20395

TRC

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TRCcompanies.com

December 10, 2019

Ms. Kimberly M. Kuhn
Project Manager
South Carolina Department of Health and Environmental Control
Bureau of Land and Waste Management
2600 Bull Street
Columbia, SC 29201

Subject: Expanded ABC+ Pilot Study - Quarterly Performance Report
Former WestPoint Home Facility: Clemson, SC.
File #20395

Dear Kimberly:

This letter report provides the results of the initial performance monitoring activities performed following completion of the ABC+ injection events conducted during the Summer of 2019. Injections for the expanded ABC+ pilot study were conducted from May 13 to July 12, 2019. The first post-injection quarterly performance monitoring activities were conducted during the period of October 25 through November 8, 2019, representing an interval of approximately three months following the completion of the ABC+ injection event. During this initial monitoring event, TRC field technicians collected basic field parameters and laboratory indicator parameters from site monitoring wells specified in the workplan.

For the first quarterly performance monitoring event, each of the performance monitoring wells were analyzed for the following field and laboratory indicator parameters:

- pH
- Specific conductance
- Temperature
- Turbidity
- Dissolved ferrous iron
- Oxidation-reduction potential
- Dissolved oxygen
- Bromide

Field and laboratory indicator parameters were collected using low-flow sampling techniques and Horiba meters. Samples collected for bromide analysis were submitted to Shealy Environmental Services, Inc. in West Columbia, South Carolina. The bromide data received from the analytical laboratory were validated by TRC. The Method 300 chromatograms obtained during the bromide analyses were also evaluated by TRC to discern the presence of a lactate peak. Based on our prior field experience, TRC has learned that lactate, if present, appears within the range of the chromatograms produced for Method 300 analysis of anions. A sample of ABC® (which contains lactate in its formulation) was analyzed by the laboratory to identify the chromatogram peak as lactate, which has enabled us to qualitatively observe the migration of injected ABC+ to the wells within the groundwater monitoring network.

This letter report transmits the following information and details for the Department's consideration, including:

- Data point location map (Attachment 1)

- Summary table of the first quarterly monitoring results along with the baseline results (Attachment 2)
- Laboratory analytical reports (Attachment 3)

Advective groundwater flow within the treated zone of the upper plume area typically ranges from approximately 25 to 100 feet per year. Given these flow rates and the distance from the ABC+ injection points to the nearby performance monitoring wells, advective transport of the ABC+ treatment media across the treatment zone and into monitoring points was expected to be minimal this soon after the ABC+ injections were completed. Despite this limitation, the initial performance monitoring event provides some encouraging results. Key observations from the first performance monitoring event include:

- Increased bromide tracer concentrations were detected in wells RMW-02, RMW-18A, and RMW-27. These monitoring wells are located to the side and upgradient of ABC+ injection points C-04 and C-05 (injection points where bromide tracer was included in the ABC+ media). This apparent upgradient movement of the injectate may be an indication of a northwest-southeast trending fracture.
- Lactate peaks were identified in monitoring wells RMW-20, RMW-20A, RMW-20B, RMW-23A, and RMW-27A. While the presence of lactate peaks in wells RMW-23A and RMW-27A may be residual from the prior ABC+ pilot study, presence of lactate in the RMW-20 well nest is clear evidence of the movement of the ABC within the aquifer from the expanded ABC+ pilot study.
- Reduced DO concentrations and lower ORP levels, combined with the observation of increasing concentrations of dissolved ferrous iron in RMW-20A and RMW-20B lead us to believe that we are seeing early indications of enhanced reductive dichlorination (ERD) activity within the aquifer.
- Reduced DO concentrations and lower ORP levels are also good indicators that the Zero Valent Iron (ZVI) present within the ABC+ treatment media is beginning to exert some physio-chemical influence.

Our current plans call for conducting the next performance monitoring event during March 2020. This time interval will allow further advective transport of the ABC+ treatment media across the pilot study area. During the next performance monitoring event (semiannual sampling event), TRC will be conducting a more intensive evaluation of the ABC+ pilot study performance and will include both performance monitoring wells and a series of direct-push sampling points at the same locations as the baseline sampling event. During the semiannual sampling event, TRC will be evaluating the underlying groundwater for volatile organic compounds (VOCs), dissolved gasses (*i.e.*, ethane, ethene, and methane), chloride, nitrate, and sulfate, in addition to the field and laboratory indicator parameters that are addressed in this letter report.

If you should have any questions, comments or concerns during your review of this initial performance monitoring report, I would encourage you to reach out to me at your earliest convenience. I can be reached at 864.420.8577.

Sincerely,

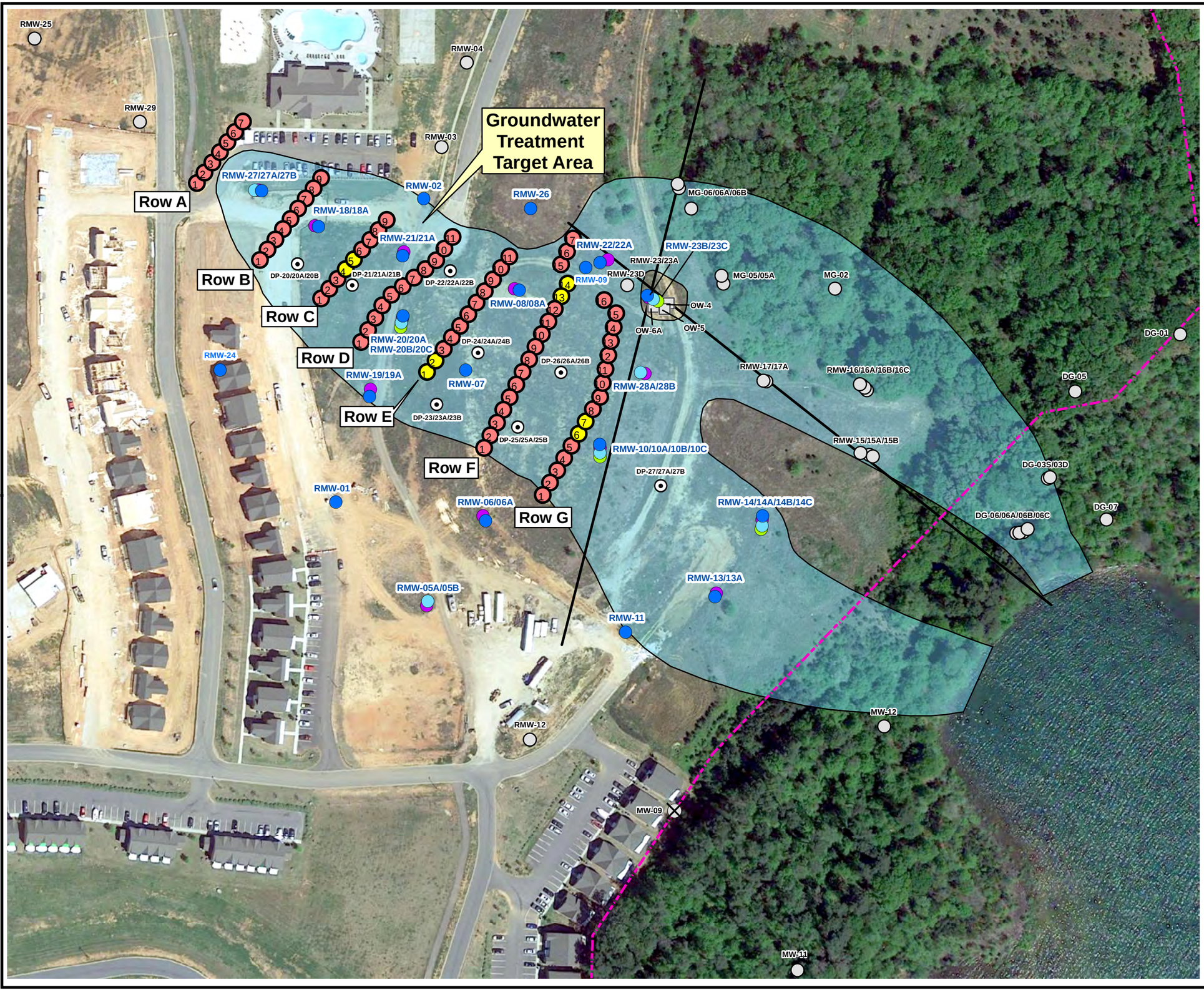
TRC Environmental Corporation

Lisa M. Clark, P.G.
Senior Hydrogeologist

Attachments

cc: Eddie Lanier, WestPoint Home
Dr. Steve Webb, TRC

Attachment 1
Data Point Location Map



LEGEND

- Water Table Aquifer Monitoring Well
- Intermediate Aquifer Monitoring Well
- Transition Zone Aquifer Monitoring Well
- Bedrock Aquifer Monitoring Well
- Observation Well (Previous Pilot Study)
- Direct-Push Groundwater Sample Location
- Destroyed Water Table Monitoring Well
- Pilot Study Injection Point
- Pilot Study Injection Point with Bromide Tracer
- Property Boundary (Approximate)
- Inferred Fracture

NOTES

Aerial Photograph Source: Google Earth (2018).

The groundwater treatment target area is based on the extent of PCE concentrations in groundwater greater than 0.1 mg/L.

Monitoring wells shown in gray are not included in the performance monitoring network.

N

0 120 240 Feet

1 " = 133 '

1:1,600

PROJECT:

FORMER WESTPOINT HOME
CLEMSON, SOUTH CAROLINA

TITLE:

ABC+ PERFORMANCE MONITORING NETWORK

DRAWN BY:	WIXON S	PROJ. NO.:	300688.0.0.10
CHECKED BY:	CLARK L		
APPROVED BY:	WEBB S		**FIGURE 1**
DATE:	DECEMBER 2019		

50 International Drive, Suite 150
Patewood Plaza Three
Greenville, SC 29615
Phone: 864.281.0030
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FILE NO.: Fig 1_Performance Mon Network_2019-12.mxd

Plot Date: 12/4/2019, 15:58:08 PM by RWIXON -- LAYOUT: ANSI B (11"x17")
Path: U:\West Point Home\Clemson SC\ArcGIS\0300688\2019-12\Fig 1_Performance Mon Network_2019-12.mxd
Coordinate System: NAD 1983 StatePlane South Carolina FIPS 3900 Feet (Foot US)
Map Rotation: 0
TRC - GIS

Attachment 2
Summary Table of the First Quarterly Monitoring Results Along With the Baseline Results

Table 1
Baseline and Post-Injection Sampling Results
WestPoint Home, Clemson, SC Facility

PARAMETER	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection
	RMW-01		RMW-02		RMW-05A		RMW-05B		RMW-06		RMW-06A	
	02/06/2019	10/28/2019	02/13/2019	11/07/2019	02/07/2019	10/28/2019	02/13/2019	11/6/2019	01/31/2019	10/29/2019	01/31/2019	11/6/2019
General Chemistry (mg/L)												
Bromide	0.25	0.24	0.37	0.86	0.10 J	< 0.20	0.091 J	<0.20	< 0.20	0.078 J	0.11 J	<0.20
Field Parameters												
pH, Field (su)	5.36	4.01	12.33	11.16	6.18	4.89	6.51	5.91	4.34	4.59	3.92	5.35
Temperature, Field (°C)	17.44	23.1	19.83	21.13	19.04	21.7	16.11	20.76	15.54	22.62	18.08	20.26
Specific Conductivity, Field (uS/cm)	287	209	3880	972	35	19	28	32	69	66	33	38
Dissolved Oxygen, Field (mg/L)	1.38	0	0	0	2.12	0.31	4.62	0	11.26	3.37	4.97	3.68
Oxidation Reduction Potential, Field (mV)	209	328	-242	-182	169	227	-15	234	302	277	297	264
Turbidity, Field (ntu)	0	8.7	0	1.2	0	0	0	0	0	25.6	2.5	0
Iron, Ferrous, Field (mg/L)	0	0	0	0.05	0	0	0	0	0	0	0	0

PARAMETER	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline		Post-Injection	Baseline	Post-Injection
	RMW-07		RMW-08		RMW-08A		RMW-09			RMW-10	
							DU-19104				
	02/05/2019	11/04/2019	02/05/2019	10/29/2019	02/05/2019	11/06/2019	02/06/2019	02/06/2019	11/4/2019	01/30/2019	10/29/2019
General Chemistry (mg/L)											
Bromide	0.34	0.31	0.30	0.15 J	1.1	0.66	0.43	0.45	0.15 J	0.30	0.32
Field Parameters											
pH, Field (su)	4.55	4.05	4.85	3.92	5.57	6.4	4.69	NA	4.38	3.53	3.24
Temperature, Field (°C)	19.98	20.53	18.63	23.74	19.74	22.63	17.58	NA	20.43	17.1	21.48
Specific Conductivity, Field (uS/cm)	72	101	104	89	664	160	159	NA	39	1400	572
Dissolved Oxygen, Field (mg/L)	2.1	0.33	3.28	0	0	0	0	NA	5.6	2	0
Oxidation Reduction Potential, Field (mV)	341	250	250	285	206	126	482	NA	438	531	392
Turbidity, Field (ntu)	0.95	0	0	14.3	1.1	0	7.8	NA	0	8.3	4.4
Iron, Ferrous, Field (mg/L)	0	0	0	0.1	0	0	0	NA	0	0	2

PARAMETER	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline		Post-Injection
	RMW-10A		RMW-10B		RMW-10C		RMW-11		RMW-13		
										DU-19102	
	02/06/2019	10/29/2019	02/06/2019	10/31/2019	02/06/2019	10/31/2019	02/04/2019	10/29/2019	02/04/2019	02/04/2019	11/01/2019
General Chemistry (mg/L)											
Bromide	< 0.20	< 0.20	0.096 J	< 0.20	0.095 J	< 0.20	0.18 J	0.13 J	0.12 J	0.13 J	0.074 J
Field Parameters											
pH, Field (su)	5.56	5.56	6.83	6.55	9.42	9	4.5	4.19	4.16	NA	3.52
Temperature, Field (°C)	17.71	21.96	16.56	20.46	16.42	19.8	18.65	23.35	15.39	NA	20.56
Specific Conductivity, Field (uS/cm)	19	16	65	76	88	98	293	171	120	NA	224
Dissolved Oxygen, Field (mg/L)	1.35	3.99	2.98	0	3.44	2.78	6	6.62	7.77	NA	0.17
Oxidation Reduction Potential, Field (mV)	220	189	-65	66	-74	33	411	360	351	NA	443
Turbidity, Field (ntu)	0	25.4	7.4	424	0	92.1	10.7	2	0	NA	32.9
Iron, Ferrous, Field (mg/L)	0	0	0.5	1	0	0	0	0	0.05	NA	0

J - Qualitative mass spectral evidence of analyte present; concentration is less than reporting limit.

Yellow highlight = lactate peak identified on Method 300 chromatogram

Table 1
Baseline and Post-Injection Sampling Results
WestPoint Home, Clemson, SC Facility

PARAMETER	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection
	RMW-13A		RMW-14		RMW-14A		RMW-14B		RMW-14C		RMW-18	
	02/11/2019	10/28/2019	01/30/2019	11/04/2019	01/29/2019	11/4/2019	01/29/2019	10/30/2019	01/29/2019	10/30/2019	01/24/2019	10/29/2019
General Chemistry (mg/L)												
Bromide	0.099 J	< 0.20	0.11 J	0.1 J	< 0.20	<0.20	0.10 J	< 0.20	0.094 J	< 0.20	0.38 J	0.52
Field Parameters												
pH, Field (su)	5.6	4.84	3.9	3.4	5.19	5.11	6.95	6.94	7.15	8.9	5.02	4.64
Temperature, Field (°C)	16.88	22.14	14.31	18.78	15.03	19.42	16.02	19.85	16.98	19.85	16.64	20.53
Specific Conductivity, Field (uS/cm)	12	13	200	423	246	242	55	48	71	52	199	552
Dissolved Oxygen, Field (mg/L)	4.13	7.83	7.38	11.59	8.1	6.22	8.49	8.24	8.93	6.08	8.04	0
Oxidation Reduction Potential, Field (mV)	271	280	370	411	266	274	92	103	173	83	525	229
Turbidity, Field (ntu)	4.78	0	0	0	0	0	220	77.5	0	8	0	86.2
Iron, Ferrous, Field (mg/L)	0	0	0	0	0	0	0	0	0	0	0	0

PARAMETER	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection
	RMW-18A		RMW-19		RMW-19A		RMW-20		RMW-20A		RMW-20B	
	01/24/2019	11/08/2019	02/06/2019	11/01/2019	01/31/2019	11/01/2019	01/24/2019	11/04/2019	01/24/2019	11/06/2019	01/24/2019	10/30/2019
General Chemistry (mg/L)												
Bromide	0.34	1.3	0.18 J	0.10 J	0.11 J	< 0.20	0.27	0.22	< 0.20	0.06 J	< 0.20	< 0.20
Field Parameters												
pH, Field (su)	4.82	4.3	4.56	4	4.63	4.94	4.79	4.23	5.08	5.83	6.29	8.02
Temperature, Field (°C)	18.11	20.35	19.17	19.32	19.04	19.9	16.1	20.92	16.05	22.79	18.44	21.73
Specific Conductivity, Field (uS/cm)	617	409	82	91	33	24	172	230	24	512	65	83
Dissolved Oxygen, Field (mg/L)	1.17	0	1.85	0	10.3	6.35	6.82	7.72	6.11	0	9.34	0
Oxidation Reduction Potential, Field (mV)	373	-105	369	348	234	174	406	446	421	-61	234	-262
Turbidity, Field (ntu)	0	2.4	1.89	30.6	0	0	0	65.7	0	282	3.5	82.2
Iron, Ferrous, Field (mg/L)	0	0	0	0	0	0	0.05	0	0.1	>10	0	5.5

PARAMETER	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection
	RMW-20C		RMW-21		RMW-21A		RMW-22		RMW-22A	
	02/05/2019	10/30/2019	02/05/2019	11/04/2019	01/31/2019	11/08/2019	02/06/2019	11/01/2019	02/07/2019	11/01/2019
General Chemistry (mg/L)										
Bromide	0.097 J	< 0.20	0.25	0.18 J	0.65	0.55	NA	0.67	NA	0.11 J
Field Parameters										
pH, Field (su)	11.13	11.96	4.87	4.72	4.96	4.14	4.82	4.41	5.95	5.38
Temperature, Field (°C)	19.72	21.45	20.65	20.83	18.1	20.24	18.12	21.04	18.1	19.49
Specific Conductivity, Field (uS/cm)	329	438	104	118	652	736	82	119	45	52
Dissolved Oxygen, Field (mg/L)	4.98	0.07	1.41	3.73	5.33	0	1.46	0	8.62	1.44
Oxidation Reduction Potential, Field (mV)	-2	-173	465	504	325	184	525	326	178	229
Turbidity, Field (ntu)	0	58.5	0.67	21	0	284	1.21	0	29.9	64
Iron, Ferrous, Field (mg/L)	0	0	0	0	0	1.5	0	0	0.05	0

J - Qualitative mass spectral evidence of analyte present; concentration is less than reporting limit.

Yellow highlight = lactate peak identified on Method 300 chromatogram

Table 1
Baseline and Post-Injection Sampling Results
WestPoint Home, Clemson, SC Facility

PARAMETER	Baseline		Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Post-Injection	Baseline	Post-Injection
	RMW-23			RMW-23A		RMW-23B		RMW-23C			RMW-24	
		DU-19103										
	01/28/2019	01/28/2019	10/31/2019	01/28/2019	10/31/2019	01/28/2019	10/31/2019	02/13/2019	02/13/2019	10/31/2019	02/07/2019	11/08/2019
General Chemistry (mg/L)												
Bromide	0.15 J	0.16 J	< 0.20	0.25	0.29	0.15 J	0.089 J	0.13 J	NA	0.087 J	0.66	0.45
Field Parameters												
pH, Field (su)	6.89	NA	6.28	7.22	6.7	7.18	6.15	6.72	6.74	6.24	6.55	5.94
Temperature, Field (°C)	14.98	NA	22.81	15.29	22.1	15.53	21.17	17.79	16.15	21.97	17.22	18.79
Specific Conductivity, Field (uS/cm)	443	NA	479	211	185	116	104	226	81	232	645	734
Dissolved Oxygen, Field (mg/L)	0	NA	6.19	1.06	0	0.94	0	0	1.86	0	0	0
Oxidation Reduction Potential, Field (mV)	-175	NA	-130	-476	-185	-132	-91	-146	85	-110	-22	-25
Turbidity, Field (ntu)	43.7	NA	213	0	0	NA	127	13.3	0	109	0	282
Iron, Ferrous, Field (mg/L)	>10	NA	>10	>10	>10	>10	>10	10	0	>10	1	2

PARAMETER	Baseline	Post-Injection	Baseline		Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection	Baseline	Post-Injection
	RMW-26		RMW-27			RMW-27A		RMW-27B		RMW-28A	
				DU-19101							
	02/06/2019	10/28/2019	01/22/2019	01/22/2019	11/7/2019	01/22/2019	11/7/2019	01/22/2019	11/7/2019	02/11/2019	11/06/2019
General Chemistry (mg/L)											
Bromide	0.92	0.95	0.38	0.38	0.72	0.098 J	< 0.20	0.095 J	< 0.20	0.17 J	0.099 J
Field Parameters											
pH, Field (su)	6.33	5.52	5.3	NA	5.94	6.84	6.11	6.79	6.75	5.12	4.34
Temperature, Field (°C)	19.66	23.29	17.25	NA	22.45	18.04	20.58	18.59	21.1	16.05	19.34
Specific Conductivity, Field (uS/cm)	260	197	382	NA	557	240	275	77	107	54	56
Dissolved Oxygen, Field (mg/L)	0	0	4.8	NA	0	4.64	0	6.49	0	1.9	0
Oxidation Reduction Potential, Field (mV)	198	70	131	NA	-36	-144	-129	-36	-78	157	252
Turbidity, Field (ntu)	83.3	0	0	NA	0	0	69.5	0	0	0	228
Iron, Ferrous, Field (mg/L)	0	0.8	0.4	NA	1.5	>10	>10	0.2	0	0.8	0

PARAMETER		Baseline	Post-Injection
		RMW-28B	
		02/11/2019	11/06/2019
General Chemistry (mg/L)			
	Bromide	0.11 J	<0.20
Field Parameters			
	pH, Field (su)	6.59	6.03
	Temperature, Field (°C)	17.74	20.09
	Specific Conductivity, Field (uS/cm)	55	35
	Dissolved Oxygen, Field (mg/L)	0.085	2.85
	Oxidation Reduction Potential, Field (mV)	124	157
	Turbidity, Field (ntu)	0	24.3
	Iron, Ferrous, Field (mg/L)	0	0

J - Qualitative mass spectral evidence of analyte present; concentration is less than reporting limit.
Yellow highlight = lactate peak identified on Method 300 chromatogram

Attachment 3
Laboratory Analytical Reports

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

TRC Companies, Inc.
50 International Dr.
Suite 150
Greenville, SC 29615
Attention: Lisa Clark

Project Name: WPH Clemson

Project Number: 300688.0000.0000.0010

Lot Number:**UK04055**

Date Completed:11/14/2019

11/14/2019 2:38 PM
Approved and released by:
Lab Director - Greenville: Lucas Odom

The electronic signature above is the equivalent of a handwritten signature.

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Laboratory Data Quality Review Notes

Project Name: WPH-Clemson, SC

Project Number: 300688.0000.0000.000010

Lab Report: UK04055 Shealy Environmental Services
Twenty five groundwater samples were analyzed for bromide.

Chain of Custody, Sample Temperature, Sample Preservation: Chains of custody (CoCs) signed; sample temperature <6 ^{o}C upon arrival at the laboratory; samples were preserved properly.

Hold Time: Samples analyzed within hold time.

Surrogates: Surrogate recoveries are not relevant to bromide analyses.

Method Blank: Method blanks did not have bromide detections.

Trip Blank: A trip blank was not collected with these samples.

Field Blank: A field blank was not collected with these samples.

Equipment Rinse Blank: A rinsate blank was not collected with these samples.

LCS/LCSD: LCS recoveries for bromide were within QC Limits. LCSD analyses were not performed.

MS/MSD: RMW-23A and RMW-23B were used for bromide MS/MSD analyses. Bromide MS and MSD recoveries and RPDs were within QC limits.

Duplicates: A field duplicate was not collected with these samples.

No qualifiers were assigned.

Data review performed by: Terry Hertz; TRC Environmental Corp.; 11/15/2019

Case Narrative
TRC Companies, Inc.
Lot Number: UK04055

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

SHEALY ENVIRONMENTAL SERVICES, INC.

Sample Summary
TRC Companies, Inc.
Lot Number: UK04055

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	RMW-05A	Aqueous	10/28/2019 1105	11/04/2019
002	RMW-01	Aqueous	10/28/2019 1425	11/04/2019
003	RMW-13A	Aqueous	10/28/2019 1520	11/04/2019
004	RMW-26	Aqueous	10/28/2019 1620	11/04/2019
005	RMW-18	Aqueous	10/29/2019 1120	11/04/2019
006	RMW-10A	Aqueous	10/29/2019 1420	11/04/2019
007	RMW-10	Aqueous	10/29/2019 1540	11/04/2019
008	RMW-06	Aqueous	10/29/2019 1550	11/04/2019
009	RMW-08	Aqueous	10/29/2019 1635	11/04/2019
010	RMW-11	Aqueous	10/29/2019 1640	11/04/2019
011	RMW-14B	Aqueous	10/30/2019 1130	11/04/2019
012	RMW-14C	Aqueous	10/30/2019 1150	11/04/2019
013	RMW-20B	Aqueous	10/30/2019 1520	11/04/2019
014	RMW-20C	Aqueous	10/30/2019 1600	11/04/2019
015	RMW-10B	Aqueous	10/31/2019 1035	11/04/2019
016	RMW-10C	Aqueous	10/31/2019 1115	11/04/2019
017	RMW-23C	Aqueous	10/31/2019 1210	11/04/2019
018	RMW-23B	Aqueous	10/31/2019 1215	11/04/2019
019	RMW-23A	Aqueous	10/31/2019 1255	11/04/2019
020	RMW-23	Aqueous	10/31/2019 1300	11/04/2019
021	RMW-19A	Aqueous	11/01/2019 1050	11/04/2019
022	RMW-19	Aqueous	11/01/2019 1055	11/04/2019
023	RMW-22A	Aqueous	11/01/2019 1145	11/04/2019
024	RMW-22	Aqueous	11/01/2019 1155	11/04/2019
025	RMW-13	Aqueous	11/01/2019 1510	11/04/2019

(25 samples)

Detection Summary

TRC Companies, Inc.

Lot Number: UK04055

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
002	RMW-01	Aqueous	Bromide	300.0	0.24		mg/L	6
004	RMW-26	Aqueous	Bromide	300.0	0.95		mg/L	8
005	RMW-18	Aqueous	Bromide	300.0	0.52		mg/L	9
007	RMW-10	Aqueous	Bromide	300.0	0.32		mg/L	11
008	RMW-06	Aqueous	Bromide	300.0	0.078	J	mg/L	12
009	RMW-08	Aqueous	Bromide	300.0	0.15	J	mg/L	13
010	RMW-11	Aqueous	Bromide	300.0	0.13	J	mg/L	14
017	RMW-23C	Aqueous	Bromide	300.0	0.087	J	mg/L	21
018	RMW-23B	Aqueous	Bromide	300.0	0.089	J	mg/L	22
019	RMW-23A	Aqueous	Bromide	300.0	0.29		mg/L	23
022	RMW-19	Aqueous	Bromide	300.0	0.10	J	mg/L	26
023	RMW-22A	Aqueous	Bromide	300.0	0.11	J	mg/L	27
024	RMW-22	Aqueous	Bromide	300.0	0.67		mg/L	28
025	RMW-13	Aqueous	Bromide	300.0	0.074	J	mg/L	29

(14 detections)

Client: TRC Companies, Inc.
Description: RMW-05A
Date Sampled: 10/28/2019 1105
Date Received: 11/04/2019

Laboratory ID: UK04055-001
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 1456	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-01
Date Sampled: 10/28/2019 1425
Date Received: 11/04/2019

Laboratory ID: UK04055-002
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 1515	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.24		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-13A
Date Sampled: 10/28/2019 1520
Date Received: 11/04/2019

Laboratory ID: UK04055-003
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 1534	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-26
Date Sampled: 10/28/2019 1620
Date Received: 11/04/2019

Laboratory ID: UK04055-004
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 1553	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.95		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-18
Date Sampled: 10/29/2019 1120
Date Received: 11/04/2019

Laboratory ID: UK04055-005
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 1612	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.52		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-10A
Date Sampled: 10/29/2019 1420
Date Received: 11/04/2019

Laboratory ID: UK04055-006
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 1631	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-10
Date Sampled: 10/29/2019 1540
Date Received: 11/04/2019

Laboratory ID: UK04055-007
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 1650	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.32		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-06
Date Sampled: 10/29/2019 1550
Date Received: 11/04/2019

Laboratory ID: UK04055-008
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 2043	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.078	J	0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-08
Date Sampled: 10/29/2019 1635
Date Received: 11/04/2019

Laboratory ID: UK04055-009
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 2102	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.15	J	0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-11
Date Sampled: 10/29/2019 1640
Date Received: 11/04/2019

Laboratory ID: UK04055-010
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 2120	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.13	J	0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-14B
Date Sampled: 10/30/2019 1130
Date Received: 11/04/2019

Laboratory ID: UK04055-011
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 2139	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-14C
Date Sampled: 10/30/2019 1150
Date Received: 11/04/2019

Laboratory ID: UK04055-012
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 2158	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-20B
Date Sampled: 10/30/2019 1520
Date Received: 11/04/2019

Laboratory ID: UK04055-013
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 2217	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-20C
Date Sampled: 10/30/2019 1600
Date Received: 11/04/2019

Laboratory ID: UK04055-014
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 2236	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-10B
Date Sampled: 10/31/2019 1035
Date Received: 11/04/2019

Laboratory ID: UK04055-015
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 2255	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-10C
Date Sampled: 10/31/2019 1115
Date Received: 11/04/2019

Laboratory ID: UK04055-016
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 2314	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-23C
Date Sampled: 10/31/2019 1210
Date Received: 11/04/2019

Laboratory ID: UK04055-017
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/12/2019 2333	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.087	J	0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-23B
Date Sampled: 10/31/2019 1215
Date Received: 11/04/2019

Laboratory ID: UK04055-018
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/13/2019 0030	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.089	J	0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-23A
Date Sampled: 10/31/2019 1255
Date Received: 11/04/2019

Laboratory ID: UK04055-019
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/13/2019 0126	GMH		35513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.29		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-23
Date Sampled: 10/31/2019 1300
Date Received: 11/04/2019

Laboratory ID: UK04055-020
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/13/2019 0242	GMH		35663

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-19A
Date Sampled: 11/01/2019 1050
Date Received: 11/04/2019

Laboratory ID: UK04055-021
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/13/2019 0301	GMH		35663

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-19
Date Sampled: 11/01/2019 1055
Date Received: 11/04/2019

Laboratory ID: UK04055-022
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/13/2019 0358	GMH		35663

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.10	J	0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-22A
Date Sampled: 11/01/2019 1145
Date Received: 11/04/2019

Laboratory ID: UK04055-023
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/13/2019 0417	GMH		35663

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.11	J	0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-22
Date Sampled: 11/01/2019 1155
Date Received: 11/04/2019

Laboratory ID: UK04055-024
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/13/2019 0436	GMH		35663

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.67		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Client: TRC Companies, Inc.
Description: RMW-13
Date Sampled: 11/01/2019 1510
Date Received: 11/04/2019

Laboratory ID: UK04055-025
Matrix: Aqueous

Inorganic non-metals

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/13/2019 0454	GMH		35663

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.074	J	0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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QC Summary

Inorganic non-metals - MB

Sample ID: UQ35513-001
Batch: 35513
Analytical Method: 300.0

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Bromide	ND		1	0.20	0.050	mg/L	11/12/2019 1219

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - LCS

Sample ID: UQ35513-002
Batch: 35513
Analytical Method: 300.0

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Bromide	8.0	8.6		1	108	90-110	11/12/2019 1257

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - MS

Sample ID: UK04055-018MS
Batch: 35513
Analytical Method: 300.0
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Bromide	0.089	8.0	8.6		1	106	90-110	11/13/2019 0049

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MSD

Sample ID: UK04055-018MD
Batch: 35513
Analytical Method: 300.0
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Bromide	0.089	8.0	8.6		1	106	0.00	90-110	20	11/13/2019 0107

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - MS

Sample ID: UK04055-019MS
Batch: 35513
Analytical Method: 300.0
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Bromide	0.29	8.0	8.9		1	108	90-110	11/13/2019 0145

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Inorganic non-metals - MSD

Sample ID: UK04055-019MD
Batch: 35513
Analytical Method: 300.0
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Bromide	0.29	8.0	8.9		1	108	0.00	90-110	20	11/13/2019 0204

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - MB

Sample ID: UQ35663-001
Batch: 35663
Analytical Method: 300.0

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Bromide	ND		1	0.20	0.050	mg/L	11/13/2019 0011

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - LCS

Sample ID: UQ35663-002
Batch: 35663
Analytical Method: 300.0

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Bromide	8.0	8.5		1	106	90-110	11/13/2019 0223

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Shealy Environmental Services, Inc.
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Chain of Custody

and

Miscellaneous Documents

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Chain of Custody Record

Number 099506

Client	Report to Contact	Telephone No. / E-mail	Quote No.
TRC	Lisa Clark		

Address	Sampler's Signature	Analysis (Attach list if more space is needed)
50 International Dr Ste 150		Page 1 of 3

City	State	Zip Code	Printed Name
Greenville	SC	29615	Aharon Misiunas

Project Name: WPH Clemson

Project No.: 300688.0.0.10

P.O. No.:

UK04055

Sample ID / Description (Containers for each sample may be combined on one line.)	Date 2019	Time	G=Grab C=Composite	Matrix: Aqueous	Solid	Wipe	Liquid	No. of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnOAc/NaOH	Bromide	Remarks / Cooler I.D.
RMW-05A	10-28	1105	G	X				1						X	
RMW-01	10-28	1425	G	X				1						X	
RMW-13A	10-28	1520	G	X				1						X	
RMW-26	10-28	1620	G	X				1						X	
RMW-18	10-29	1120	G	X				1						X	
RMW-10A	10-29	1420	G	X				1						X	
RMW-10	10-29	1540	G	X				1						X	
RMW-06	10-29	1550	G	X				1						X	
RMW-08	10-29	1635	G	X				1						X	
RMW-11	10-29	1640	G	X				1						X	

Turn Around Time Required (Prior lab approval required for expedited TAT.)
☐ Standard ☐ Rush (Specify)

Sample Disposal
☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by	11-1-19	1640	1. Received by: TRC sample storage	11-1-19	1640
2. Relinquished by: TRC Sample Storage	11/4/19	0935	2. Received by: Matt DP	11/4/19	0935
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: Matt DP	11/4/19	1450	4. Laboratory Received by	11/4/19	1450

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) Yes No Ice Pack

Receipt Temp: 2.6 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

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Chain of Custody Record

Number 099505

Client	Report to Contact	Telephone No. / E-mail	Quote No.
TRC	Lisa Clark		
Address: 50 International Dr Ste 150	Sampler's Signature	Analysis (Attach list if more space is needed)	Page 2 of 3
City: Greenville; State: SC; Zip Code: 29615	Printed Name: Aharon Mirvinas		
Project Name: WPA Clemson			UK04055

Project No.	P.O. No.			Matrix			No of Containers by Preservative Type							
Sample ID / Description (Containers for each sample may be combined on one line.)	Date 2019	Time	G=Grab C=Composite	Aqueous	Solid	Non-Aqueous	Oxygen	H2SO4	HNO3	HCl	NaOH	5035 Kit	Bromide	Remarks / Cooler I.D.
RMW-14B	10-30	1130	G	X			1						X	
RMW-14C	10-30	1150	G	X			1						X	
RMW-20B	10-30	1520	G	X			1						X	
RMW-20C	10-30	1600	G	X			1						X	
RMW-10B	10-31	1035	G	X			1						X	
RMW-10C	10-31	1115	G	X			1						X	
RMW-23C	10-31	1210	G	X			1						X	
RMW-23B	10-31	1215	G	X			1						X	
RMW-23A	10-31	1255	G	X			1						X	
RMW-23	10-31	1300	G	X			1						X	

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by:	11-1-19	1640	1. Received by: TRC Sample Storage	11-1-19	1640
2. Relinquished by: TRC Sample Storage	11/4/19	0935	2. Received by:	11/4/19	0935
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by:	Date 11/4/19	Time 14:50	4. Laboratory received by:	Date 11/4/19	Time 1450

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack
Receipt Temp. 2.4 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

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SHEALY Chain of Custody Record

Number 099504

Client: TRC	Report to Contact: Lisa Clark	Telephone No. / E-mail:	Quote No.
Address: 50 International Dr Ste 150	Sampler's Signature: x	Analysis (Attach list if more space is needed):	Page 3 of 3
City: Greenville / State: SC / Zip Code: 29615	Printed Name: Aharon Mirsky		
Project Name: WPH Clemson			UK04055
Project No.: 300688.0.0.10	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	G=Grab C=Composite	Matrix: Aqueous	Solid	Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	SAS Kit	Bromide
RMW-19A	11-1	1050	G	x			1						x
RMW-19	11-1	1055	G	x			1						x
RMW-22A	11-1	1145	G	x			1						x
RMW-22	11-1	1155	G	x			1						x
RMW-13	11-1	1510	G	x			1						x
~~RMW-14E AM~~	~~10-30 PM~~	~~1150 AM~~											

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time
1. Relinquished by:	11-1-19	1640
2. Relinquished by: TRC Sample Storage	11/4/19	0935
3. Relinquished by:	Date	Time
4. Relinquished by:	11/4/19	1450

	Date	Time
1. Received by: TRC sample storage	11-1-19	1640
2. Received by:	11/4/19	0935
3. Received by:	Date	Time
4. Laboratory received by:	11/4/19	1450

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on Ice (Circle): (Yes) No Ice Pack — Receipt Temp. 2.4 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

Shealy Environmental Services, Inc.
Document Number: ME0018C-14

Page 1 of 1
Effective Date: 8/2/2018

Sample Receipt Checklist (SRC)

Client: TRC Cooler Inspected by/date: BMG / 11/04/19 Lot #: UK04055

Means of receipt: ☑ SESI ☐ Client ☐ UPS ☐ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

2.6 / 2.6 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote # NA

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H_2SO_4, HNO_3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: BMG Date: 11/04/19

Comments:

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

TRC Companies, Inc.
50 International Dr.
Suite 150
Greenville, SC 29615
Attention: Lisa Clark

Project Name: WPH Clemson

Project Number: 300688.0000.0000.0002

Lot Number:**UK11024**

Date Completed:11/20/2019

Project Manager:**Lucas Odom**

11/21/2019 10:13 AM
Approved and released by:
Project Manager: Kelly M. Nance

The electronic signature above is the equivalent of a handwritten signature.

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Laboratory Data Quality Review Notes

Project Name: WPH-Clemson, SC

Project Number: 300688.0000.0000.000010

Lab Report: UK11024 Shealy Environmental Services
Nineteen groundwater samples were analyzed for bromide.

Chain of Custody, Sample Temperature, Sample Preservation: Chains of custody (CoCs) signed; sample temperature <6 ^{o}C upon arrival at the laboratory; samples were preserved properly.

Hold Time: Samples analyzed within hold time.

Surrogates: Surrogate recoveries are not relevant to bromide analyses.

Method Blank: Method blanks did not have bromide detections.

Trip Blank: A trip blank was not collected with these samples.

Field Blank: A field blank was not collected with these samples.

Equipment Rinse Blank: A rinsate blank was not collected with these samples.

LCS/LCSD: LCS recoveries for bromide were within QC Limits. LCSD analyses were not performed.

MS/MSD: RMW-09, RMW-08A, and RMW-27B were used for bromide MS/MSD analyses. Bromide MS and MSD recoveries and RPDs were within QC limits except as follows:

- The RMW-08A bromide MS recovery was within the QC limits, but the corresponding MSD recovery was 1% above the upper QC limit. No qualifier was assigned.

Duplicates: A field duplicate was not collected with these samples.

No qualifiers were assigned.

Data review performed by: Terry Hertz; TRC Environmental Corp.; 11/25/2019

Case Narrative
TRC Companies, Inc.
Lot Number: UK11024

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

Inorganic non-metals
The matrix spike duplicate (MSD) associated with sample -009 had bromide recovered outside of the acceptance limits. The laboratory control sample (LCS) was recovered within the required acceptance limits; therefore, this likely demonstrates a matrix effect.

Sample Summary

TRC Companies, Inc.

Lot Number: UK11024

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	RMW-20	Aqueous	11/04/2019 1105	11/11/2019
002	RMW-14	Aqueous	11/04/2019 1125	11/11/2019
003	RMW-07	Aqueous	11/04/2019 1145	11/11/2019
004	RMW-09	Aqueous	11/04/2019 1200	11/11/2019
005	RMW-14A	Aqueous	11/04/2019 1350	11/11/2019
006	RMW-21	Aqueous	11/04/2019 1355	11/11/2019
007	RMW-28A	Aqueous	11/06/2019 1130	11/11/2019
008	RMW-28B	Aqueous	11/06/2019 1150	11/11/2019
009	RMW-08A	Aqueous	11/06/2019 1405	11/11/2019
010	RMW-06A	Aqueous	11/06/2019 1420	11/11/2019
011	RMW-05B	Aqueous	11/06/2019 1450	11/11/2019
012	RMW-20A	Aqueous	11/06/2019 1455	11/11/2019
013	RMW-27	Aqueous	11/07/2019 1020	11/11/2019
014	RMW-27A	Aqueous	11/07/2019 1025	11/11/2019
015	RMW-27B	Aqueous	11/07/2019 1105	11/11/2019
016	RMW-02	Aqueous	11/07/2019 1145	11/11/2019
017	RMW-18A	Aqueous	11/08/2019 1020	11/11/2019
018	RMW-21A	Aqueous	11/08/2019 1055	11/11/2019
019	RMW-24	Aqueous	11/08/2019 1315	11/11/2019

(19 samples)

Detection Summary

TRC Companies, Inc.

Lot Number: UK11024

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	RMW-20	Aqueous	Bromide	300.0	0.22		mg/L	5
002	RMW-14	Aqueous	Bromide	300.0	0.10	J	mg/L	6
003	RMW-07	Aqueous	Bromide	300.0	0.31		mg/L	7
004	RMW-09	Aqueous	Bromide	300.0	0.15	J	mg/L	8
006	RMW-21	Aqueous	Bromide	300.0	0.18	J	mg/L	10
007	RMW-28A	Aqueous	Bromide	300.0	0.099	J	mg/L	11
009	RMW-08A	Aqueous	Bromide	300.0	0.66		mg/L	13
012	RMW-20A	Aqueous	Bromide	300.0	0.060	J	mg/L	16
013	RMW-27	Aqueous	Bromide	300.0	0.72		mg/L	17
016	RMW-02	Aqueous	Bromide	300.0	0.86		mg/L	20
017	RMW-18A	Aqueous	Bromide	300.0	1.3		mg/L	21
018	RMW-21A	Aqueous	Bromide	300.0	0.55		mg/L	22
019	RMW-24	Aqueous	Bromide	300.0	0.45		mg/L	23

(13 detections)

Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-001
Description: RMW-20
Matrix: Aqueous
Date Sampled: 11/04/2019 1105
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/19/2019 0815	HKL		36290

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.22		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

Shealy Environmental Services, Inc.
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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-002
Description: RMW-14
Matrix: Aqueous
Date Sampled: 11/04/2019 1125
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/19/2019 0911	HKL		36290

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.10	J	0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-003
Description: RMW-07
Matrix: Aqueous
Date Sampled: 11/04/2019 1145
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/19/2019 0930	HKL		36290

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.31		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-004
Description: RMW-09
Matrix: Aqueous
Date Sampled: 11/04/2019 1200
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/19/2019 0949	HKL		36290

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.15	J	0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-005
Description: RMW-14A
Matrix: Aqueous
Date Sampled: 11/04/2019 1350
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/18/2019 2132	HKL		36195

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-006
Description: RMW-21
Matrix: Aqueous
Date Sampled: 11/04/2019 1355
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/18/2019 2153	HKL		36195

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.18	J	0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-007
Description: RMW-28A
Matrix: Aqueous
Date Sampled: 11/06/2019 1130
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/18/2019 2215	HKL		36195

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.099	J	0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-008
Description: RMW-28B
Matrix: Aqueous
Date Sampled: 11/06/2019 1150
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/18/2019 2236	HKL		36195

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-009
Description: RMW-08A
Matrix: Aqueous
Date Sampled: 11/06/2019 1405
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/19/2019 1844	GMH		36357

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.66		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-010
Description: RMW-06A
Matrix: Aqueous
Date Sampled: 11/06/2019 1420
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/19/2019 1940	GMH		36357

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-011
Description: RMW-05B
Matrix: Aqueous
Date Sampled: 11/06/2019 1450
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/19/2019 1959	GMH		36357

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-012
Description: RMW-20A
Matrix: Aqueous
Date Sampled: 11/06/2019 1455
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/19/2019 2018	GMH		36357

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.060	J	0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-013
Description: RMW-27
Matrix: Aqueous
Date Sampled: 11/07/2019 1020
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/19/2019 2037	GMH		36357

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.72		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-014
Description: RMW-27A
Matrix: Aqueous
Date Sampled: 11/07/2019 1025
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/19/2019 2056	GMH		36357

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-015
Description: RMW-27B
Matrix: Aqueous
Date Sampled: 11/07/2019 1105
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/19/2019 2153	GMH		36357

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	ND		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-016
Description: RMW-02
Matrix: Aqueous
Date Sampled: 11/07/2019 1145
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/19/2019 2249	GMH		36357

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.86		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-017
Description: RMW-18A
Matrix: Aqueous
Date Sampled: 11/08/2019 1020
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/19/2019 2308	GMH		36357

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	1.3		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-018
Description: RMW-21A
Matrix: Aqueous
Date Sampled: 11/08/2019 1055
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/19/2019 2327	GMH		36357

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.55		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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Inorganic non-metals

Client: TRC Companies, Inc.
Laboratory ID: UK11024-019
Description: RMW-24
Matrix: Aqueous
Date Sampled: 11/08/2019 1315
Date Received: 11/11/2019

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1		(Bromide) 300.0	1	11/19/2019 2346	GMH		36357

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
Bromide		300.0	0.45		0.20	0.050	mg/L	1

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL

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QC Summary

Inorganic non-metals - MB

Sample ID: UQ36195-001
Batch: 36195
Analytical Method: 300.0

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Bromide	ND		1	0.20	0.050	mg/L	11/18/2019 1202

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - LCS

Sample ID: UQ36195-002
Batch: 36195
Analytical Method: 300.0

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Bromide	8.0	8.4		1	105	90-110	11/18/2019 1244

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - MB

Sample ID: UQ36290-001
Batch: 36290
Analytical Method: 300.0

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Bromide	ND		1	0.20	0.050	mg/L	11/19/2019 0118

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - LCS

Sample ID: UQ36290-002
Batch: 36290
Analytical Method: 300.0

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Bromide	8.0	8.6		1	108	90-110	11/19/2019 0137

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - MS

Sample ID: UK11024-004MS
Batch: 36290
Analytical Method: 300.0
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Bromide	0.15	8.0	8.4		1	103	90-110	11/19/2019 1008

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - MSD

Sample ID: UK11024-004MD
Batch: 36290
Analytical Method: 300.0
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Bromide	0.15	8.0	8.5		1	104	1.2	90-110	20	11/19/2019 1027

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - MB

Sample ID: UQ36357-001
Batch: 36357
Analytical Method: 300.0

Matrix: Aqueous

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
Bromide	ND		1	0.20	0.050	mg/L	11/19/2019 1716

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - LCS

Sample ID: UQ36357-002
Batch: 36357
Analytical Method: 300.0

Matrix: Aqueous

Parameter	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Bromide	8.0	8.6		1	108	90-110	11/19/2019 1754

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL

N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - MS

Sample ID: UK11024-009MS
Batch: 36357
Analytical Method: 300.0
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Bromide	0.66	8.0	9.3		1	108	90-110	11/19/2019 1903

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

Inorganic non-metals - MSD

Sample ID: UK11024-009MD
Batch: 36357
Analytical Method: 300.0
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Bromide	0.66	8.0	9.5	N	1	111	2.1	90-110	20	11/19/2019 1922

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - MS

Sample ID: UK11024-015MS
Batch: 36357
Analytical Method: 300.0
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Bromide	ND	8.0	8.6		1	108	90-110	11/19/2019 2211

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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Inorganic non-metals - MSD

Sample ID: UK11024-015MD
Batch: 36357
Analytical Method: 300.0
Matrix: Aqueous

Parameter	Sample Amount (mg/L)	Spike Amount (mg/L)	Result (mg/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Bromide	ND	8.0	8.5		1	106	1.2	90-110	20	11/19/2019 2230

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
ND = Not detected at or above the DL
N = Recovery is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Shealy Environmental Services, Inc.
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Chain of Custody

and

Miscellaneous Documents

Shealy Environmental Services, Inc.
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SHEALY ENVIRONMENTAL SERVICES, INC.

Chain of Custody Record

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 099503

Client: TRC	Report to Contact: Lisa Clark	Telephone No. / E-mail:	Quote No.
Address: 50 International Dr Ste 150	Sampler's Signature:	Analysis (Attach list if more space is needed)	Page 1 of 2
City: Greenville / State: SC / Zip Code: 29615	Printed Name: Aharon Misiunas		
Project Name: WPH Clemson			UK11024
Project No.: 300688.0.010	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date 2019	Time	Collect Grab/Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	HNO3	H2SO4	HCl	NaOH	ZnAc/NaOH	Analysis: Bromide
RMW-20	11.4	1105	G	X			1						X
RMW-14	11.4	1125	G	X			1						X
RMW-07	11.4	1145	G	X			1						X
RMW-09	11.4	1200	G	X			1						X
RMW-14A	11.4	1350	G	X			1						X
RMW-28	11.4	1355	G	X			1						X
RMW-28A	11.6	1130	G	X			1						X
RMW-28B	11.6	1150	G	X			1						X
RMW-08A	11.6	1405	G	X			1						X
RMW-06A	11.6	1420	G	X			1						X

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time
1. Relinquished by:	11-8-19	1537
2. Relinquished by: TRC Sample Storage	11/11/19	1100
3. Relinquished by:		
4. Relinquished by:	11/11/19	1510

	Date	Time
1. Received by: TRC Sample Storage	11-8-19	1537
2. Received by:	11/11/19	1100
3. Received by:		
4. Laboratory received by:	11/11/19	1510

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) Yes No Ice Pack — Receipt Temp. 3.0 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Chain of Custody Record

Number 92121

Client	Report to Contact	Telephone No. / E-mail	Quote No.
TRC	Lisa Clark		

Address	Sampler's Signature	Analysis (Attach list if more space is needed)	Page 2 of 2
50 International Dr STE 150	x		

City	State	Zip Code	Printed Name
Greenville	SC	29615	Aharon Misivnas

Project Name	Project No.	P.O. No.
WPA Clemson	300698.0.0.10	

UK11024
LJO

Sample ID / Description (Containers for each sample may be combined on one line.)	Date 2019	Time	Grab/Composite	Matrix: Aqueous	Soil	Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnOAc/NaOH	Bromide
RMW-05B	11.6	1450	G	X			1						X
RMW-20A	11.6	1455	G	X			1						X
RMW-27	11.7	1020	G	X			1						X
RMW-27A	11.7	1025	G	X			1						X
RMW-27B	11.7	1105	G	X			1						X
RMW-02	11.7	1145	G	X			1						X
RMW-18A	11.8	1030	G	X			1						X
RMW-21A	11.8	1055	G	X			1						X
RMW-24	11.8	1315	G	X			1						X

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☐ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by	11.8.19	1537	1. Received by TRC Sample Storage	11.8.19	1537
2. Relinquished by TRC Sample Storage	11/11/19	1100	2. Received by	11/11/19	1100
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by	11/11/19	1510	4. Laboratory received by	11/11/19	1510

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) Yes No Ice Pack

Receipt Temp 3.0 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-138 Effective Date: 08-01-2014

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
Document Number: ME0018C-14

Page 1 of 1
Effective Date: 8/2/2018

Sample Receipt Checklist (SRC)

Client: TRC Cooler Inspected by/date: JSH / 11/11/19 Lot #: UK11024

Means of receipt: ☑ SESI ☐ Client ☐ UPS ☐ FedEx ☐ Other: _____

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

3.0 / 3.0 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? _____
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☑ Yes	☐ No		21. Was the quote number listed on the container label? If yes, Quote # 21491

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.

Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA _____ were received with bubbles >6 mm in diameter.

Samples(s) NA _____ were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: JSH Date: 11/11/19

Comments: