact, signed, and dated correctly? YES NO...NA

6. Were custody papers inside cooler? YES NO...NA

I certify that I opened the cooler and answered questions 1-6 (Initial) WA

7. Were custody seals on containers: YES NO and intact YES...NO...NA

Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap, Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry Ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

b. Was there any observable headspace present in any VOA vial? YES...NO...NA

14. Was there a Trip Blank in this cooler? YES NO NA If multiple coolers, sequence # _____

I certify that I unloaded the cooler and answered questions 7-14 (Initial) [Signature]

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (Initial) [Signature]

17. Were custody papers properly filled out (Ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (Initial) [Signature]

I certify that I attached a label with the unique LIMS number to each container (Initial) [Signature]

21. Were there Non-Conformance issues at logIn? YES...NO Was a PIPE generated? YES...NO...# _____

Columbia Analytical Services, Inc. Chain of Custody
 9143 Phillips Highway • Jacksonville, FL 32256 • 904-739-2277 • FAX 904-739-2011

CAS Contact: Jerry Allen

Project Number: J1105196
 Project Manager: Jerry Allen

TA Nashville
 NUK3193
 12/02/11 23:59

MR. O'BRIEN
 KEN
 EPA Method
 9020 (TOX)

Lab Code	Sample ID	# of Cont.	Matrix	Sample Date	Time	Lab ID
J1105196-001	LG-6	2	Water	11/17/11	0955	Severest-Front
J1105196-002	LG-5		Water	11/17/11	1130	Severest-Front
J1105196-003	LG-3		Water	11/17/11	1345	Severest-Front
J1105196-004	LG-7		Water	11/17/11	1505	Severest-Front
J1105196-005	LG-1		Water	11/17/11	1640	Severest-Front
J1105196-006	DUP-01		Water	11/17/11	0000	Severest-Front

Test Comments: MISC_OUT_1 - None
 J1105196-001,2,3,4,5,6
 Send to Test America Nashville TN.

Special Instructions/Comments PLEASE SEND RESULTS TO MANDY SULLIVAN	Turnaround Requirements RUSH (Surcharges Apply) PLEASE CIRCLE WORK DAYS 1 2 3 4 5 STANDARD Requested FAX Date: _____ Requested Report Date: 12/02/11	Report Requirements I. Results Only II. Results + QC Summaries III. Results + QC and Calibration Summaries IV. Data Validation Report with Raw Data PQL/MDL/1 Y EDD Y	Invoice Information PO# J1105196 Bill to
	Retinquished By: <u>[Signature]</u> 11-21-11 Received By: <u>[Signature]</u> 11-22-11 / 09YS Airbill Number: _____		

Memorandum

Date: February 6, 2012
To: Pat Kelley
From: Mary Ann Brookshire
Subject: Quality Assurance Review
Project: International Paper - Roanoke Rapids, NC - Low Ground Landfill
Sampling Dates: November 17, 2011
Project Number: 300018

1.0 Introduction

This memorandum presents the cursory validation of the water sample analyses listed in Table 1. The analyses were performed by Columbia Analytical Services, Inc. with the exception of the total organic halide analysis that was subcontracted to Test America. The criteria used to qualify data are from the *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (USEPA 2004), the analytical methods, or the professional judgment of the validation chemist. The following laboratory deliverables were reviewed during the validation process:

- Chain-of-custody (COC) documentation to assess holding times and verify report completeness
- Laboratory quality control (QC) sample results, including method blanks, laboratory control samples (LCSs), matrix spike/matrix spike duplicates (MS/MSDs), and laboratory duplicates
- Analytical results to verify reporting limits

Table 1—Sample Data Reviewed

Sample ID	Laboratory ID	Metals ^a	Wet Chem ^b
LG-6	J1105196-001	X	X
LG-5	J1105196-002	X	X
LG-3	J1105196-003	X	X
LG-7	J1105196-004	X	X
LG-1	J1105196-005	X	X
DUP-01	J1105196-006	X	X

^a Total metals by methods 6010B, 6020, and 7470A (USPEPA 1996)

^b BOD by method 405.1, TOC by method 415.1, COD by method 5220D, pH by method 9040B, conductivity by method 120.1, TDS by 160.1, TOX by method 9020B and nitrate, sulfate, fluoride and chloride by method 300 (SM 1992, USEPA 1983, USEPA 1996, and USEPA 1999b)

2.0 Data Validation

2.1 Custody, Preservation, and Completeness

Sample custody was maintained from sample collection to receipt at the laboratory. The reports are complete and contain results for the samples and tests requested on the COC forms. The samples were received intact and were properly preserved.

2.2 Metals Analyses

The samples noted on Table 1 were analyzed for total metals by methods 6010B, 6020 and 7470A.

2.2.1 Holding Times

The samples were analyzed within the required holding times.

2.2.2 Blank Analyses

2.2.2.1 Method Blanks

Method blanks were analyzed at the required frequency. Target analytes were not detected at concentrations above the method detection limits in the method blank sample.

2.2.2.2 Field Blanks

Field blank samples were not collected. Data qualification is not required.

2.2.3 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

MS/MSDs were analyzed as required. The recoveries and RPDs for the MS/MSD analyses are within the QC limits.

2.2.4 Laboratory Control Sample

LCS samples were analyzed as required. The percent recovery values are within the laboratory QC limits.

2.2.5 Laboratory Reporting Limits

The reporting limits are consistent with method reporting limits (MRL) with the exception of samples requiring dilutions.

2.2.6 Field Duplicates

One field duplicate pair (LG-1/DUP-01) was collected with these samples. The field duplicate results are consistent with the sample results. The RPDs for the detected analytes are provided in the table below.

Sample ID	Duplicate ID	Parameter	Units	Sample Result	Duplicate Result	RPD
LG-1	DUP-1	Arsenic	ug/L	<0.5	0.5	NC
		Barium	ug/L	108	106	1.9
		Cadmium	ug/L	0.34 J	0.32 J	NC
		Chromium	ug/L	3.2	3.4	6.1
		Copper	ug/L	7.6	7.3	4.0
		Iron	ug/L	4270	4190	1.9
		Lead	ug/L	4.4	4.5	2.2
		Manganese	ug/L	283	288	1.8
		Mercury	ug/L	0.03 J	0.03 J	NC
		Selenium	ug/L	<1.1	1.5 J	NC
		Silver	ug/L	0.04 J	<0.03	NC
		Zinc	ug/L	14.9	15.2	2.0

NC – Not calculable, at least one result is less than the method reporting limit.

2.2.7 Overall Assessment of Data Usability

The usability of the data is based on the EPA guidance documents noted previously. Based upon the information presented here, the data are acceptable without qualification.

2.3 General Chemistry Analyses

The samples were analyzed for biochemical oxygen demand (BOD), total organic carbon (TOC), chemical oxygen demand (COD), pH, conductivity, total dissolved solids (TDS), nitrate, fluoride, sulfate, chloride, and total organic halides (TOX).

2.3.1 Holding Times

The samples were analyzed within the required holding times with the following exception.

- The pH analysis was performed beyond the holding time of ASAP. The pH results for each sample are qualified as estimated (J).

2.3.2 Blank Analyses

2.3.2.1 Method Blanks

Method blanks were analyzed at the required frequency. Target analytes were not detected in the method blanks with the following exceptions.

- TOC was detected in the method blank at a concentration of 0.3 mg/L.

Functional Guidelines prescribes three qualifications schemes for blank contamination between the MDL and reporting limit, (1) associated sample concentrations that are non-

detect are not qualified, (2) associated sample concentrations less than the reporting limit and greater than the MDL are qualified as undetected (U) at the reporting limit, and (3) associated sample concentrations greater than the reporting limit are qualified based upon professional judgment. The TOC data were not qualified as the associated sample concentrations were significantly greater than the method blank concentration.

2.3.2.2 Field Blanks

Field blank samples were not collected. Data qualification is not required.

2.3.3 Matrix Spike Analyses

An MS sample was analyzed for COD, chloride, fluoride, nitrate, and sulfate. The MS recoveries are within the laboratory QC limits.

2.3.4 Matrix Duplicate Analyses

Matrix duplicates (MD) were analyzed as required for the pH, COD, chloride, conductivity, fluoride, nitrate, TDS, TOX, and sulfate. The RPDs are within the QC limits.

2.3.5 Laboratory Control Sample

LCS samples were analyzed as required. The percent recovery values are within the laboratory QC limits.

2.3.6 Laboratory Reporting Limits

The reporting limits are consistent with method reporting limits.

2.3.7 Field Duplicates

One field duplicate pair (LG-1/DUP-01) was collected with these samples. The field duplicate results are consistent with the sample results. The RPDs for the detected analytes are provided in the table below.

Sample ID	Duplicate ID	Parameter	Units	Sample Result	Duplicate Result	RPD
LG-1	DUP-1	Total Organic Halides	mg/L	0.19	0.188	1.1
		Total Organic Carbon	mg/L	3.7	3.6	2.7
		Chemical Oxygen Demand	mg/L	21	20	4.9
		Chloride	mg/L	2.42	2.40	0.8
		Conductivity	umhos/com	172	171	0.6
		Fluoride	mg/L	0.15 J	0.14 J	NC
		pH	S.U.	6.54	6.48	0.9
		Total Dissolved Solids	mg/L	123	117	5.0
		Sulfate	mg/L	17.5	17.5	0.0

NC – Not calculable, at least one result is less than the method reporting limit.

2.3.8 Overall Assessment of Data Usability

The usability of the data is based on the EPA guidance documents noted previously. Based upon the information presented here, the data are acceptable with qualification.

3.0 Data Qualifier Definitions

The following data validation qualifiers were used in the review of this data set. These qualifiers are from the Contract Laboratory Program National Functional Guidelines for Organic Data Review (USEPA 1999).

- U The analyte was analyzed for but not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a “tentative identification”.
- NJ The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents its approximate concentration.
- R The sample results are rejected due to serious deficiencies in the ability to analyze the samples and meet quality control criteria. The presence or absence of the analyte cannot be verified.

4.0 References

SM 1992. Standard Methods for the Examination of Water and Waste, 18th Edition. 1992.

USEPA. 1983. Methods for Chemical Analysis of Water and Waste EPA/600/4-79/020. United States Environmental Protection Agency. Office of Research and Development. March 1983.

USEPA. 1996. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) Third Edition, Updates I, II, IIA, IIB, and III. United States Environmental Protection Agency. Office of Solid Waste. December 1996.

USEPA. 1999a. Contract Laboratory Program National Functional Guidelines for Organic Data Review. U.S. Environmental Protection Agency Office of Emergency and Remedial Response. EPA540/R-99/008. October 1999.

USEPA. 1999b. Method 1664, Revision A: N-Hexane Extractable Material (HEM; Oil and Grease) and Silica Gel Treated N-Hexane Extractable Material by Extraction and Gravimetry EPA-821-R-98-002. United States Environmental Protection Agency. Office of Water. February 1999.

USEPA. 2004. Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. U.S. Environmental Protection Agency Office of Superfund Remediation and Technology Innovation. EPA 540-R-04-004. October 2004.

5.0 SUMMARY OF QUALIFIED DATA

Sample ID	Analyte	Qualifier	Reason for Qualification
LG-6	pH	J	Analyzed beyond the holding time
LG-5	pH	J	Analyzed beyond the holding time
LG-3	pH	J	Analyzed beyond the holding time
LG-7	pH	J	Analyzed beyond the holding time
LG-1	pH	J	Analyzed beyond the holding time
Dup-01	pH	J	Analyzed beyond the holding time

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
 Project: IP-Roanoke Rapids/209383.11
 Sample Matrix: Water
 Sample Name: LG-6
 Lab Code: J1105196-001

Service Request: J1105196
 Date Collected: 11/17/11 0955
 Date Received: 11/18/11

Basis: NA

Inorganic Parameters

Analyte Name	Method	Result Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Arsenic, Total Recoverable	6020	ND U	µg/L	1.0	0.5	1	11/21/11	11/22/11 15:43	
Barium, Total Recoverable	6020	521	µg/L	2.0	0.4	1	11/21/11	11/22/11 15:43	
Cadmium, Total Recoverable	6020	ND U	µg/L	0.40	0.12	1	11/21/11	11/22/11 15:43	
Chromium, Total Recoverable	6020	5.1	µg/L	1.0	0.2	1	11/21/11	11/22/11 15:43	
Copper, Total Recoverable	6020	0.7 J	µg/L	1.0	0.2	1	11/21/11	11/22/11 15:43	
Iron, Total Recoverable	6010B	350	µg/L	100	20	1	11/21/11	11/22/11 20:48	
Lead, Total Recoverable	6020	0.14 J	µg/L	0.50	0.06	1	11/21/11	11/22/11 15:43	
Manganese, Total Recoverable	6020	1120	µg/L	2.0	0.2	1	11/21/11	11/22/11 15:43	
Mercury, Total	7470A	ND U	µg/L	0.10	0.02	1	11/21/11	11/22/11 15:30	
Selenium, Total Recoverable	6020	ND U	µg/L	2.0	1.1	1	11/21/11	11/22/11 15:43	
Silver, Total Recoverable	6020	ND U	µg/L	0.50	0.03	1	11/21/11	11/22/11 15:43	
Zinc, Total Recoverable	6020	2.2 J	µg/L	5.0	0.9	1	11/21/11	11/22/11 15:43	

MB
2/6/12

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
 Project: IP-Roanoke Rapids/209383.11
 Sample Matrix: Water
 Sample Name: LG-5
 Lab Code: J1105196-002

Service Request: J1105196
 Date Collected: 11/17/11 1130
 Date Received: 11/18/11

Basis: NA

Inorganic Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Arsenic, Total Recoverable	6020	1.5		µg/L	1.0	0.5	1	11/21/11	11/22/11 15:46	
Barium, Total Recoverable	6020	107		µg/L	2.0	0.4	1	11/21/11	11/22/11 15:46	
Cadmium, Total Recoverable	6020	0.60		µg/L	0.40	0.12	1	11/21/11	11/22/11 15:46	
Chromium, Total Recoverable	6020	3.0		µg/L	1.0	0.2	1	11/21/11	11/22/11 15:46	
Copper, Total Recoverable	6020	3.2		µg/L	1.0	0.2	1	11/21/11	11/22/11 15:46	
Iron, Total Recoverable	6010B	6380		µg/L	100	20	1	11/21/11	11/22/11 20:56	
Lead, Total Recoverable	6020	0.13	J	µg/L	0.50	0.06	1	11/21/11	11/22/11 15:46	
Manganese, Total Recoverable	6020	10800		µg/L	40	4	20	11/21/11	11/29/11 13:27	
Mercury, Total	7470A	ND	U	µg/L	0.10	0.02	1	11/21/11	11/22/11 15:32	
Selenium, Total Recoverable	6020	ND	U	µg/L	2.0	1.1	1	11/21/11	11/22/11 15:46	
Silver, Total Recoverable	6020	0.03	J	µg/L	0.50	0.03	1	11/21/11	11/22/11 15:46	
Zinc, Total Recoverable	6020	14.9		µg/L	5.0	0.9	1	11/21/11	11/22/11 15:46	

MB
2/6/12

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
 Project: IP-Roanoke Rapids/209383.11
 Sample Matrix: Water
 Sample Name: LG-7
 Lab Code: J1105196-004

Service Request: J1105196
 Date Collected: 11/17/11 1505
 Date Received: 11/18/11

Basis: NA

Inorganic Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Arsenic, Total Recoverable	6020	ND	U	µg/L	1.0	0.5	1	11/21/11	11/22/11 15:53	
Barium, Total Recoverable	6020	92.1		µg/L	2.0	0.4	1	11/21/11	11/22/11 15:53	
Cadmium, Total Recoverable	6020	0.30	J	µg/L	0.40	0.12	1	11/21/11	11/22/11 15:53	
Chromium, Total Recoverable	6020	0.5	J	µg/L	1.0	0.2	1	11/21/11	11/22/11 15:53	
Copper, Total Recoverable	6020	4.0		µg/L	1.0	0.2	1	11/21/11	11/22/11 15:53	
Iron, Total Recoverable	6010B	960		µg/L	100	20	1	11/21/11	11/22/11 21:08	
Lead, Total Recoverable	6020	1.21		µg/L	0.50	0.06	1	11/21/11	11/22/11 15:53	
Manganese, Total Recoverable	6020	465		µg/L	2.0	0.2	1	11/21/11	11/22/11 15:53	
Mercury, Total	7470A	ND	U	µg/L	0.10	0.02	1	11/21/11	11/22/11 15:36	
Selenium, Total Recoverable	6020	ND	U	µg/L	2.0	1.1	1	11/21/11	11/22/11 15:53	
Silver, Total Recoverable	6020	ND	U	µg/L	0.50	0.03	1	11/21/11	11/22/11 15:53	
Zinc, Total Recoverable	6020	3.7	J	µg/L	5.0	0.9	1	11/21/11	11/22/11 15:53	

MB
2/6/12

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
 Project: IP-Roanoke Rapids/209383.11
 Sample Matrix: Water
 Sample Name: LG-1
 Lab Code: J1105196-005

Service Request: J1105196
 Date Collected: 11/17/11 1640
 Date Received: 11/18/11

Basis: NA

Inorganic Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Arsenic, Total Recoverable	6020	ND	U	µg/L	1.0	0.5	1	11/21/11	11/22/11 15:56	
Barium, Total Recoverable	6020	108		µg/L	2.0	0.4	1	11/21/11	11/22/11 15:56	
Cadmium, Total Recoverable	6020	0.34	J	µg/L	0.40	0.12	1	11/21/11	11/22/11 15:56	
Chromium, Total Recoverable	6020	3.2		µg/L	1.0	0.2	1	11/21/11	11/22/11 15:56	
Copper, Total Recoverable	6020	7.6		µg/L	1.0	0.2	1	11/21/11	11/22/11 15:56	
Iron, Total Recoverable	6010B	4270		µg/L	100	20	1	11/21/11	11/22/11 21:16	
Lead, Total Recoverable	6020	4.40		µg/L	0.50	0.06	1	11/21/11	11/22/11 15:56	
Manganese, Total Recoverable	6020	283		µg/L	2.0	0.2	1	11/21/11	11/22/11 15:56	
Mercury, Total	7470A	0.03	J	µg/L	0.10	0.02	1	11/21/11	11/22/11 15:38	
Selenium, Total Recoverable	6020	ND	U	µg/L	2.0	1.1	1	11/21/11	11/22/11 15:56	
Silver, Total Recoverable	6020	0.04	J	µg/L	0.50	0.03	1	11/21/11	11/22/11 15:56	
Zinc, Total Recoverable	6020	14.9		µg/L	5.0	0.9	1	11/21/11	11/22/11 15:56	

MB
 2/6/12

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
 Project: IP-Roanoke Rapids/209383.11
 Sample Matrix: Water
 Sample Name: DUP-01
 Lab Code: J1105196-006

Service Request: J1105196
 Date Collected: 11/17/11 0000
 Date Received: 11/18/11

Basis: NA

Inorganic Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Arsenic, Total Recoverable	6020	0.5	J	µg/L	1.0	0.5	1	11/21/11	11/22/11 16:17	
Barium, Total Recoverable	6020	106		µg/L	2.0	0.4	1	11/21/11	11/22/11 16:17	
Cadmium, Total Recoverable	6020	0.32	J	µg/L	0.40	0.12	1	11/21/11	11/22/11 16:17	
Chromium, Total Recoverable	6020	3.4		µg/L	1.0	0.2	1	11/21/11	11/22/11 16:17	
Copper, Total Recoverable	6020	7.3		µg/L	1.0	0.2	1	11/21/11	11/22/11 16:17	
Iron, Total Recoverable	6010B	4190		µg/L	100	20	1	11/21/11	11/22/11 21:20	
Lead, Total Recoverable	6020	4.50		µg/L	0.50	0.06	1	11/21/11	11/22/11 16:17	
Manganese, Total Recoverable	6020	288		µg/L	2.0	0.2	1	11/21/11	11/22/11 16:17	
Mercury, Total	7470A	0.03	J	µg/L	0.10	0.02	1	11/21/11	11/22/11 15:39	
Selenium, Total Recoverable	6020	1.5	J	µg/L	2.0	1.1	1	11/21/11	11/22/11 16:17	
Silver, Total Recoverable	6020	ND	U	µg/L	0.50	0.03	1	11/21/11	11/22/11 16:17	
Zinc, Total Recoverable	6020	15.2		µg/L	5.0	0.9	1	11/21/11	11/22/11 16:17	

MB
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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
 Project: IP-Roanoke Rapids/209383.11
 Sample Matrix: Water
 Sample Name: LG-6
 Lab Code: J1105196-001

Service Request: J1105196
 Date Collected: 11/17/11 0955
 Date Received: 11/18/11

Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	405.1	7.5		mg/L	2.0	2.0	1	NA	11/18/11 14:00	
Carbon, Total Organic (TOC)	415.1	21.9		mg/L	1.0	0.2	1	NA	11/29/11 12:09	
Chemical Oxygen Demand, Total	SM21 5220 D	94		mg/L	20	8	1	11/22/11	11/22/11 16:25	
Chloride	300.0	25.1		mg/L	2.5	0.4	5	NA	11/22/11 16:57	
Conductivity at 25 Degrees Celsius	120.1	3430		µMHOS/cm	1.0	1.0	1	NA	11/18/11 18:10	
Fluoride	300.0	0.29		mg/L	0.20	0.02	1	NA	11/18/11 16:41	
Nitrate as Nitrogen	300.0	0.19	J	mg/L	0.20	0.03	1	NA	11/18/11 16:41	
pH	9040B	7.55	J	pH Units			1	NA	11/18/11 11:15	H
Solids, Total Dissolved (TDS)	160.1	2500		mg/L	40	40	4	NA	11/22/11 12:27	
Sulfate	300.0	271		mg/L	2.5	1.0	5	NA	11/22/11 16:57	

MB
2/6/12

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: LG-5
Lab Code: J1105196-002

Service Request: J1105196
Date Collected: 11/17/11 11:30
Date Received: 11/18/11

Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	405.1	2.2		mg/L	2.0	2.0	1	NA	11/18/11 14:00	
Carbon, Total Organic (TOC)	415.1	12.1		mg/L	1.0	0.2	1	NA	11/29/11 12:28	
Chemical Oxygen Demand, Total	SM21 5220 D	56		mg/L	20	8	1	11/22/11	11/22/11 16:28	
Chloride	300.0	3.12		mg/L	0.50	0.07	1	NA	11/18/11 17:26	
Conductivity at 25 Degrees Celsius	120.1	701		µMHOS/cm	1.0	1.0	1	NA	11/18/11 18:19	
Fluoride	300.0	0.17	J	mg/L	0.20	0.02	1	NA	11/18/11 17:26	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	11/18/11 17:26	
pH	9040B	6.39	J	pH Units			1	NA	11/18/11 11:15	H
Solids, Total Dissolved (TDS)	160.1	540		mg/L	10	10	1	NA	11/22/11 12:27	
Sulfate	300.0	176		mg/L	0.50	0.20	1	NA	11/18/11 17:26	

MB
2/6/12

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
Project: IP-Roanoke Rapids/209383.11
Sample Matrix: Water
Sample Name: LG-3
Lab Code: J1105196-003

Service Request: J1105196
Date Collected: 11/17/11 13:45
Date Received: 11/18/11

Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	405.1	ND	U	mg/L	2.0	2.0	1	NA	11/18/11 14:00	
Carbon, Total Organic (TOC)	415.1	9.7		mg/L	1.0	0.2	1	NA	11/29/11 13:14	
Chemical Oxygen Demand, Total	SM21 5220 D	42		mg/L	20	8	1	11/22/11	11/22/11 16:28	
Chloride	300.0	71.5		mg/L	0.50	0.07	1	NA	11/18/11 17:41	
Conductivity at 25 Degrees Celsius	120.1	1990		µMHOS/cm	1.0	1.0	1	NA	11/18/11 18:22	
Fluoride	300.0	0.26		mg/L	0.20	0.02	1	NA	11/18/11 17:41	
Nitrate as Nitrogen	300.0	10.6		mg/L	0.20	0.03	1	NA	11/18/11 17:41	
pH	9040B	7.02	J	pH Units			1	NA	11/18/11 11:15	H
Solids, Total Dissolved (TDS)	160.1	1300		mg/L	20	20	2	NA	11/22/11 12:27	
Sulfate	300.0	184		mg/L	0.50	0.20	1	NA	11/18/11 17:41	

MIB
11/16/12

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
 Project: IP-Roanoke Rapids/209383.11
 Sample Matrix: Water
 Sample Name: LG-7
 Lab Code: J1105196-004

Service Request: J1105196
 Date Collected: 11/17/11 1505
 Date Received: 11/18/11

Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	405.1	ND	U	mg/L	2.0	2.0	1	NA	11/18/11 14:00	
Carbon, Total Organic (TOC)	415.1	5.8		mg/L	1.0	0.2	1	NA	11/29/11 13:27	
Chemical Oxygen Demand, Total	SM21 5220 D	29		mg/L	20	8	1	11/22/11	11/22/11 16:28	
Chloride	300.0	20.6		mg/L	1.0	0.2	2	NA	11/22/11 17:42	
Conductivity at 25 Degrees Celsius	120.1	2120		µMHOS/cm	1.0	1.0	1	NA	11/18/11 18:25	
Fluoride	300.0	0.23		mg/L	0.20	0.02	1	NA	11/18/11 17:56	
Nitrate as Nitrogen	300.0	0.20	J	mg/L	0.20	0.03	1	NA	11/18/11 17:56	
pH	9040B	7.47	J	pH Units			1	NA	11/18/11 11:15	H
Solids, Total Dissolved (TDS)	160.1	1420		mg/L	40	40	4	NA	11/22/11 12:27	
Sulfate	300.0	131		mg/L	0.50	0.20	1	NA	11/18/11 17:56	

MB
2/16/12

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
 Project: IP-Roanoke Rapids/209383.11
 Sample Matrix: Water
 Sample Name: LG-1
 Lab Code: J1105196-005

Service Request: J1105196
 Date Collected: 11/17/11 1640
 Date Received: 11/18/11

Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	405.1	ND	U	mg/L	2.0	2.0	1	NA	11/18/11 14:00	
Carbon, Total Organic (TOC)	415.1	3.7		mg/L	1.0	0.2	1	NA	11/29/11 14:28	
Chemical Oxygen Demand, Total	SM21 5220 D	21		mg/L	20	8	1	11/22/11	11/22/11 16:29	
Chloride	300.0	2.42		mg/L	0.50	0.07	1	NA	11/18/11 18:11	
Conductivity at 25 Degrees Celsius	120.1	172		µMHOS/cm	1.0	1.0	1	NA	11/18/11 18:29	
Fluoride	300.0	0.15	J	mg/L	0.20	0.02	1	NA	11/18/11 18:11	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	11/18/11 18:11	
pH	9040B	6.54	□	pH Units			1	NA	11/18/11 11:15	H
Solids, Total Dissolved (TDS)	160.1	123		mg/L	10	10	1	NA	11/22/11 12:27	
Sulfate	300.0	17.5		mg/L	0.50	0.20	1	NA	11/18/11 18:11	

YMB
2/6/12

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EarthCon Site Services Inc
 Project: IP-Roanoke Rapids/209383.11
 Sample Matrix: Water
 Sample Name: DUP-01
 Lab Code: J1105196-006

Service Request: J1105196
 Date Collected: 11/17/11 0000
 Date Received: 11/18/11

Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	405.1	ND	U	mg/L	2.0	2.0	1	NA	11/18/11 14:00	
Carbon, Total Organic (TOC)	415.1	3.6		mg/L	1.0	0.2	1	NA	11/29/11 14:43	
Chemical Oxygen Demand, Total	SM21 5220 D	20		mg/L	20	8	1	11/22/11	11/22/11 16:30	
Chloride	300.0	2.40		mg/L	0.50	0.07	1	NA	11/18/11 18:26	
Conductivity at 25 Degrees Celsius	120.1	171		µMHOS/cm	1.0	1.0	1	NA	11/18/11 18:31	
Fluoride	300.0	0.14	J	mg/L	0.20	0.02	1	NA	11/18/11 18:26	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	11/18/11 18:26	
pH	9040B	6.48	J	pH Units			1	NA	11/18/11 11:15	H
Solids, Total Dissolved (TDS)	160.1	117		mg/L	10	10	1	NA	11/23/11 16:03	
Sulfate	300.0	17.5		mg/L	0.50	0.20	1	NA	11/18/11 18:26	

MB
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Client Sample Results

Client: Columbia Analytical Services (9477)
 Project/Site: [none]

TestAmerica Job ID: NUK3193

Client Sample ID: LG-6

Lab Sample ID: NUK3193-01

Date Collected: 11/17/11 09:55

Matrix: Water

Date Received: 11/22/11 09:45

Method: SW846 9020B - General Chemistry Parameters

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Halides	0.852		0.120	0.0720	mg/L		12/01/11 09:14	12/02/11 11:09	1.00

M/B
2/6/12

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Client Sample Results

Client: Columbia Analytical Services (9477)
Project/Site: [none]

TestAmerica Job ID: NUK3193

Client Sample ID: LG-5
Date Collected: 11/17/11 11:30
Date Received: 11/22/11 09:45

Lab Sample ID: NUK3193-02
Matrix: Water

Method: SW846 9020B - General Chemistry Parameters

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Halides	0.410		0.120	0.0720	mg/L		12/01/11 09:14	12/02/11 11:09	1.00

YIB
2/6/12

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Client Sample Results

Client: Columbia Analytical Services (9477)
Project/Site: [none]

TestAmerica Job ID: NUK3193

Client Sample ID: LG-3

Lab Sample ID: NUK3193-03

Date Collected: 11/17/11 13:45

Matrix: Water

Date Received: 11/22/11 09:45

Method: SW846 9020B - General Chemistry Parameters

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Halides	0.763		0.0300	0.0180	mg/L		12/01/11 09:14	12/02/11 11:09	1.00

MMB
2/6/12

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Client Sample Results

Client: Columbia Analytical Services (9477)
Project/Site: [none]

TestAmerica Job ID: NUK3193

Client Sample ID: LG-7
Date Collected: 11/17/11 15:05
Date Received: 11/22/11 09:45

Lab Sample ID: NUK3193-04
Matrix: Water

Method: SW846 9020B - General Chemistry Parameters

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Halides	0.337		0.0300	0.0180	mg/L		12/01/11 09:14	12/02/11 11:09	1.00

MVB
2/6/12

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Client Sample Results

Client: Columbia Analytical Services (9477)
Project/Site: [none]

TestAmerica Job ID: NUK3193

Client Sample ID: DUP-01

Lab Sample ID: NUK3193-06

Date Collected: 11/17/11 00:01

Matrix: Water

Date Received: 11/22/11 09:45

Method: SW846 9020B - General Chemistry Parameters

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Halides	0.188		0.0600	0.0360	mg/L		12/01/11 09:14	12/02/11 11:09	1.00

*YMB
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