Examination of Leachate, Drill Cuttings and Related Environmental, Economic and Technical Aspects Associated with Solid Waste Facilities in West Virginia

Appendix D: Analytical Results of Landfill Leachate

-Reports as received from the laboratory

CHAIN OF CUSTODY RECORD

v10-0114 REIC use ONLY — CLIENT ID MAR071 DATE _____ SHEET _____

REIC

Research Environmental & Industrial Consultants, Inc.

MAIN LABORATORY & CORPORATE HEADQUARTERS:
P.O. Box 286 • 225 Industrial Park Rd, Beaver, WV 25813
800-999-0105 • 304-255-2500 • www.reiclabs.com

MID-OHIO VALLEY Service Center
101 17th Street
Ashland, KY 41101
606-393-5027

SHENANDOAH Service Center
1557 Commerce Rd., Ste 201
Verona, VA 24482
540-248-0183

ROANOKE Service Center
3029-C Peters Creek Rd
Roanoke, VA 24019
540-777-1276

MORGANTOWN Service Center
16 Commerce Drive
Westover, WV 26501
304-241-5861

Client: Marshall University Center for Environmental, Geotechnical and Applied Sciences — PO # _____

Contact Person: George Carico/Jamie Wolfe — Phone: 304-696-5456

Address: One John Marshall Drive — City: Huntington — State: WV — Zip: 25755

Billing Address (if different) _____

City _____ State _____ Zip _____

Site ID & State: Short Creek Landfill/Wheeling POTW — Project ID: Drill Cutting/Leachate Analysis — Sampler: J McGee

SAMPLE LOG & ANALYSIS REQUEST

TURNAROUND TIME

- (•) NORMAL
- ( ) RUSH TURNAROUND*: ( ) 5 DAY ( ) 3 DAY ( ) 2 DAY ( ) 1 DAY

*Rush work needs prior laboratory approval and will incur additional charges

ANALYSIS & METHOD REQUESTED

See Attachment

Field Readings → ph / Temp / Cond
1 - 8.39 / 17.0 / 21,200
2 - 7.72 / 14.8 / 9,480
3 - 6.77 / 16.1 / 1,142

MSC Sampling Fee--- 6.5 Mas

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	a 0 b	a 1 b	a 2 b	a 3 b	a 5 b	a 10 b	a b	a b	a b
1-Short Creek/Open LF	20	11/24/14 @ 0945	Water	Grab	X			X					X
2-Short Creek/Closed LF	20	1055	Water	Grab	X				X				
3-Wheeling POTW Effluent	23	1155	Water	Grab	X					X			
Trip Blank	1		Water	Grab	X								
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									

ENTER PRESERVATIVE CODE(S):

0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Bisulfate/Methanol
9 Ammonium Chloride
10 AS/AH *
11 _____ *

(Use blanks for preservatives not listed.)

COMMENTS:
Dissolved Metals are Field Filtered

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: 1 °C — ICED? Y N

Containers provided by: [X] REIC [ ] Client

1		2		3	
Relinquished by (signature)	Date/Time 11.24.14 1345	Relinquished by (signature)	Date/Time	Relinquished by (signature)	Date/Time
Received by (signature)	Date/Time 11/24/14 1345	Received by (signature)	Date/Time	Received by (signature)	Date/Time

WVDEP Drill Cutting / Leachate Analysis List

Aluminum

Antimony

Arsenic

Barium

Beryllium

Boron

Cadmium

Chromium

Hexavalent Chromium

Copper

Lead

Lithium

Mercury

Nickel

Selenium

Silver

Strontium

Vanadium

Zinc

Chloride

Fluoride

Nitrate as Nitrogen

Nitrite as Nitrogen

Sulfate

Total Suspended Solids

Free Cyanide

Benzene

Chlorobenzene

Chlorodibromomethane

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

1,4-Dinitrobenzene

1,4-Naphthoquinone

2,4-Dinitrotoluene

2,6-Dinitrotoluene

4-Nitroquinoline-1-oxide

bis(2-ethylhexyl) phthalate

Butyl benzylphthalate

Di-N-Butyl Phthalate

Di-N-Octylphthalate Diethyl Phthalate

Dimethyl Phthalate

Flouranthene

Nitrobenzene

Pentachloronitrobenzene

Gross Alpha

Gross Beta

Radium 226

Radium 228

Strontium 90

Radon

pH

Total Dissolved Solids

Total Suspended Solids

BOD 5-Day

Ammonia as Nitrogen

Total Kjeldahl Nitrogen

Oil & Grease

Acidity to pH 8.3

Specific Conductance

Alkalinity to pH 4.5

Chemical Oxygen Demand

Dissolved Iron and Iron

Manganese and Dissolved Manganese

REI Consultants, Inc.

FIELD LOG: pH Calibration Records 6-2010.Rev.1

Client Name: Marshall University Site Location: Wheeling, WV

Date: 11/24/14 Analyst: [illegible]

Calibration Location: Field / Laboratory Instrument: Oakton pH Meter

4.0 Buffer Lot #: D085-14

7.0 Buffer Lot #: D119-04

10.0 Buffer Lot #: D112-08

pH (SU) - SM4500-H+B, 18th Edition				
Standard	Initial Reading	Reading After Calibration	Temperature °C	Comments
4.0 Buffer	4.01	4.01	20.3	
7.0 Buffer	6.99	7.00	↓	
10.0 Buffer	9.93	10.01	↓	

Slope: 98%

Comments:

Calibration at the laboratory requires a pH 7.0 QC Check

All field pH analysis must be followed by a Post Analysis pH Check

Quality Control Samples	Reading	Acceptance Range:
QC Check, 7.0	7.02	*True Value ± 0.1 (6.9 - 7.1)*
Post Analysis QC Check, 7.0	7.01	

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
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101 17th Street
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TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Thursday, December 04, 2014

GEORGE CARICO
MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/LEACHATE ANALYSIS

Work Order #: 1411R54

Dear GEORGE CARICO:

REI Consultants, Inc. received 4 sample(s) on 11/24/2014 for the analyses presented in the following report.

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1411R54

Date Reported: 12/4/2014

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,

Project: DRILL CUTTING/LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1411R54

Date Reported: 12/4/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 9:45:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-01A	**Matrix:**	Liquid
Client Sample ID:	1-SHORT CREEK/OPEN LF	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.123	0.005	0.100	NA		mg/L	12/2/2014 3:40 PM	PA/VA
Antimony	ND	0.020	0.200	NA		mg/L	12/2/2014 3:40 PM	PA/VA
Arsenic	0.094	0.020	0.200	NA	J	mg/L	12/2/2014 3:40 PM	PA/VA
Barium	2.49	0.002	0.100	NA		mg/L	12/2/2014 3:40 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	12/2/2014 3:40 PM	PA/VA
Boron	22.5	0.020	0.100	NA		mg/L	12/2/2014 3:40 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	12/2/2014 3:40 PM	PA/VA
Chromium	0.094	0.005	0.100	NA	J	mg/L	12/2/2014 3:40 PM	PA/VA
Copper	0.049	0.005	0.100	NA	J	mg/L	12/2/2014 3:40 PM	PA/VA
Iron	10.8	0.010	0.100	NA		mg/L	12/2/2014 3:40 PM	PA/VA
Lead	0.010	0.010	0.200	NA	J	mg/L	12/2/2014 3:40 PM	PA/VA
Lithium	0.343	0.020	0.100	NA		mg/L	12/3/2014 12:18 PM	
Manganese	0.271	0.002	0.100	NA		mg/L	12/2/2014 3:40 PM	PA/VA
Nickel	0.339	0.005	0.100	NA		mg/L	12/2/2014 3:40 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	12/2/2014 3:40 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	12/2/2014 3:40 PM	PA/VA
Strontium	2.21	0.001	0.010	NA		mg/L	12/3/2014 12:18 PM	PA
Vanadium	0.040	0.005	0.100	NA	J	mg/L	12/2/2014 3:40 PM	PA/VA
Zinc	0.070	0.003	0.050	NA		mg/L	12/2/2014 3:40 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	12/1/2014 9:57 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0102	NA		mg/L	11/25/2014 8:27 PM	
1,4-Napthoquinone	ND	NA	0.0102	NA		mg/L	11/25/2014 8:27 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0510	NA		mg/L	11/25/2014 8:27 PM	
Pentachloronitrobenzene	ND	NA	0.0102	NA		mg/L	11/25/2014 8:27 PM	
Bis(2-ethylhexyl)phthalate	0.0405	0.0051	0.0102	NA		mg/L	11/25/2014 8:27 PM	PA/VA
Butyl benzyl phthalate	ND	0.0051	0.0102	NA		mg/L	11/25/2014 8:27 PM	PA/VA
Di-n-butyl phthalate	ND	0.0051	0.0102	NA		mg/L	11/25/2014 8:27 PM	PA/VA
Diethyl phthalate	ND	0.0020	0.0102	NA		mg/L	11/25/2014 8:27 PM	PA/VA
Dimethyl phthalate	ND	0.0020	0.0102	NA		mg/L	11/25/2014 8:27 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0020	0.0102	NA		mg/L	11/25/2014 8:27 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0020	0.0102	NA		mg/L	11/25/2014 8:27 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1411R54

Date Reported: 12/4/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 9:45:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-01A	**Matrix:**	Liquid
Client Sample ID:	1-SHORT CREEK/OPEN LF	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0051	0.0102	NA		mg/L	11/25/2014 8:27 PM	PA/VA
Fluoranthene	ND	0.0020	0.0102	NA		mg/L	11/25/2014 8:27 PM	PA/VA
Nitrobenzene	ND	0.0020	0.0102	NA		mg/L	11/25/2014 8:27 PM	PA/VA
Surr: 2-Fluorophenol	49.0	NA	32.9-110	NA		%REC	11/25/2014 8:27 PM	
Surr: Phenol-d5	46.5	NA	25.8-110	NA		%REC	11/25/2014 8:27 PM	
Surr: 2,4,6-Tribromophenol	88.2	NA	63.8-110	NA		%REC	11/25/2014 8:27 PM	
Surr: Nitrobenzene-d5	83.0	NA	61.8-110	NA		%REC	11/25/2014 8:27 PM	
Surr: 2-Fluorobiphenyl	79.3	NA	58.6-110	NA		%REC	11/25/2014 8:27 PM	
Surr: 4-Terphenyl-d14	66.4	NA	55.1-110	NA		%REC	11/25/2014 8:27 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	50.0	100	NA		µg/L	12/1/2014 5:56 PM	PA/VA
Chlorobenzene	ND	50.0	100	NA		µg/L	12/1/2014 5:56 PM	PA/VA
Dibromochloromethane	ND	50.0	100	NA		µg/L	12/1/2014 5:56 PM	PA/VA
1,2-Dichlorobenzene	ND	50.0	100	NA		µg/L	12/1/2014 5:56 PM	PA/VA
1,3-Dichlorobenzene	ND	50.0	100	NA		µg/L	12/1/2014 5:56 PM	PA/VA
1,4-Dichlorobenzene	ND	50.0	100	NA		µg/L	12/1/2014 5:56 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	97.6	NA	68.7-129	NA		%REC	12/1/2014 5:56 PM	
Surr: 4-Bromofluorobenzene	101	NA	71.8-127	NA		%REC	12/1/2014 5:56 PM	
Surr: Dibromofluoromethane	108	NA	74.3-124	NA		%REC	12/1/2014 5:56 PM	
Surr: Toluene-d8	101	NA	71.4-129	NA		%REC	12/1/2014 5:56 PM	

Notes:

Elevated PQLs are due to matrix interference. Sample foamed during analysis.

BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: CB**	
Biochemical Oxygen Demand	121	2	5	NA		mg/L	11/25/2014 12:45 PM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	1,120	200	500	NA		mg/L	11/25/2014 8:25 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	0.0011	0.0005	0.0050	NA	J	mg/L	11/25/2014 12:39 PM	PA/VA

Notes:

Elevated PQLs are due to matrix interference.

REI Consultants, Inc. - Analytical Report

WO#: 1411R54

Date Reported: 12/4/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 9:45:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-01A	**Matrix:**	Liquid
Client Sample ID:	1-SHORT CREEK/OPEN LF	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	4,000	25.0	250	NA		mg/L	11/25/2014 11:46 AM	PA/VA
Fluoride	7.55	0.25	1.00	NA		mg/L	11/25/2014 11:46 AM	PA/VA
Sulfate	44.6	5.00	25.0	NA		mg/L	11/25/2014 11:46 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	0.40	0.10	0.50	NA	J	mg/L	11/25/2014 11:46 AM	PA/VA
Nitrogen, Nitrite	ND	0.25	2.50	NA		mg/L	11/25/2014 11:46 AM	PA/VA

Notes:

Elevated PQLs are due to matrix interference.

TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	701	40.0	200	NA		mg/L	11/25/2014 6:00 PM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: KS**	
Oil & Grease	11.1	2.0	5.0	NA		mg/L	11/25/2014 8:25 AM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	0.042	0.005	0.020	NA		mg/L	11/25/2014 12:14 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	794	16.0	40.0	NA		mg/L	11/25/2014 2:26 PM	PA/VA

Notes:

Sample acidity or alkalinity exceeded the added preservative, so that the required preservation pH was not achieved.

CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	20,300	NA	NA	NA		µmhos/cm	11/25/2014 4:00 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: DSD**	
Total Dissolved Solids	10,000	10	20	NA		mg/L	11/25/2014 6:00 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	28.0	4.0	20.0	NA		mg/L	11/25/2014 5:22 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1411R54

Date Reported: 12/4/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 9:45:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-01A	**Matrix:**	Liquid
Client Sample ID:	1-SHORT CREEK/OPEN LF	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	ND	1.0	10	NA		mg/L	11/25/2014 12:35 PM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	3,550	10	100	NA		mg/L	11/25/2014 12:35 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	8.34	NA	NA	NA		SU	11/25/2014 12:35 PM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1411R54

Date Reported: 12/4/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 9:45:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-01B	**Matrix:**	Liquid
Client Sample ID:	1-SHORT CREEK/OPEN LF	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	4.96	0.010	0.100	NA		mg/L	12/2/2014 3:53 PM	PA/VA
Manganese	0.246	0.002	0.100	NA		mg/L	12/2/2014 3:53 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1411R54

Date Reported: 12/4/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 10:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-02A	**Matrix:**	Liquid
Client Sample ID:	2-SHORT CREEK/CLOSED LF	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.007	0.005	0.100	NA	J	mg/L	12/2/2014 3:56 PM	PA/VA
Antimony	ND	0.020	0.200	NA		mg/L	12/2/2014 3:56 PM	PA/VA
Arsenic	0.032	0.020	0.200	NA	J	mg/L	12/2/2014 3:56 PM	PA/VA
Barium	1.43	0.002	0.100	NA		mg/L	12/2/2014 3:56 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	12/2/2014 3:56 PM	PA/VA
Boron	9.02	0.020	0.100	NA		mg/L	12/2/2014 3:56 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	12/2/2014 3:56 PM	PA/VA
Chromium	0.026	0.005	0.100	NA	J	mg/L	12/2/2014 3:56 PM	PA/VA
Copper	0.011	0.005	0.100	NA	J	mg/L	12/2/2014 3:56 PM	PA/VA
Iron	8.34	0.010	0.100	NA		mg/L	12/2/2014 3:56 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	12/2/2014 3:56 PM	PA/VA
Lithium	0.137	0.020	0.100	NA		mg/L	12/3/2014 12:24 PM	
Manganese	0.604	0.002	0.100	NA		mg/L	12/2/2014 3:56 PM	PA/VA
Nickel	0.110	0.005	0.100	NA		mg/L	12/2/2014 3:56 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	12/2/2014 3:56 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	12/2/2014 3:56 PM	PA/VA
Strontium	1.61	0.001	0.010	NA		mg/L	12/3/2014 12:24 PM	PA
Vanadium	0.010	0.005	0.100	NA	J	mg/L	12/2/2014 3:56 PM	PA/VA
Zinc	0.024	0.003	0.050	NA	J	mg/L	12/2/2014 3:56 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	12/1/2014 9:59 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0102	NA		mg/L	11/25/2014 8:53 PM	
1,4-Napthoquinone	ND	NA	0.0102	NA		mg/L	11/25/2014 8:53 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0510	NA		mg/L	11/25/2014 8:53 PM	
Pentachloronitrobenzene	ND	NA	0.0102	NA		mg/L	11/25/2014 8:53 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0051	0.0102	NA		mg/L	11/25/2014 8:53 PM	PA/VA
Butyl benzyl phthalate	ND	0.0051	0.0102	NA		mg/L	11/25/2014 8:53 PM	PA/VA
Di-n-butyl phthalate	ND	0.0051	0.0102	NA		mg/L	11/25/2014 8:53 PM	PA/VA
Diethyl phthalate	ND	0.0020	0.0102	NA		mg/L	11/25/2014 8:53 PM	PA/VA
Dimethyl phthalate	ND	0.0020	0.0102	NA		mg/L	11/25/2014 8:53 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0020	0.0102	NA		mg/L	11/25/2014 8:53 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0020	0.0102	NA		mg/L	11/25/2014 8:53 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1411R54

Date Reported: 12/4/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 10:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-02A	**Matrix:**	Liquid
Client Sample ID:	2-SHORT CREEK/CLOSED LF	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0051	0.0102	NA		mg/L	11/25/2014 8:53 PM	PA/VA
Fluoranthene	ND	0.0020	0.0102	NA		mg/L	11/25/2014 8:53 PM	PA/VA
Nitrobenzene	ND	0.0020	0.0102	NA		mg/L	11/25/2014 8:53 PM	PA/VA
Surr: 2-Fluorophenol	43.9	NA	32.9-110	NA		%REC	11/25/2014 8:53 PM	
Surr: Phenol-d5	34.4	NA	25.8-110	NA		%REC	11/25/2014 8:53 PM	
Surr: 2,4,6-Tribromophenol	89.9	NA	63.8-110	NA		%REC	11/25/2014 8:53 PM	
Surr: Nitrobenzene-d5	90.8	NA	61.8-110	NA		%REC	11/25/2014 8:53 PM	
Surr: 2-Fluorobiphenyl	82.5	NA	58.6-110	NA		%REC	11/25/2014 8:53 PM	
Surr: 4-Terphenyl-d14	68.2	NA	55.1-110	NA		%REC	11/25/2014 8:53 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	5.00	10.0	NA		µg/L	12/1/2014 6:29 PM	PA/VA
Chlorobenzene	ND	5.00	10.0	NA		µg/L	12/1/2014 6:29 PM	PA/VA
Dibromochloromethane	ND	5.00	10.0	NA		µg/L	12/1/2014 6:29 PM	PA/VA
1,2-Dichlorobenzene	ND	5.00	10.0	NA		µg/L	12/1/2014 6:29 PM	PA/VA
1,3-Dichlorobenzene	ND	5.00	10.0	NA		µg/L	12/1/2014 6:29 PM	PA/VA
1,4-Dichlorobenzene	ND	5.00	10.0	NA		µg/L	12/1/2014 6:29 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	94.5	NA	68.7-129	NA		%REC	12/1/2014 6:29 PM	
Surr: 4-Bromofluorobenzene	109	NA	71.8-127	NA		%REC	12/1/2014 6:29 PM	
Surr: Dibromofluoromethane	106	NA	74.3-124	NA		%REC	12/1/2014 6:29 PM	
Surr: Toluene-d8	100	NA	71.4-129	NA		%REC	12/1/2014 6:29 PM	

Notes:

Elevated PQLs are due to matrix interference. Sample foamed during analysis.

BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: CB**	
Biochemical Oxygen Demand	54	2	5	NA		mg/L	11/25/2014 12:45 PM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	282	100	250	NA		mg/L	11/25/2014 8:25 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	0.0006	0.0002	0.0020	NA	J	mg/L	11/25/2014 12:52 PM	PA/VA

Notes:

Elevated PQLs are due to matrix interference.

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WO#: 1411R54

Date Reported: 12/4/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 10:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-02A	**Matrix:**	Liquid
Client Sample ID:	2-SHORT CREEK/CLOSED LF	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	1,470	10.0	100	NA		mg/L	11/25/2014 12:04 PM	PA/VA
Fluoride	4.48	0.10	0.40	NA		mg/L	11/25/2014 12:04 PM	PA/VA
Sulfate	62.8	2.00	10.0	NA		mg/L	11/25/2014 12:04 PM	PA/VA
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	0.78	0.04	0.20	NA		mg/L	11/25/2014 12:04 PM	PA/VA
Nitrogen, Nitrite	ND	0.10	1.00	NA		mg/L	11/25/2014 12:04 PM	PA/VA

Notes:

Elevated PQLs are due to matrix interference.

TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	350	10.0	50.0	NA		mg/L	11/25/2014 5:07 PM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: KS**	
Oil & Grease	ND	2.0	5.0	NA		mg/L	11/25/2014 8:25 AM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	0.005	0.005	0.020	NA	J	mg/L	11/25/2014 12:18 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	399	10.4	26.0	NA		mg/L	11/25/2014 3:06 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	9.1	NA	NA	NA		µmhos/cm	11/25/2014 4:00 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: DSD**	
Total Dissolved Solids	4,490	10	20	NA		mg/L	11/25/2014 6:00 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	26.0	4.0	20.0	NA		mg/L	11/25/2014 5:22 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	174	1.0	10	NA		mg/L	11/25/2014 12:35 PM	PA/VA

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Date Reported: 12/4/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 10:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-02A	**Matrix:**	Liquid
Client Sample ID:	2-SHORT CREEK/CLOSED LF	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	1,980	10	100	NA		mg/L	11/25/2014 12:35 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	7.72	NA	NA	NA		SU	11/25/2014 12:35 PM	PA

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Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-02B	**Matrix:**	Liquid
Client Sample ID:	2-SHORT CREEK/CLOSED LF	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	2.21	0.010	0.100	NA		mg/L	12/2/2014 4:03 PM	PA/VA
Manganese	0.588	0.002	0.100	NA		mg/L	12/2/2014 4:03 PM	PA/VA

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Date Reported: 12/4/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 11:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-03A	**Matrix:**	Liquid
Client Sample ID:	3-WHEELING POTW EFFLUENT	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	ND	0.005	0.100	NA		mg/L	12/2/2014 4:06 PM	PA/VA
Antimony	ND	0.020	0.200	NA		mg/L	12/2/2014 4:06 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	12/2/2014 4:06 PM	PA/VA
Barium	0.046	0.002	0.100	NA	J	mg/L	12/2/2014 4:06 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	12/2/2014 4:06 PM	PA/VA
Boron	0.304	0.020	0.100	NA		mg/L	12/2/2014 4:06 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	12/2/2014 4:06 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	12/2/2014 4:06 PM	PA/VA
Copper	0.005	0.005	0.100	NA	J	mg/L	12/2/2014 4:06 PM	PA/VA
Iron	0.125	0.010	0.100	NA		mg/L	12/3/2014 2:00 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	12/2/2014 4:06 PM	PA/VA
Lithium	0.025	0.020	0.100	NA	J	mg/L	12/3/2014 12:31 PM	
Manganese	0.567	0.002	0.100	NA		mg/L	12/2/2014 4:06 PM	PA/VA
Nickel	ND	0.005	0.100	NA		mg/L	12/2/2014 4:06 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	12/2/2014 4:06 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	12/2/2014 4:06 PM	PA/VA
Strontium	0.708	0.001	0.010	NA		mg/L	12/3/2014 12:31 PM	PA
Vanadium	ND	0.005	0.100	NA		mg/L	12/2/2014 4:06 PM	PA/VA
Zinc	0.023	0.003	0.050	NA	J	mg/L	12/2/2014 4:06 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	12/1/2014 10:01 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0101	NA		mg/L	11/25/2014 9:20 PM	
1,4-Napthoquinone	ND	NA	0.0101	NA		mg/L	11/25/2014 9:20 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0503	NA		mg/L	11/25/2014 9:20 PM	
Pentachloronitrobenzene	ND	NA	0.0101	NA		mg/L	11/25/2014 9:20 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0050	0.0101	NA		mg/L	11/25/2014 9:20 PM	PA/VA
Butyl benzyl phthalate	ND	0.0050	0.0101	NA		mg/L	11/25/2014 9:20 PM	PA/VA
Di-n-butyl phthalate	ND	0.0050	0.0101	NA		mg/L	11/25/2014 9:20 PM	PA/VA
Diethyl phthalate	ND	0.0020	0.0101	NA		mg/L	11/25/2014 9:20 PM	PA/VA
Dimethyl phthalate	ND	0.0020	0.0101	NA		mg/L	11/25/2014 9:20 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0020	0.0101	NA		mg/L	11/25/2014 9:20 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0020	0.0101	NA		mg/L	11/25/2014 9:20 PM	PA/VA

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Date Reported: 12/4/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 11:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-03A	**Matrix:**	Liquid
Client Sample ID:	3-WHEELING POTW EFFLUENT	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0050	0.0101	NA		mg/L	11/25/2014 9:20 PM	PA/VA
Fluoranthene	ND	0.0020	0.0101	NA		mg/L	11/25/2014 9:20 PM	PA/VA
Nitrobenzene	ND	0.0020	0.0101	NA		mg/L	11/25/2014 9:20 PM	PA/VA
Surr: 2-Fluorophenol	34.6	NA	32.9-110	NA		%REC	11/25/2014 9:20 PM	
Surr: Phenol-d5	27.7	NA	25.8-110	NA		%REC	11/25/2014 9:20 PM	
Surr: 2,4,6-Tribromophenol	78.6	NA	63.8-110	NA		%REC	11/25/2014 9:20 PM	
Surr: Nitrobenzene-d5	79.2	NA	61.8-110	NA		%REC	11/25/2014 9:20 PM	
Surr: 2-Fluorobiphenyl	77.2	NA	58.6-110	NA		%REC	11/25/2014 9:20 PM	
Surr: 4-Terphenyl-d14	76.3	NA	55.1-110	NA		%REC	11/25/2014 9:20 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	12/1/2014 7:02 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	12/1/2014 7:02 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	12/1/2014 7:02 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/1/2014 7:02 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/1/2014 7:02 PM	PA/VA
1,4-Dichlorobenzene	7.40	0.500	1.00	NA		µg/L	12/1/2014 7:02 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	102	NA	68.7-129	NA		%REC	12/1/2014 7:02 PM	
Surr: 4-Bromofluorobenzene	106	NA	71.8-127	NA		%REC	12/1/2014 7:02 PM	
Surr: Dibromofluoromethane	106	NA	74.3-124	NA		%REC	12/1/2014 7:02 PM	
Surr: Toluene-d8	100	NA	71.4-129	NA		%REC	12/1/2014 7:02 PM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: CB**	
Biochemical Oxygen Demand	5	2	5	NA		mg/L	11/25/2014 12:45 PM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	25	4	10	NA		mg/L	11/25/2014 8:25 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	0.0004	0.0001	0.0010	NA	J	mg/L	11/25/2014 1:06 PM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	132	0.50	5.00	NA		mg/L	11/25/2014 12:22 PM	PA/VA
Fluoride	0.55	0.05	0.20	NA		mg/L	11/25/2014 12:22 PM	PA/VA

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Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 11:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-03A	**Matrix:**	Liquid
Client Sample ID:	3-WHEELING POTW EFFLUENT	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Sulfate	99.0	5.00	25.0	NA		mg/L	11/25/2014 12:22 PM	PA/VA
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	0.54	0.02	0.10	NA		mg/L	11/25/2014 12:22 PM	PA/VA
Nitrogen, Nitrite	0.07	0.05	0.50	NA	J	mg/L	11/25/2014 12:22 PM	PA/VA
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	19.6	0.40	2.00	NA		mg/L	11/25/2014 6:01 PM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: KS**	
Oil & Grease	ND	2.0	5.0	NA		mg/L	11/25/2014 8:25 AM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	11/25/2014 12:19 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	20.6	0.64	1.60	NA		mg/L	11/25/2014 2:50 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	1,180	NA	NA	NA		µmhos/cm	11/25/2014 4:00 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: DSD**	
Total Dissolved Solids	605	5	10	NA		mg/L	11/25/2014 6:00 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	5.5	1.0	5.0	NA		mg/L	11/25/2014 5:22 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	40.1	1.0	10	NA		mg/L	11/25/2014 12:35 PM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	188	1.0	10	NA		mg/L	11/25/2014 12:35 PM	PA/VA

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Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 11:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-03A	**Matrix:**	Liquid
Client Sample ID:	3-WHEELING POTW EFFLUENT	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	6.81	NA	NA	NA		SU	11/25/2014 12:35 PM	PA

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Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 11:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-03B	**Matrix:**	Liquid
Client Sample ID:	3-WHEELING POTW EFFLUENT	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	0.099	0.010	0.100	NA	J	mg/L	12/3/2014 2:03 PM	PA/VA
Manganese	0.523	0.002	0.100	NA		mg/L	12/2/2014 4:12 PM	PA/VA

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Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 12:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R54-04A	**Matrix:**	Trip Blank
Client Sample ID:	TRIP BLANK	**Site ID:**	SHORT CREEK LANDFILL/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	12/1/2014 7:35 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	12/1/2014 7:35 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	12/1/2014 7:35 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/1/2014 7:35 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/1/2014 7:35 PM	PA/VA
1,4-Dichlorobenzene	0.950	0.500	1.00	NA	J	µg/L	12/1/2014 7:35 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	101	NA	68.7-129	NA		%REC	12/1/2014 7:35 PM	
Surr: 4-Bromofluorobenzene	102	NA	71.8-127	NA		%REC	12/1/2014 7:35 PM	
Surr: Dibromofluoromethane	112	NA	74.3-124	NA		%REC	12/1/2014 7:35 PM	
Surr: Toluene-d8	99.7	NA	71.4-129	NA		%REC	12/1/2014 7:35 PM	

Notes:

Analyte was detected in client sample ID: TRIP BLANK, however all QC was within acceptable REIC control limits. A repeat analysis could not be performed due to insufficient sample.

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Wednesday, December 31, 2014

GEORGE CARICO
MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/LEACHATE ANALYSIS

Work Order #: 1411R57

Dear GEORGE CARICO:

REI Consultants, Inc. received 3 sample(s) on 11/24/2014 for the analyses presented in the following report.

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1411R57

Date Reported: 12/31/2014

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,

Project: DRILL CUTTING/LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1411R57

Date Reported: 12/31/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 9:45:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R57-01A	**Matrix:**	Liquid
Client Sample ID:	1-SHORT CREEK/OPEN LF	**Site ID:**	SHORT CREEK/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1411R57

Date Reported: 12/31/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 10:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R57-02A	**Matrix:**	Liquid
Client Sample ID:	2-SHORT CREEK/CLOSED LF	**Site ID:**	SHORT CREEK/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1411R57

Date Reported: 12/31/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	11/24/2014 11:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	11/24/2014
Lab ID:	1411R57-03A	**Matrix:**	Liquid
Client Sample ID:	3-WHEELING POTW EFFLUENT	**Site ID:**	SHORT CREEK/WHEELING POTW

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

December 17, 2014

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1411R57
Pace Project No.: 30135430

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on November 26, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1411R57
Pace Project No.: 30135430

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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SAMPLE SUMMARY

Project: 1411R57
Pace Project No.: 30135430

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30135430001	**1411R57-01A**	Water	11/24/14 09:45	11/26/14 12:25
30135430002	**1411R57-02A**	Water	11/24/14 10:55	11/26/14 12:25
30135430003	**1411R57-03A**	Water	11/24/14 11:55	11/26/14 12:25

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SAMPLE ANALYTE COUNT

Project: 1411R57
Pace Project No.: 30135430

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30135430001	**1411R57-01A**	SM 7500Rn-B	FCC	1
		EPA 900.0	FCC	2
		EPA 903.1	JC2	1
		EPA 904.0	JAL	1
		ASTM D5811-95	LAL	1
30135430002	**1411R57-02A**	SM 7500Rn-B	FCC	1
		EPA 900.0	FCC	2
		EPA 903.1	JC2	1
		EPA 904.0	JAL	1
		ASTM D5811-95	LAL	1
30135430003	**1411R57-03A**	SM 7500Rn-B	FCC	1
		EPA 900.0	FCC	2
		EPA 903.1	JC2	1
		EPA 904.0	JAL	1
		ASTM D5811-95	LAL	1

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PROJECT NARRATIVE

Project: 1411R57
Pace Project No.: 30135430

Method: **SM 7500Rn-B**
Description: 7500RnB Radon
Client: REI Consultants, Inc.
Date: December 17, 2014

General Information:
3 samples were analyzed for SM 7500Rn-B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

The sample was analyzed outside the EPA recommended holding time for radon.
- 1411R57-01A (Lab ID: 30135430001)
- 1411R57-02A (Lab ID: 30135430002)
- 1411R57-03A (Lab ID: 30135430003)

Upon receipt at the laboratory, six mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.
- 1411R57-01A (Lab ID: 30135430001)
- 1411R57-02A (Lab ID: 30135430002)

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PROJECT NARRATIVE

Project: 1411R57
Pace Project No.: 30135430

Method: **EPA 900.0**
Description: 900.0 Gross Alpha/Beta
Client: REI Consultants, Inc.
Date: December 17, 2014

General Information:
3 samples were analyzed for EPA 900.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

The sample was analyzed outside the EPA recommended holding time for radon.
- 1411R57-01A (Lab ID: 30135430001)
- 1411R57-02A (Lab ID: 30135430002)
- 1411R57-03A (Lab ID: 30135430003)

Upon receipt at the laboratory, six mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.
- 1411R57-01A (Lab ID: 30135430001)
- 1411R57-02A (Lab ID: 30135430002)

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PROJECT NARRATIVE

Project: 1411R57
Pace Project No.: 30135430

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: REI Consultants, Inc.
Date: December 17, 2014

General Information:
3 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

The sample was analyzed outside the EPA recommended holding time for radon.
- 1411R57-01A (Lab ID: 30135430001)
- 1411R57-02A (Lab ID: 30135430002)
- 1411R57-03A (Lab ID: 30135430003)

Upon receipt at the laboratory, six mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.
- 1411R57-01A (Lab ID: 30135430001)
- 1411R57-02A (Lab ID: 30135430002)

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PROJECT NARRATIVE

Project: 1411R57
Pace Project No.: 30135430

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: REI Consultants, Inc.
Date: December 17, 2014

General Information:
3 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

The sample was analyzed outside the EPA recommended holding time for radon.
- 1411R57-01A (Lab ID: 30135430001)
- 1411R57-02A (Lab ID: 30135430002)
- 1411R57-03A (Lab ID: 30135430003)

Upon receipt at the laboratory, six mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.
- 1411R57-01A (Lab ID: 30135430001)
- 1411R57-02A (Lab ID: 30135430002)

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(724)850-5600

PROJECT NARRATIVE

Project: 1411R57
Pace Project No.: 30135430

Method: **ASTM D5811-95**
Description: 905.0 Strontium 89/90 Eichrom
Client: REI Consultants, Inc.
Date: December 17, 2014

General Information:
3 samples were analyzed for ASTM D5811-95. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

The sample was analyzed outside the EPA recommended holding time for radon.
- 1411R57-01A (Lab ID: 30135430001)
- 1411R57-02A (Lab ID: 30135430002)
- 1411R57-03A (Lab ID: 30135430003)

Upon receipt at the laboratory, six mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.
- 1411R57-01A (Lab ID: 30135430001)
- 1411R57-02A (Lab ID: 30135430002)

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1411R57
Pace Project No.: 30135430

Sample: 1411R57-01A **Lab ID: 30135430001** Collected: 11/24/14 09:45 Received: 11/26/14 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • The sample was analyzed outside the EPA recommended holding time for radon.
• Upon receipt at the laboratory, six mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**-87.5 ± 63.9 (117) C:NA T:NA**	pCi/L	12/01/14 20:46	10043-92-2	
Gross Alpha	EPA 900.0	**9.15 ± 22.3 (42.5) C:NA T:NA**	pCi/L	12/05/14 18:14	12587-46-1	
Gross Beta	EPA 900.0	**265 ± 52.0 (21.9) C:NA T:NA**	pCi/L	12/05/14 18:14	12587-47-2	
Radium-226	EPA 903.1	**4.70 ± 2.61 (0.979) C:NA T:79%**	pCi/L	12/10/14 13:07	13982-63-3	
Radium-228	EPA 904.0	**4.35 ± 2.92 (5.39) C:82% T:63%**	pCi/L	12/11/14 14:03	15262-20-1	
Strontium-90	ASTM D5811-95	**-0.753 ± 0.596 (1.11) C:108% T:NA**	pCi/L	12/15/14 19:56	10098-97-2	

Sample: 1411R57-02A **Lab ID: 30135430002** Collected: 11/24/14 10:55 Received: 11/26/14 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • The sample was analyzed outside the EPA recommended holding time for radon.
• Upon receipt at the laboratory, six mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**-63.6 ± 64.0 (117) C:NA T:NA**	pCi/L	12/01/14 21:19	10043-92-2	
Gross Alpha	EPA 900.0	**4.35 ± 12.8 (24.3) C:NA T:NA**	pCi/L	12/05/14 18:15	12587-46-1	
Gross Beta	EPA 900.0	**114 ± 22.0 (8.04) C:NA T:NA**	pCi/L	12/05/14 18:15	12587-47-2	
Radium-226	EPA 903.1	**5.01 ± 2.45 (0.798) C:NA T:80%**	pCi/L	12/10/14 13:07	13982-63-3	
Radium-228	EPA 904.0	**2.17 ± 2.29 (4.51) C:83% T:77%**	pCi/L	12/11/14 14:03	15262-20-1	
Strontium-90	ASTM D5811-95	**0.188 ± 0.555 (0.998) C:103% T:NA**	pCi/L	12/15/14 19:56	10098-97-2	

Sample: 1411R57-03A **Lab ID: 30135430003** Collected: 11/24/14 11:55 Received: 11/26/14 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • The sample was analyzed outside the EPA recommended holding time for radon.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**1.1 ± 66.3 (116) C:NA T:NA**	pCi/L	12/01/14 21:52	10043-92-2	
Gross Alpha	EPA 900.0	**0.877 ± 1.34 (2.48) C:NA T:NA**	pCi/L	12/06/14 17:00	12587-46-1	
Gross Beta	EPA 900.0	**7.04 ± 1.46 (0.900) C:NA T:NA**	pCi/L	12/06/14 17:00	12587-47-2	
Radium-226	EPA 903.1	**0.290 ± 0.349 (0.533) C:NA T:78%**	pCi/L	12/10/14 13:07	13982-63-3	
Radium-228	EPA 904.0	**0.203 ± 0.369 (0.798) C:85% T:59%**	pCi/L	12/11/14 14:02	15262-20-1	

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1411R57
Pace Project No.: 30135430

Sample: 1411R57-03A **Lab ID: 30135430003** Collected: 11/24/14 11:55 Received: 11/26/14 12:25 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • The sample was analyzed outside the EPA recommended holding time for radon.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Strontium-90	ASTM D5811-95	**0.241 ± 0.648 (1.16) C:84% T:NA**	pCi/L	12/16/14 19:05	10098-97-2	

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1411R57
Pace Project No.: 30135430

QC Batch: RADC/22416 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30135430001, 30135430002, 30135430003

METHOD BLANK: 824000 Matrix: Water
Associated Lab Samples: 30135430001, 30135430002, 30135430003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.112 ± 0.465 (0.887) C:NA T:91%	pCi/L	12/10/14 12:30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1411R57
Pace Project No.: 30135430

QC Batch: RADC/22542 | Analysis Method: ASTM D5811-95
QC Batch Method: ASTM D5811-95 | Analysis Description: 905.0 Strontium 89/90 Eichrom
Associated Lab Samples: 30135430001, 30135430002, 30135430003

METHOD BLANK: 828711 | Matrix: Water
Associated Lab Samples: 30135430001, 30135430002, 30135430003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Strontium-90	-0.375 ± 0.377 (1.08) C:98% T:NA	pCi/L	12/15/14 06:50	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1411R57
Pace Project No.: 30135430

QC Batch: RADC/22408 Analysis Method: SM 7500Rn-B
QC Batch Method: SM 7500Rn-B Analysis Description: 7500Rn B Radon
Associated Lab Samples: 30135430001, 30135430002, 30135430003

METHOD BLANK: 823664 Matrix: Water
Associated Lab Samples: 30135430001, 30135430002, 30135430003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radon	2.3 ± 17.4 (30.3) C:NA T:NA	pCi/L	12/01/14 20:12	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1411R57
Pace Project No.: 30135430

QC Batch: RADC/22462 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30135430001, 30135430002, 30135430003

METHOD BLANK: 825490 Matrix: Water
Associated Lab Samples: 30135430001, 30135430002, 30135430003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.065 ± 0.339 (0.653) C:NA T:NA	pCi/L	12/06/14 16:58	
Gross Beta	-0.108 ± 0.315 (0.608) C:NA T:NA	pCi/L	12/06/14 16:58	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1411R57
Pace Project No.: 30135430

QC Batch: RADC/22417 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30135430001, 30135430002, 30135430003

METHOD BLANK: 824001 Matrix: Water
Associated Lab Samples: 30135430001, 30135430002, 30135430003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.614 ± 0.392 (0.740) C:83% T:79%	pCi/L	12/11/14 11:29	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1411R57
Pace Project No.: 30135430

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3136	PAGE: 1	OF: 1

ADDRESS

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: 304.255.2500
FAX:
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA COMPANY: PACE ANALYTICAL SERVIC

ADDRESS: 1638 ROSEYTOWN ROAD

CITY, STATE, ZIP: GREENSBURG, PA 15601

PHONE: (724) 850-5600 FAX:

ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:

State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. Please email results to: kberry@reiclabs.com Thank you

ANALYTICAL PARAMETERS

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	GROSS_ALPHA_SUB (EPA 900.0)	GROSS_BETA_SUB (EPA 900.0)	RADIUM_226_SUB (EPA 903.1)	RADIUM_228_SUB (EPA 904.0)	RADON (913.0)	STRONTIUM_90_SUB (EPA 905.0)
						*	2	2	2	2	0	2
1	1411R57-01A	1-SHORT CREEK/OPEN LF	.	Liquid	11/24/2014 9:45:00 AM	6	√	√	√	√	√	√
2	1411R57-02A	2-SHORT CREEK/CLOSED LF	.	Liquid	11/24/2014 10:55:00 AM	6	√	√	√	√	√	√
3	1411R57-03A	3-WHEELING POTW EFFLUENT	.	Liquid	11/24/2014 11:55:00 AM	6	√	√	√	√	√	√

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Blake Will	11-25-14	16:00	UPS	11-25-14	16:00
Relinquished By: UPS	Date:	Time:	Received By: Scott Burnin	Date: 11-26-14	Time: 1225
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☒ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☒ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool? _____

Comments: _____

Sample Condition Upon Receipt

Pace Analytical

Client Name: REIc

Project # 30135430 Am

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1Z26X 7313 6694 6C0

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no Biological Tissue is Frozen: Yes No

Packing Material: Bubble Wrap X Bubble Bags ____ None ____ Other _____

Thermometer Used NA Type of Ice: Wet Blue (None) ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.:_____°C Correction Factor: _____°C Final Temp:_____°C

Date and Initials of person examining contents: SRA 11-26-14

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☒No	☐N/A	4. waiver on file 12/1/14
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☒Yes	☐No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used: SRA 11-26-14	☒Yes	☐No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☒Yes	☐No	☒N/A	11.
Sample Labels match COC:	☒Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT				
All containers needing preservation have been checked.	☒Yes	☐No	☐N/A	13. Added 6ml HNO3 to 1-L bottles from sample #1,2 @ 1820 11-26-14 SRA
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☒No	☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes	☒No		Initial when completed SRA / Lot # of added preservative DL14-1100
Samples checked for dechlorination:	☐Yes	☐No	☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☒N/A	15.
Trip Blank Present:	☐Yes	☒No	☐N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased):				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carrie Ferris **Date:** 12/1/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30135430

Client Name: RETC

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other Radon	Other
001	WT																		3				3	
003	WT																		1				1	

CHAIN OF CUSTODY RECORD

v10-0114 REIC use ONLY — CLIENT ID MAR071 DATE ____ SHEET ____

REIC
Research Environmental & Industrial Consultants, Inc.
MAIN LABORATORY & CORPORATE HEADQUARTERS:
P.O. Box 286 • 225 Industrial Park Rd, Beaver, WV 25813
800-999-0105 • 304-255-2500 • www.reiclabs.com

MID-OHIO VALLEY Service Center, 101 17th Street, Ashland, KY 41101, 606-393-5027
SHENANDOAH Service Center, 1557 Commerce Rd., Ste 201, Verona, VA 24482, 540-248-0183
ROANOKE Service Center, 3029-C Peters Creek Rd, Roanoke, VA 24019, 540-777-1276
MORGANTOWN Service Center, 16 Commerce Drive, Westover, WV 26501, 304-241-5861

Client: Marshall University Center for Environmental, Geotechnical and Applied Sciences — PO # ____
Contact Person: George Carico/Jamie Wolfe — Phone: 304-696-5456
Address: One John Marshall Drive — City: Huntington — State: WV — Zip: 25755
Billing Address (if different) ____
City ____ State ____ Zip ____
Site ID & State: Phase II — Project ID: Drill Cutting/Leachate Analysis — Sampler: J McGee

SAMPLE LOG & ANALYSIS REQUEST

TURNAROUND TIME	RUSH TURNAROUND*			
◉ NORMAL	○ 5 DAY	○ 3 DAY	○ 2 DAY	○ 1 DAY

*Rush work needs prior laboratory approval and will incur additional charges

ANALYSIS & METHOD REQUESTED: See Attachment

Field Readings: pH Temp Cond
6.38 - 12.7 - 12,520
5.66 - 8.6 - 5,670
6.13 - 11.8 - 1105

MSC Sampling Fee--- 6 hrs

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	0	1	2	3	5	10			
1-Short Creek/Open LF	20	3/20/15 @ 1005	Water	Grab	X					X			X
2-Short Creek/Closed LF	20	1055	Water	Grab	X						X		
3-Wheeling POTW Effluent	23	1140	Water	Grab	X							X	
Trip Blank	1		Water	Grab	X								
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									

ENTER PRESERVATIVE CODE(S):

0 None	6 Sodium Hydroxide
1 Hydrochloric Acid	7 Ascorbic Acid
2 Nitric Acid	8 Sodium Bisulfate/Methanol
3 Sulfuric Acid	9 Ammonium Chloride
4 Sodium Thiosulfate	10 AS/AH *
5 Sodium Hydroxide/ Sodium Arsenite	11 ____ *

*(Use blanks for preservatives not listed.)

COMMENTS:
Dissolved Metals are Field Filtered

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: 2 °C — ICED? Y ✓ N ____

Containers provided by: [✓] REIC [ ] Client

1 Relinquished by (signature)	3-20-15 1400	2 Relinquished by (signature)	Date/Time	3 Relinquished by (signature)	Date/Time
Received by (signature)	3/20/15 1400	Received by (signature)	Date/Time	Received by (signature)	Date/Time

REI Consultants, Inc.

FIELD LOG: pH Calibration Records 6-2010.Rev.1

Client Name: Marshall Site Location: CP/POTW

Date: 3/30/15 Analyst: [illegible]

Calibration Location: Field / Laboratory Instrument: Oakton pH Meter

4.0 Buffer Lot #: D055-14
7.0 Buffer Lot #: D119.04
10.0 Buffer Lot #: D116.08

pH (SU) - SM4500-H+B, 18th Edition				
Standard	Initial Reading	Reading After Calibration	Temperature °C	Comments
4.0 Buffer	4.02	4.01	20.0	
7.0 Buffer	7.01	7.00	↓	
10.0 Buffer	9.55	10.01	↓	

Slope: 96.7

Comments:

Calibration at the laboratory requires a pH 7.0 QC Check

All field pH analysis must be followed by a Post Analysis pH Check

Quality Control Samples	Reading	Acceptance Range:
QC Check, 7.0	7.00	True Value ± 0.1 (6.9 - 7.1)
Post Analysis QC Check, 7.0	7.07	

REI Consultants, Inc. P.O. Box 286 Beaver, WV 25813 Phone: 800-999-0105 Fax: 304-255-2572 www.reiclabs.com

WVDEP Drill Cutting / Leachate Analysis List

Aluminum

Antimony

Arsenic

Barium

Beryllium

Boron

Cadmium

Chromium

Hexavalent Chromium

Copper

Lead

Lithium

Mercury

Nickel

Selenium

Silver

Strontium

Vanadium

Zinc

Chloride

Fluoride

Nitrate as Nitrogen

Nitrite as Nitrogen

Sulfate

Total Suspended Solids

Free Cyanide

Benzene

Chlorobenzene

Chlorodibromomethane

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

1,4-Dinitrobenzene

1,4-Naphthoquinone

2,4-Dinitrotoluene

2,6-Dinitrotoluene

4-Nitroquinoline-1-oxide

bis(2-ethylhexyl) phthalate

Butyl benzylphthalate

Di-N-Butyl Phthalate

Di-N-Octylphthalate Diethyl Phthalate

Dimethyl Phthalate

Flouranthene

Nitrobenzene

Pentachloronitrobenzene

Gross Alpha

Gross Beta

Radium 226

Radium 228

Strontium 90

Radon

pH

Total Dissolved Solids

Total Suspended Solids

BOD 5-Day

Ammonia as Nitrogen

Total Kjeldahl Nitrogen

Oil & Grease

Acidity to pH 8.3

Specific Conductance

Alkalinity to pH 4.5

Chemical Oxygen Demand

Dissolved Iron and Iron

Manganese and Dissolved Manganese

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Friday, April 17, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/LEACHATE ANALYSIS

Work Order #: 1503Y72

Dear GEORGE CARICO:

REI Consultants, Inc. received 4 sample(s) on 3/30/2015 for the analyses presented in the following report.

Sincerely,

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1503Y72

Date Reported: 4/17/2015

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project: DRILL CUTTING/LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 10:05:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-01A	**Matrix:**	Liquid
Client Sample ID:	1-SHORT CREEK/OPEN LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.031	0.006	0.100	NA	J	mg/L	4/6/2015 8:57 PM	PA/VA
Antimony	ND	0.040	0.200	NA		mg/L	4/6/2015 8:57 PM	PA/VA
Arsenic	0.047	0.020	0.200	NA	J	mg/L	4/6/2015 8:57 PM	PA/VA
Barium	1.68	0.002	0.100	NA		mg/L	4/6/2015 8:57 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	4/6/2015 8:57 PM	PA/VA
Boron	12.1	0.035	0.100	NA		mg/L	4/6/2015 8:57 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	4/6/2015 8:57 PM	PA/VA
Chromium	0.049	0.005	0.100	NA	J	mg/L	4/6/2015 8:57 PM	PA/VA
Copper	0.016	0.005	0.100	NA	J	mg/L	4/6/2015 8:57 PM	PA/VA
Iron	20.5	0.010	0.100	NA		mg/L	4/6/2015 8:57 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	4/6/2015 8:57 PM	PA/VA
Lithium	0.225	0.020	0.100	NA		mg/L	4/3/2015 3:55 PM	
Manganese	1.25	0.002	0.100	NA		mg/L	4/6/2015 8:57 PM	PA/VA
Nickel	0.178	0.005	0.100	NA		mg/L	4/6/2015 8:57 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	4/6/2015 8:57 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	4/6/2015 8:57 PM	PA/VA
Strontium	2.25	0.001	0.010	NA		mg/L	4/3/2015 3:55 PM	
Vanadium	0.026	0.005	0.100	NA	J	mg/L	4/6/2015 8:57 PM	PA/VA
Zinc	0.036	0.003	0.050	NA	J	mg/L	4/6/2015 8:57 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	4/2/2015 12:28 PM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0104	NA		mg/L	4/13/2015 9:15 PM	
1,4-Napthoquinone	ND	NA	0.0104	NA		mg/L	4/13/2015 9:15 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0521	NA		mg/L	4/13/2015 9:15 PM	
Pentachloronitrobenzene	ND	NA	0.0104	NA		mg/L	4/13/2015 9:15 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0052	0.0104	NA		mg/L	4/13/2015 9:15 PM	PA/VA
Butyl benzyl phthalate	ND	0.0052	0.0104	NA		mg/L	4/13/2015 9:15 PM	PA/VA
Di-n-butyl phthalate	ND	0.0052	0.0104	NA		mg/L	4/13/2015 9:15 PM	PA/VA
Diethyl phthalate	ND	0.0021	0.0104	NA		mg/L	4/13/2015 9:15 PM	PA/VA
Dimethyl phthalate	ND	0.0021	0.0104	NA		mg/L	4/13/2015 9:15 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0021	0.0104	NA		mg/L	4/13/2015 9:15 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0021	0.0104	NA		mg/L	4/13/2015 9:15 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 10:05:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-01A	**Matrix:**	Liquid
Client Sample ID:	1-SHORT CREEK/OPEN LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0052	0.0104	NA		mg/L	4/13/2015 9:15 PM	PA/VA
Fluoranthene	ND	0.0021	0.0104	NA		mg/L	4/13/2015 9:15 PM	PA/VA
Nitrobenzene	ND	0.0021	0.0104	NA		mg/L	4/13/2015 9:15 PM	PA/VA
Surr: 2-Fluorophenol	37.9	NA	32.9-110	NA		%REC	4/13/2015 9:15 PM	
Surr: Phenol-d5	32.9	NA	25.8-110	NA		%REC	4/13/2015 9:15 PM	
Surr: 2,4,6-Tribromophenol	77.5	NA	63.8-110	NA		%REC	4/13/2015 9:15 PM	
Surr: Nitrobenzene-d5	82.7	NA	61.8-110	NA		%REC	4/13/2015 9:15 PM	
Surr: 2-Fluorobiphenyl	53.2	NA	58.6-110	NA	S	%REC	4/13/2015 9:15 PM	
Surr: 4-Terphenyl-d14	69.7	NA	55.1-110	NA		%REC	4/13/2015 9:15 PM	

Notes:

Surrogate inadvertantly omited for the associated matrix spike sample.

VOLATILE ORGANIC COMPOUNDS-8260 **Method: SW8260B (1996)** **Analyst: JM**

Benzene	ND	50.0	100	NA		µg/L	4/12/2015 1:32 PM	PA/VA
Chlorobenzene	ND	50.0	100	NA		µg/L	4/12/2015 1:32 PM	PA/VA
Dibromochloromethane	ND	50.0	100	NA		µg/L	4/12/2015 1:32 PM	PA/VA
1,2-Dichlorobenzene	ND	50.0	100	NA		µg/L	4/12/2015 1:32 PM	PA/VA
1,3-Dichlorobenzene	ND	50.0	100	NA		µg/L	4/12/2015 1:32 PM	PA/VA
1,4-Dichlorobenzene	ND	50.0	100	NA		µg/L	4/12/2015 1:32 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	104	NA	68.7-129	NA		%REC	4/12/2015 1:32 PM	
Surr: 4-Bromofluorobenzene	102	NA	71.8-127	NA		%REC	4/12/2015 1:32 PM	
Surr: Dibromofluoromethane	105	NA	74.3-124	NA		%REC	4/12/2015 1:32 PM	
Surr: Toluene-d8	91.8	NA	71.4-129	NA		%REC	4/12/2015 1:32 PM	

Notes:

Elevated PQLs are due to matrix interference. Sample foamed during analysis.

BOD, 5 Day, 20°C **Method: SM5210 B-2001** **Analyst: CB**

Biochemical Oxygen Demand	48	2	5	NA		mg/L	3/31/2015 4:02 PM	PA/VA

Chemical Oxygen Demand **Method: EPA 410.4, Rev. 2 (1993)** **Analyst: SF**

Chemical Oxygen Demand	825	200	500	NA		mg/L	3/31/2015 7:49 AM	PA/VA

HEXAVALENT CHROMIUM BY IC **Method: EPA 218.6, Rev. 3.3 (1994)** **Analyst: CF**

Chromium (VI)	ND	0.0003	0.0010	NA		mg/L	3/31/2015 1:46 PM	

ANIONS by ION CHROMATOGRAPHY **Method: EPA 300.0, Rev.2.1 (1993)** **Analyst: CF**

Chloride	2,130	20.0	100	NA		mg/L	3/31/2015 11:04 AM	

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 10:05:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-01A	**Matrix:**	Liquid
Client Sample ID:	1-SHORT CREEK/OPEN LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Fluoride	3.20	0.25	1.00	NA		mg/L	3/31/2015 11:04 AM	
Sulfate	7.71	1.00	5.00	NA		mg/L	3/31/2015 11:04 AM	
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	ND	0.02	0.10	NA		mg/L	3/31/2015 11:04 AM	
Nitrogen, Nitrite	ND	0.25	2.50	NA		mg/L	3/31/2015 11:04 AM	

Notes:

Elevated PQLs are due to matrix interference.

TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	426	20.0	100	NA		mg/L	4/2/2015 10:02 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	ND	2.0	5.0	NA		mg/L	3/31/2015 4:02 PM	PA/VA

Notes:

Sample acidity or alkalinity exceeded the added preservative, so that the required preservation pH was not achieved.

CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	4/6/2015 10:11 AM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	1,120	64.0	160	NA		mg/L	4/10/2015 7:54 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	12,100	NA	NA	NA		µmhos/cm	3/30/2015 11:00 AM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	5,740	10	20	NA		mg/L	3/31/2015 4:02 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	60.0	4.0	20.0	NA		mg/L	3/31/2015 4:02 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	399	1.0	10	NA		mg/L	3/31/2015 4:51 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 10:05:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-01A	**Matrix:**	Liquid
Client Sample ID:	1-SHORT CREEK/OPEN LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	2,470	10	100	NA		mg/L	3/31/2015 4:51 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	7.23	NA	NA	NA		SU	3/31/2015 4:51 PM	

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 10:05:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-01B	**Matrix:**	Liquid
Client Sample ID:	1-SHORT CREEK/OPEN LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	14.3	0.010	0.100	NA		mg/L	4/2/2015 12:46 PM	PA/VA
Manganese	1.27	0.002	0.100	NA		mg/L	4/2/2015 12:46 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 10:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-02A	**Matrix:**	Liquid
Client Sample ID:	2-SHORT CREEK/CLOSED LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	ND	0.006	0.100	NA		mg/L	4/6/2015 9:16 PM	PA/VA
Antimony	ND	0.040	0.200	NA		mg/L	4/6/2015 9:16 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	4/6/2015 9:16 PM	PA/VA
Barium	0.727	0.002	0.100	NA		mg/L	4/6/2015 9:16 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	4/6/2015 9:16 PM	PA/VA
Boron	3.78	0.035	0.100	NA		mg/L	4/6/2015 9:16 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	4/6/2015 9:16 PM	PA/VA
Chromium	0.008	0.005	0.100	NA	J	mg/L	4/6/2015 9:16 PM	PA/VA
Copper	0.017	0.005	0.100	NA	J	mg/L	4/6/2015 9:16 PM	PA/VA
Iron	5.99	0.010	0.100	NA		mg/L	4/6/2015 9:16 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	4/6/2015 9:16 PM	PA/VA
Lithium	0.082	0.020	0.100	NA	J	mg/L	4/3/2015 4:05 PM	
Manganese	0.744	0.002	0.100	NA		mg/L	4/6/2015 9:16 PM	PA/VA
Nickel	0.045	0.005	0.100	NA	J	mg/L	4/6/2015 9:16 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	4/6/2015 9:16 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	4/6/2015 9:16 PM	PA/VA
Strontium	1.45	0.001	0.010	NA		mg/L	4/3/2015 4:05 PM	
Vanadium	ND	0.005	0.100	NA		mg/L	4/6/2015 9:16 PM	PA/VA
Zinc	0.076	0.003	0.050	NA		mg/L	4/6/2015 9:16 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	4/2/2015 12:30 PM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0110	NA		mg/L	4/13/2015 8:49 PM	
1,4-Napthoquinone	ND	NA	0.0110	NA		mg/L	4/13/2015 8:49 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0552	NA		mg/L	4/13/2015 8:49 PM	
Pentachloronitrobenzene	ND	NA	0.0110	NA		mg/L	4/13/2015 8:49 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0055	0.0110	NA		mg/L	4/13/2015 8:49 PM	PA/VA
Butyl benzyl phthalate	ND	0.0055	0.0110	NA		mg/L	4/13/2015 8:49 PM	PA/VA
Di-n-butyl phthalate	ND	0.0055	0.0110	NA		mg/L	4/13/2015 8:49 PM	PA/VA
Diethyl phthalate	ND	0.0022	0.0110	NA		mg/L	4/13/2015 8:49 PM	PA/VA
Dimethyl phthalate	ND	0.0022	0.0110	NA		mg/L	4/13/2015 8:49 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0022	0.0110	NA		mg/L	4/13/2015 8:49 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0022	0.0110	NA		mg/L	4/13/2015 8:49 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 10:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-02A	**Matrix:**	Liquid
Client Sample ID:	2-SHORT CREEK/CLOSED LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0055	0.0110	NA		mg/L	4/13/2015 8:49 PM	PA/VA
Fluoranthene	ND	0.0022	0.0110	NA		mg/L	4/13/2015 8:49 PM	PA/VA
Nitrobenzene	ND	0.0022	0.0110	NA		mg/L	4/13/2015 8:49 PM	PA/VA
Surr: 2-Fluorophenol	36.1	NA	32.9-110	NA		%REC	4/13/2015 8:49 PM	
Surr: Phenol-d5	31.7	NA	25.8-110	NA		%REC	4/13/2015 8:49 PM	
Surr: 2,4,6-Tribromophenol	76.4	NA	63.8-110	NA		%REC	4/13/2015 8:49 PM	
Surr: Nitrobenzene-d5	80.3	NA	61.8-110	NA		%REC	4/13/2015 8:49 PM	
Surr: 2-Fluorobiphenyl	78.7	NA	58.6-110	NA		%REC	4/13/2015 8:49 PM	
Surr: 4-Terphenyl-d14	75.9	NA	55.1-110	NA		%REC	4/13/2015 8:49 PM	

Notes:

Surrogate inadvertantly omited for the associated matrix spike sample.

VOLATILE ORGANIC COMPOUNDS-8260 **Method: SW8260B (1996)** **Analyst: JM**

Benzene	ND	5.00	10.0	NA		µg/L	4/12/2015 2:05 PM	PA/VA
Chlorobenzene	ND	5.00	10.0	NA		µg/L	4/12/2015 2:05 PM	PA/VA
Dibromochloromethane	ND	5.00	10.0	NA		µg/L	4/12/2015 2:05 PM	PA/VA
1,2-Dichlorobenzene	ND	5.00	10.0	NA		µg/L	4/12/2015 2:05 PM	PA/VA
1,3-Dichlorobenzene	ND	5.00	10.0	NA		µg/L	4/12/2015 2:05 PM	PA/VA
1,4-Dichlorobenzene	ND	5.00	10.0	NA		µg/L	4/12/2015 2:05 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	97.2	NA	68.7-129	NA		%REC	4/12/2015 2:05 PM	
Surr: 4-Bromofluorobenzene	101	NA	71.8-127	NA		%REC	4/12/2015 2:05 PM	
Surr: Dibromofluoromethane	99.5	NA	74.3-124	NA		%REC	4/12/2015 2:05 PM	
Surr: Toluene-d8	91.3	NA	71.4-129	NA		%REC	4/12/2015 2:05 PM	

Notes:

Elevated PQLs are due to matrix interference. Sample foamed during analysis.

BOD, 5 Day, 20°C **Method: SM5210 B-2001** **Analyst: CB**

Biochemical Oxygen Demand	18	2	5	NA		mg/L	3/31/2015 4:02 PM	PA/VA

Chemical Oxygen Demand **Method: EPA 410.4, Rev. 2 (1993)** **Analyst: SF**

Chemical Oxygen Demand	260	100	250	NA		mg/L	3/31/2015 7:49 AM	PA/VA

HEXAVALENT CHROMIUM BY IC **Method: EPA 218.6, Rev. 3.3 (1994)** **Analyst: CF**

Chromium (VI)	ND	0.0003	0.0010	NA		mg/L	3/31/2015 1:46 PM	

ANIONS by ION CHROMATOGRAPHY **Method: EPA 300.0, Rev.2.1 (1993)** **Analyst: CF**

Chloride	815	10.0	50.0	NA		mg/L	3/31/2015 11:24 AM	

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 10:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-02A	**Matrix:**	Liquid
Client Sample ID:	2-SHORT CREEK/CLOSED LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Fluoride	2.02	0.05	0.20	NA		mg/L	3/31/2015 11:24 AM	
Sulfate	85.6	1.00	5.00	NA		mg/L	3/31/2015 11:24 AM	
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	0.29	0.02	0.10	NA		mg/L	3/31/2015 11:24 AM	
Nitrogen, Nitrite	ND	0.25	2.50	NA		mg/L	3/31/2015 11:24 AM	

Notes:

Elevated PQLs are due to matrix interference.

TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	158	8.00	40.0	NA		mg/L	4/2/2015 10:04 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	2.1	2.0	5.0	NA	J	mg/L	3/31/2015 4:02 PM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	4/6/2015 10:11 AM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	406	16.0	40.0	NA		mg/L	4/10/2015 7:10 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	5,250	NA	NA	NA		µmhos/cm	3/30/2015 11:00 AM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	2,620	10	20	NA		mg/L	3/31/2015 4:02 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	16.0	4.0	20.0	NA	J	mg/L	3/31/2015 4:02 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	177	1.0	10	NA		mg/L	3/31/2015 4:51 PM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	1,320	4.0	40.0	NA		mg/L	3/31/2015 4:51 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 10:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-02A	**Matrix:**	Liquid
Client Sample ID:	2-SHORT CREEK/CLOSED LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	7.33	NA	NA	NA		SU	3/31/2015 4:51 PM	

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 10:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-02B	**Matrix:**	Liquid
Client Sample ID:	2-SHORT CREEK/CLOSED LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	1.28	0.010	0.100	NA		mg/L	4/2/2015 12:49 PM	PA/VA
Manganese	0.761	0.002	0.100	NA		mg/L	4/2/2015 12:49 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 11:40:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-03A	**Matrix:**	Liquid
Client Sample ID:	3-WHEELING POTW EFFLUENT	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	ND	0.006	0.100	NA		mg/L	4/6/2015 9:19 PM	PA/VA
Antimony	ND	0.040	0.200	NA		mg/L	4/6/2015 9:19 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	4/6/2015 9:19 PM	PA/VA
Barium	0.045	0.002	0.100	NA	J	mg/L	4/6/2015 9:19 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	4/6/2015 9:19 PM	PA/VA
Boron	0.212	0.035	0.100	NA		mg/L	4/6/2015 9:19 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	4/6/2015 9:19 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	4/6/2015 9:19 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	4/6/2015 9:19 PM	PA/VA
Iron	0.090	0.010	0.100	NA	J	mg/L	4/8/2015 9:36 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	4/6/2015 9:19 PM	PA/VA
Lithium	ND	0.020	0.100	NA		mg/L	4/3/2015 4:08 PM	
Manganese	0.048	0.002	0.100	NA	J	mg/L	4/6/2015 9:19 PM	PA/VA
Nickel	0.006	0.005	0.100	NA	J	mg/L	4/6/2015 9:19 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	4/6/2015 9:19 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	4/6/2015 9:19 PM	PA/VA
Strontium	0.709	0.001	0.010	NA		mg/L	4/3/2015 4:08 PM	
Vanadium	ND	0.005	0.100	NA		mg/L	4/6/2015 9:19 PM	PA/VA
Zinc	0.022	0.003	0.050	NA	J	mg/L	4/6/2015 9:19 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	4/1/2015 10:02 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0106	NA		mg/L	4/13/2015 8:23 PM	
1,4-Napthoquinone	ND	NA	0.0106	NA		mg/L	4/13/2015 8:23 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0529	NA		mg/L	4/13/2015 8:23 PM	
Pentachloronitrobenzene	ND	NA	0.0106	NA		mg/L	4/13/2015 8:23 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0053	0.0106	NA		mg/L	4/13/2015 8:23 PM	PA/VA
Butyl benzyl phthalate	ND	0.0053	0.0106	NA		mg/L	4/13/2015 8:23 PM	PA/VA
Di-n-butyl phthalate	ND	0.0053	0.0106	NA		mg/L	4/13/2015 8:23 PM	PA/VA
Diethyl phthalate	ND	0.0021	0.0106	NA		mg/L	4/13/2015 8:23 PM	PA/VA
Dimethyl phthalate	ND	0.0021	0.0106	NA		mg/L	4/13/2015 8:23 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0021	0.0106	NA		mg/L	4/13/2015 8:23 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0021	0.0106	NA		mg/L	4/13/2015 8:23 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 11:40:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-03A	**Matrix:**	Liquid
Client Sample ID:	3-WHEELING POTW EFFLUENT	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0053	0.0106	NA		mg/L	4/13/2015 8:23 PM	PA/VA
Fluoranthene	ND	0.0021	0.0106	NA		mg/L	4/13/2015 8:23 PM	PA/VA
Nitrobenzene	ND	0.0021	0.0106	NA		mg/L	4/13/2015 8:23 PM	PA/VA
Surr: 2-Fluorophenol	0	NA	32.9-110	NA	S	%REC	4/13/2015 8:23 PM	
Surr: Phenol-d5	0	NA	25.8-110	NA	S	%REC	4/13/2015 8:23 PM	
Surr: 2,4,6-Tribromophenol	0	NA	63.8-110	NA	S	%REC	4/13/2015 8:23 PM	
Surr: Nitrobenzene-d5	0.180	NA	61.8-110	NA	S	%REC	4/13/2015 8:23 PM	
Surr: 2-Fluorobiphenyl	0	NA	58.6-110	NA	S	%REC	4/13/2015 8:23 PM	
Surr: 4-Terphenyl-d14	0	NA	55.1-110	NA	S	%REC	4/13/2015 8:23 PM	

Notes:

Surrogate inadvertantly omited for the matrix spike sample.

VOLATILE ORGANIC COMPOUNDS-8260 — **Method: SW8260B (1996)** — **Analyst: JM**

Benzene	ND	0.500	1.00	NA		µg/L	4/12/2015 2:38 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	4/12/2015 2:38 PM	PA/VA
Dibromochloromethane	0.500	0.500	1.00	NA	J	µg/L	4/12/2015 2:38 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	4/12/2015 2:38 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	4/12/2015 2:38 PM	PA/VA
1,4-Dichlorobenzene	1.19	0.500	1.00	NA		µg/L	4/12/2015 2:38 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	105	NA	68.7-129	NA		%REC	4/12/2015 2:38 PM	
Surr: 4-Bromofluorobenzene	103	NA	71.8-127	NA		%REC	4/12/2015 2:38 PM	
Surr: Dibromofluoromethane	110	NA	74.3-124	NA		%REC	4/12/2015 2:38 PM	
Surr: Toluene-d8	91.3	NA	71.4-129	NA		%REC	4/12/2015 2:38 PM	

BOD, 5 Day, 20°C — **Method: SM5210 B-2001** — **Analyst: CB**

Biochemical Oxygen Demand	4	2	5	NA	J	mg/L	3/31/2015 4:02 PM	PA/VA

Chemical Oxygen Demand — **Method: EPA 410.4, Rev. 2 (1993)** — **Analyst: SF**

Chemical Oxygen Demand	24	4	10	NA		mg/L	3/31/2015 7:49 AM	PA/VA

HEXAVALENT CHROMIUM BY IC — **Method: EPA 218.6, Rev. 3.3 (1994)** — **Analyst: CF**

Chromium (VI)	ND	0.0003	0.0010	NA		mg/L	3/31/2015 1:46 PM	

ANIONS by ION CHROMATOGRAPHY — **Method: EPA 300.0, Rev.2.1 (1993)** — **Analyst: CF**

Chloride	136	1.00	5.00	NA		mg/L	3/31/2015 11:44 AM	
Fluoride	0.28	0.05	0.20	NA		mg/L	3/31/2015 11:44 AM	

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 11:40:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-03A	**Matrix:**	Liquid
Client Sample ID:	3-WHEELING POTW EFFLUENT	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Sulfate	158	5.00	25.0	NA		mg/L	3/31/2015 11:44 AM	

Notes:

Matrix spike recoveries were not within method criteria due to matrix interference. LCS recoveries indicate method was in control.

ANIONS by ION CHROMATOGRAPHY-48 HOUR — **Method: EPA 300.0, Rev.2.1 (1993)** — **Analyst: CF**

Nitrogen, Nitrate	2.50	0.10	0.50	NA		mg/L	3/31/2015 11:44 AM	
Nitrogen, Nitrite	ND	0.05	0.50	NA		mg/L	3/31/2015 11:44 AM	

Notes:

Matrix spike recoveries were not within method criteria due to matrix interference. LCS recoveries indicate method was in control.

TOTAL KJELDAHL NITROGEN (TKN) — **Method: EPA 351.2, Rev. 2.0 (1993)** — **Analyst: JH**

Nitrogen, Kjeldahl, Total	9.11	0.40	2.00	NA		mg/L	4/1/2015 10:40 AM	PA/VA

OIL and GREASE — **Method: EPA 1664 Rev. A** — **Analyst: CC**

Oil & Grease	ND	2.0	5.0	NA		mg/L	3/31/2015 4:02 PM	PA/VA

CYANIDE, Free — **Method: SM4500-CN I-1997** — **Analyst: JH**

Cyanide, Free	ND	0.005	0.020	NA		mg/L	4/6/2015 10:14 AM	

AMMONIA NITROGEN — **Method: EPA 350.1, Rev.2. (1993)** — **Analyst: JH**

Nitrogen, Ammonia (As N)	8.72	0.40	1.00	NA		mg/L	4/10/2015 5:24 PM	PA/VA

CONDUCTIVITY — **Method: SM2510 B - 1997** — **Analyst: KY**

Specific Conductivity	1,200	NA	NA	NA		µmhos/cm	4/3/2015 2:00 PM	PA/VA

TOTAL DISSOLVED SOLIDS — **Method: SM2540 C-1997** — **Analyst: KY**

Total Dissolved Solids	595	5	10	NA		mg/L	3/31/2015 5:10 PM	PA/VA

TOTAL SUSPENDED SOLIDS — **Method: SM2540 D-1997** — **Analyst: KY**

Total Suspended Solids	3.5	1.0	5.0	NA	J	mg/L	3/31/2015 4:19 PM	PA/VA

ACIDITY — **Method: SM2310 B-1997** — **Analyst: DSD**

Acidity, Total	48.4	1.0	10	NA		mg/L	3/31/2015 4:51 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 11:40:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-03A	**Matrix:**	Liquid
Client Sample ID:	3-WHEELING POTW EFFLUENT	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	181	1.0	10	NA		mg/L	3/31/2015 4:51 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	6.87	NA	NA	NA		SU	3/31/2015 4:51 PM	

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 11:40:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-03B	**Matrix:**	Liquid
Client Sample ID:	3-WHEELING POTW EFFLUENT	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	0.037	0.010	0.100	NA	J	mg/L	4/2/2015 12:52 PM	PA/VA
Manganese	0.045	0.002	0.100	NA	J	mg/L	4/2/2015 12:52 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503Y72

Date Reported: 4/17/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 12:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y72-04A	**Matrix:**	Trip Blank
Client Sample ID:	TRIP BLANK	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	4/12/2015 3:11 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	4/12/2015 3:11 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	4/12/2015 3:11 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	4/12/2015 3:11 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	4/12/2015 3:11 PM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	4/12/2015 3:11 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	104	NA	68.7-129	NA		%REC	4/12/2015 3:11 PM	
Surr: 4-Bromofluorobenzene	100	NA	71.8-127	NA		%REC	4/12/2015 3:11 PM	
Surr: Dibromofluoromethane	109	NA	74.3-124	NA		%REC	4/12/2015 3:11 PM	
Surr: Toluene-d8	91.8	NA	71.4-129	NA		%REC	4/12/2015 3:11 PM	

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Thursday, April 30, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/LEACHATE ANALYSIS

Work Order #: 1503Y76

Dear GEORGE CARICO:

REI Consultants, Inc. received 3 sample(s) on 3/30/2015 for the analyses presented in the following report.

Sincerely,

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1503Y76

Date Reported: 4/30/2015

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project: DRILL CUTTING/LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1503Y76

Date Reported: 4/30/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 10:05:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y76-01A	**Matrix:**	Liquid
Client Sample ID:	1-SHORT CREEK/OPEN LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1503Y76

Date Reported: 4/30/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 10:55:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y76-02A	**Matrix:**	Liquid
Client Sample ID:	2-SHORT CREEK/CLOSED LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1503Y76

Date Reported: 4/30/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/30/2015 11:40:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/30/2015
Lab ID:	1503Y76-03A	**Matrix:**	Liquid
Client Sample ID:	3-WHEELING POTW EFFLUENT	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

April 22, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1503Y76
Pace Project No.: 30144826

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on April 06, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1503Y76
Pace Project No.: 30144826

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1503Y76
Pace Project No.: 30144826

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30144826001	**1503Y76-01A**	Water	03/30/15 10:05	04/06/15 15:20
30144826002	**1503Y76-02A**	Water	03/30/15 10:55	04/06/15 15:20
30144826003	**1503Y76-03A**	Water	03/30/15 11:40	04/06/15 15:20

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1503Y76
Pace Project No.: 30144826

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30144826001	**1503Y76-01A**	SM 7110C	FCC	1
		EPA 900.0	FCC	1
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1
30144826002	**1503Y76-02A**	SM 7110C	FCC	1
		EPA 900.0	FCC	1
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1
30144826003	**1503Y76-03A**	EPA 900.0	FCC	2
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503Y76
Pace Project No.: 30144826

Method: **SM 7110C**
Description: 7110C Gross Alpha
Client: REI Consultants, Inc.
Date: April 22, 2015

General Information:
2 samples were analyzed for SM 7110C. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Batch Comments:

The % RPD between the GRA 7110C Laboratory Control Sample(LCS)/LCSDuplicate(LCSD) associated with the samples in this analytical project was outside of Pace¿s default acceptance criteria. Pace allows an alternate assessment using the numerical performance indicator. The value was 1.88, which is acceptable. Results have been reported without qualification.

- QC Batch: RADC / 24122

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503Y76
Pace Project No.: 30144826

Method: **EPA 900.0**
Description: 900.0 Gross Alpha/Beta
Client: REI Consultants, Inc.
Date: April 22, 2015

General Information:
3 samples were analyzed for EPA 900.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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Greensburg, PA 15601
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PROJECT NARRATIVE

Project: 1503Y76
Pace Project No.: 30144826

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: REI Consultants, Inc.
Date: April 22, 2015

General Information:
3 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 1503Y76
Pace Project No.: 30144826

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: REI Consultants, Inc.
Date: April 22, 2015

General Information:
3 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503Y76
Pace Project No.: 30144826

Method: **ASTM D5811-95**
Description: ASTM D5811 Sr 89/90 Eichrom
Client: REI Consultants, Inc.
Date: April 22, 2015

General Information:
3 samples were analyzed for ASTM D5811-95. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: RADC/23997

N2: The lab does not hold TNI accreditation for this parameter.

- 1503Y76-01A (Lab ID: 30144826001)
  - Strontium-90
- 1503Y76-02A (Lab ID: 30144826002)
  - Strontium-90
- 1503Y76-03A (Lab ID: 30144826003)
  - Strontium-90
- BLANK (Lab ID: 877119)
  - Strontium-90

This data package has been reviewed for quality and completeness and is approved for release.

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1503Y76
Pace Project No.: 30144826

Sample: 1503Y76-01A **Lab ID: 30144826001** Collected: 03/30/15 10:05 Received: 04/06/15 15:20 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample Acceptance Policy Waiver on file from the client.
• Upon receipt at the laboratory, six mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	SM 7110C	**5.55 ± 4.06 (6.62) C:NA T:NA**	pCi/L	04/18/15 15:30	12587-46-1	
Gross Beta	EPA 900.0	**154 ± 30.0 (12.8) C:NA T:NA**	pCi/L	04/11/15 19:46	12587-47-2	
Radium-226	EPA 903.1	**1.67 ± 1.54 (0.907) C:NA T:86%**	pCi/L	04/16/15 12:12	13982-63-3	
Radium-228	EPA 904.0	**2.37 ± 1.81 (3.56) C:69% T:75%**	pCi/L	04/17/15 16:39	15262-20-1	
Strontium-90	ASTM D5811-95	**-0.0800 ± 1.45 (2.66) C:122% T:NA**	pCi/L	04/10/15 21:24	10098-97-2	N2

Sample: 1503Y76-02A **Lab ID: 30144826002** Collected: 03/30/15 10:55 Received: 04/06/15 15:20 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample Acceptance Policy Waiver on file from the client.
• Upon receipt at the laboratory, 3 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	SM 7110C	**3.16 ± 2.43 (4.07) C:NA T:NA**	pCi/L	04/18/15 15:30	12587-46-1	
Gross Beta	EPA 900.0	**54.6 ± 11.1 (7.01) C:NA T:NA**	pCi/L	04/11/15 19:46	12587-47-2	
Radium-226	EPA 903.1	**2.61 ± 1.28 (0.416) C:NA T:97%**	pCi/L	04/16/15 12:14	13982-63-3	
Radium-228	EPA 904.0	**1.30 ± 0.582 (0.959) C:76% T:79%**	pCi/L	04/17/15 16:39	15262-20-1	
Strontium-90	ASTM D5811-95	**-1.01 ± 0.921 (1.73) C:101% T:NA**	pCi/L	04/10/15 21:24	10098-97-2	N2

Sample: 1503Y76-03A **Lab ID: 30144826003** Collected: 03/30/15 11:40 Received: 04/06/15 15:20 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample Acceptance Policy Waiver on file from the client.
• Upon receipt at the laboratory, 3 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**0.428 ± 1.05 (2.01) C:NA T:NA**	pCi/L	04/11/15 19:46	12587-46-1	
Gross Beta	EPA 900.0	**3.90 ± 1.10 (1.31) C:NA T:NA**	pCi/L	04/11/15 19:46	12587-47-2	
Radium-226	EPA 903.1	**0.210 ± 0.320 (0.515) C:NA T:93%**	pCi/L	04/16/15 12:13	13982-63-3	
Radium-228	EPA 904.0	**0.163 ± 0.383 (0.849) C:81% T:80%**	pCi/L	04/21/15 16:19	15262-20-1	
Strontium-90	ASTM D5811-95	**0.386 ± 0.862 (1.54) C:100% T:NA**	pCi/L	04/10/15 21:24	10098-97-2	N2

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503Y76
Pace Project No.: 30144826

QC Batch: RADC/23997 Analysis Method: ASTM D5811-95
QC Batch Method: ASTM D5811-95 Analysis Description: ASTM D5811 Sr 89/90 Eichrom
Associated Lab Samples: 30144826001, 30144826002, 30144826003

METHOD BLANK: 877119 Matrix: Water
Associated Lab Samples: 30144826001, 30144826002, 30144826003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Strontium-90	0.465 ± 0.489 (1.02) C:100% T:NA	pCi/L	04/10/15 16:43	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503Y76
Pace Project No.: 30144826

QC Batch: RADC/23982 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30144826003

METHOD BLANK: 876223 | Matrix: Water
Associated Lab Samples: 30144826003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.553 ± 0.385 (0.755) C:80% T:91%	pCi/L	04/21/15 16:19	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503Y76
Pace Project No.: 30144826

QC Batch: RADC/24010 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30144826001, 30144826002, 30144826003

METHOD BLANK: 877132 Matrix: Water
Associated Lab Samples: 30144826001, 30144826002, 30144826003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	-0.122 ± 0.765 (2.10) C:NA T:NA	pCi/L	04/11/15 14:26	
Gross Beta	-0.040 ± 0.665 (1.69) C:NA T:NA	pCi/L	04/11/15 14:26	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503Y76
Pace Project No.: 30144826

QC Batch: RADC/24122 | Analysis Method: SM 7110C
QC Batch Method: SM 7110C | Analysis Description: 7110C Gross Alpha
Associated Lab Samples: 30144826001, 30144826002

METHOD BLANK: 881300 | Matrix: Water
Associated Lab Samples: 30144826001, 30144826002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	-0.0142 ± 0.698 (1.95) C:NA T:NA	pCi/L	04/18/15 17:08	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503Y76
Pace Project No.: 30144826

QC Batch: RADC/24015 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30144826001, 30144826002, 30144826003

METHOD BLANK: 877137 Matrix: Water
Associated Lab Samples: 30144826001, 30144826002, 30144826003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.203 ± 0.399 (0.730) C:NA T:92%	pCi/L	04/16/15 12:24	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503Y76
Pace Project No.: 30144826

QC Batch: RADC/24019 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30144826001, 30144826002

METHOD BLANK: 877141 | Matrix: Water
Associated Lab Samples: 30144826001, 30144826002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.288 ± 0.384 (0.822) C:79% T:88%	pCi/L	04/17/15 16:46	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1503Y76
Pace Project No.: 30144826

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

N2 The lab does not hold TNI accreditation for this parameter.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3521	PAGE: 1	OF: 1

30144826

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA COMPANY: PACE ANALYTICAL SERVIC

ADDRESS: 1638 ROSEYTOWN ROAD

CITY, STATE, ZIP: GREENSBURG, PA 15601

PHONE: (724) 850-5600 FAX:

ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:

State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. All results to Kathy Berry at kberry@reiclabs.com.

ANALYTICAL PARAMETERS

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	GROSS_ALPHA_SUB (EPA 900.0)	GROSS_BETA_SUB (EPA 900.0)	RADIUM_226_SUB (EPA 903.1)	RADIUM_228_SUB (EPA 904.0)	STRONTIUM_90_SUB (EPA 905.0)	
						*	2	2	2	2	2	
1	1503Y76-01A	1-SHORT CREEK/OPEN LF		Liquid	3/30/2015 10:05:00 AM	1	√	√	√	√	√	001
2	1503Y76-02A	2-SHORT CREEK/CLOSED LF		Liquid	3/30/2015 10:55:00 AM	1	√	√	√	√	√	002
3	1503Y76-03A	3-WHEELING POTW EFFLUENT		Liquid	3/30/2015 11:40:00 AM	1	√	√	√	√	√	003

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[illegible]	3/31/15	16:00	MSC		
[illegible]	4-6-15	15:20	[illegible]	4-6-15	11:21
			[illegible]	4/6/15	1520

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples NA °C Attempt to Cool ? _____

Comments: _____

Pace Analytical

Sample Condition Upon Receipt

Client Name: REIC

Project # 30144826

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no Biological Tissue is Frozen: Yes No

Packing Material: Bubble Wrap ____ Bubble Bags ____ None X Other _____

Thermometer Used NA Type of Ice: Wet Blue (None) ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.: NA °C Correction Factor: NA °C Final Temp: NA °C

Date and initials of person examining contents: Am 4/6/15

Temp should be above freezing to 6°C

		Comments:
Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☒No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☒No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☒No ☐N/A	7.
Sufficient Volume:	☒Yes ☐No ☐N/A	8.
Correct Containers Used:	☒Yes ☐No ☐N/A	9.
-Pace Containers Used:	☐Yes ☒No ☐N/A	
Containers Intact:	☒Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT		
All containers needing preservation have been checked.	☒Yes ☐No ☐N/A	13. added 6ml HNO3 to 001. added 3ml HNO3 to 002-003
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☒No ☐N/A	pH<2 Am 4/6/15 1620
exceptions: VOA, coliform, TOC, O&G, Phenols	☐Yes ☒No	Initial when completed Am / Lot # of added preservative DLIS-0264
Samples checked for dechlorination:	☐Yes ☐No ☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☒N/A	15.
Trip Blank Present:	☐Yes ☐No ☒N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carrie Sears Date: 4/7/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30144826

Client Name: REIC

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other	Other
001	WT																		3					
003																								

SCURF Back (C016-4 15May2012).xls

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

April 02, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1503Y76
Pace Project No.: 30144423

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on April 01, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1503Y76
Pace Project No.: 30144423

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1503Y76
Pace Project No.: 30144423

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30144423001	**1503Y76-01A**	Water	03/30/15 10:05	04/01/15 10:00
30144423002	**1503Y76-02A**	Water	03/30/15 10:55	04/01/15 10:00
30144423003	**1503Y76-03A**	Water	03/30/15 11:40	04/01/15 10:00

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1503Y76
Pace Project No.: 30144423

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30144423001	**1503Y76-01A**	SM 7500Rn-B	FCC	1
30144423002	**1503Y76-02A**	SM 7500Rn-B	FCC	1
30144423003	**1503Y76-03A**	SM 7500Rn-B	FCC	1

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503Y76
Pace Project No.: 30144423

Method: **SM 7500Rn-B**
Description: 7500RnB Radon
Client: REI Consultants, Inc.
Date: April 02, 2015

General Information:
3 samples were analyzed for SM 7500Rn-B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1503Y76
Pace Project No.: 30144423

Sample: 1503Y76-01A **Lab ID: 30144423001** Collected: 03/30/15 10:05 Received: 04/01/15 10:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**-34.0 ± 28.1 (51.0)** **C:NA T:NA**	pCi/L	04/01/15 23:39	10043-92-2	

Sample: 1503Y76-02A **Lab ID: 30144423002** Collected: 03/30/15 10:55 Received: 04/01/15 10:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**-2.8 ± 29.0 (50.9)** **C:NA T:NA**	pCi/L	04/02/15 00:12	10043-92-2	

Sample: 1503Y76-03A **Lab ID: 30144423003** Collected: 03/30/15 11:40 Received: 04/01/15 10:00 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**-3.7 ± 28.9 (50.8)** **C:NA T:NA**	pCi/L	04/02/15 00:46	10043-92-2	

Pace Analytical Services, Inc.
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Greensburg, PA 15601
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503Y76
Pace Project No.: 30144423

QC Batch: RADC/23913 Analysis Method: SM 7500Rn-B
QC Batch Method: SM 7500Rn-B Analysis Description: 7500Rn B Radon
Associated Lab Samples: 30144423001, 30144423002, 30144423003

METHOD BLANK: 873548 Matrix: Water
Associated Lab Samples: 30144423001, 30144423002, 30144423003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radon	-1.7 ± 18.2 (32.1) C:NA T:NA	pCi/L	04/01/15 23:06	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1503Y76
Pace Project No.: 30144423

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3522	PAGE: 1	OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA COMPANY: PACE ANALYTICAL SERVIC

ADDRESS: 1638 ROSEYTOWN ROAD

CITY, STATE, ZIP: GREENSBURG, PA 15601

PHONE: (724) 850-5600 FAX:

ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:

State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. All results to Kathy Berry at kberry@reiclabs.com.

ANALYTICAL PARAMETERS

30144423

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	RADON (913.0)												
						*	0												
1	1503Y76-01A	1-SHORT CREEK/OPEN LF	.	Liquid	3/30/2015 10:05:00 AM	3	√											001	
2	1503Y76-02A	2-SHORT CREEK/CLOSED LF	.	Liquid	3/30/2015 10:55:00 AM	3	√											002	
3	1503Y76-03A	3-WHEELING POTW EFFLUENT	.	Liquid	3/30/2015 11:40:00 AM	3	√											003	

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS:

Relinquished By: [signature]	Date: 3/31/15	Time: 16:00	Received By: UPS	Date: 3/31/15	Time: 16:00
Relinquished By:	Date:	Time:	Received By: [signature]	Date: 4-1-15	Time: 1000
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☐ RUSH Next BD ☑ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool ? _____

Comments: _____

AL

Sample Condition Upon Receipt

Pace Analytical

Client Name: RGIC

Project # 30144423

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1226X 713 13 7453 R60

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no **Biological Tissue is Frozen:** Yes No

Packing Material: Bubble Wrap X Bubble Bags ____ None ____ Other _____

Thermometer Used #6 **Type of Ice:** Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.: 2.1 °C **Correction Factor:** -0.3 °C **Final Temp:** 1.8 °C

Date and initials of person examining contents: 4-1-15 SM 8- SM 4-1-15

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☒No	☐N/A	4.
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☒Yes	☐No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☒No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11.
Sample Labels match COC:	☒Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT				
All containers needing preservation have been checked.	☐Yes	☐No	☒N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☒N/A	
exceptions: VOA, coliform, TOC, O&G, Phenols	☐Yes	☒No		Initial when completed SMA / Lot # of added preservative
Samples checked for dechlorination:	☐Yes	☐No	☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☒No	☐N/A	15.
Trip Blank Present:	☐Yes	☒No	☐N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carina Serio **Date:** 4/1/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30144423

Client Name: REFC

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other Radon	Other
001	wt																						3	
003	t																						4	

CHAIN OF CUSTODY RECORD

v10-0114

REIC use ONLY — CLIENT ID MAR071 DATE _____ SHEET ____

REIC
Research Environmental & Industrial Consultants, Inc.
MAIN LABORATORY & CORPORATE HEADQUARTERS:
P.O. Box 286 • 225 Industrial Park Rd, Beaver, WV 25813
800-999-0105 • 304-255-2500 • www.reiclabs.com

MID-OHIO VALLEY Service Center
101 17th Street
Ashland, KY 41101
606-393-5027

SHENANDOAH Service Center
1557 Commerce Rd., Ste 201
Verona, VA 24482
540-248-0183

ROANOKE Service Center
3029-C Peters Creek Rd
Roanoke, VA 24019
540-777-1276

MORGANTOWN Service Center
16 Commerce Drive
Westover, WV 26501
304-241-5861

Client: Marshall University Center for Environmental, Geotechnical and Applied Sciences PO # _____

Contact Person George Carico/Jamie Wolfe Phone 304-696-5456

Address One John Marshall Drive City Huntington State WV Zip 25755

Billing Address (if different) _____

City _____ State _____ Zip _____

Site ID & State Wetzel Co Landfill/WWTP Project ID Drill Cutting/Leachate Analysis Sampler J McGee

SAMPLE LOG & ANALYSIS REQUEST

TURNAROUND TIME	RUSH TURNAROUND*
⊙ NORMAL	○ 5 DAY ○ 3 DAY ○ 2 DAY ○ 1 DAY

*Rush work needs prior laboratory approval and will incur additional charges

ANALYSIS & METHOD REQUESTED

See Attachment

S.U °C US

pH - 6.78 Temp - 10.8 Cond - 6,470

pH - 6.59 Temp - 9.8 Cond - 7,010

MSC Sampling Fee— 6 MAS

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	#0	#1	#2	#3	#5	#10	#	#	#
1-Wetzel Co LF	20	1/26/15 10:30	Water	Grab	X						X		X
2-Wetzel Co LF WWTP Effluent	23	1050	Water	Grab	X							X	
Trip Blank	1		Water	Grab	X								
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									

ENTER PRESERVATIVE CODE(S):

0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Bisulfate/Methanol
9 Ammonium Chloride
10 NS/AH *
11 _____ *

* (Use blanks for preservatives not listed.)

COMMENTS:
Dissolved Metals are Field Filtered

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: ___ °C ICED? Y___ N___

Containers provided by: [X] REIC [ ] Client

1		2		3	
Relinquished by (signature)	Date/Time 1-26-15 1400	Relinquished by (signature)	Date/Time	Relinquished by (signature)	Date/Time
Received by (signature) Kathleen-Weigle	Date/Time 1/26/15 1400	Received by (signature)	Date/Time	Received by (signature)	Date/Time

REI Consultants, Inc.

FIELD LOG: pH Calibration Records 6-2010.Rev.1

Client Name: Marshall Univ Site Location: Wetzel Co CF

Date: 1/22/15 Analyst: [illegible]

Calibration Location: Field / Laboratory Instrument: Oakton pH Meter

4.0 Buffer Lot #: D085-14
7.0 Buffer Lot #: D119-04
10.0 Buffer Lot #: D112-08

pH (SU) - SM4500-H+B, 18th Edition				
Standard	Initial Reading	Reading After Calibration	Temperature °C	Comments
4.0 Buffer	4.04	4.01	21.8	
7.0 Buffer	6.55	7.00	↓	
10.0 Buffer	9.57	10.01	↓	

Slope: 96.5

Comments:

Calibration at the laboratory requires a pH 7.0 QC Check

All field pH analysis must be followed by a Post Analysis pH Check

Quality Control Samples	Reading	Acceptance Range:
QC Check, 7.0	6.55	*True Value ± 0.1 (6.9 - 7.1)*
Post Analysis QC Check, 7.0	7.03	

REI Consultants, Inc. P.O. Box 286 Beaver, WV 25813 Phone: 800-999-0105 Fax: 304-255-2572 www.reiclabs.com

WVDEP Drill Cutting / Leachate Analysis List

Aluminum

Antimony

Arsenic

Barium

Beryllium

Boron

Cadmium

Chromium

Hexavalent Chromium

Copper

Lead

Lithium

Mercury

Nickel

Selenium

Silver

Strontium

Vanadium

Zinc

Chloride

Fluoride

Nitrate as Nitrogen

Nitrite as Nitrogen

Sulfate

Total Suspended Solids

Free Cyanide

Benzene

Chlorobenzene

Chlorodibromomethane

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

1,4-Dinitrobenzene

1,4-Naphthoquinone

2,4-Dinitrotoluene

2,6-Dinitrotoluene

4-Nitroquinoline-1-oxide

bis(2-ethylhexyl) phthalate

Butyl benzylphthalate

Di-N-Butyl Phthalate

Di-N-Octylphthalate Diethyl Phthalate

Dimethyl Phthalate

Flouranthene

Nitrobenzene

Pentachloronitrobenzene

Gross Alpha

Gross Beta

Radium 226

Radium 228

Strontium 90

Radon

pH

Total Dissolved Solids

Total Suspended Solids

BOD 5-Day

Ammonia as Nitrogen

Total Kjeldahl Nitrogen

Oil & Grease

Acidity to pH 8.3

Specific Conductance

Alkalinity to pH 4.5

Chemical Oxygen Demand

Dissolved Iron and Iron

Manganese and Dissolved Manganese

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

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3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Wednesday, February 04, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/LEACHATE ANALYSIS

Work Order #: 1501P19

Dear GEORGE CARICO:

REI Consultants, Inc. received 3 sample(s) on 1/26/2015 for the analyses presented in the following report.

Kathy Berry

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1501P19

Date Reported: 2/4/2015

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,

Project: DRILL CUTTING/LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1501P19

Date Reported: 2/4/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	1/26/2015 10:30:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	1/26/2015
Lab ID:	1501P19-01A	**Matrix:**	Liquid
Client Sample ID:	1-WETZEL CO LF	**Site ID:**	WETZEL CO. LANDFILL/WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.026	0.005	0.100	NA	J	mg/L	1/28/2015 9:04 PM	PA/VA
Antimony	ND	0.020	0.200	NA		mg/L	1/28/2015 9:04 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	1/28/2015 9:04 PM	PA/VA
Barium	1.01	0.002	0.100	NA		mg/L	1/28/2015 9:04 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	1/28/2015 9:04 PM	PA/VA
Boron	1.65	0.020	0.100	NA		mg/L	1/30/2015 6:39 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	1/28/2015 9:04 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	1/28/2015 9:04 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	1/28/2015 9:04 PM	PA/VA
Iron	5.42	0.010	0.100	NA		mg/L	1/28/2015 9:04 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	1/28/2015 9:04 PM	PA/VA
Lithium	0.039	0.020	0.100	NA	J	mg/L	1/29/2015 3:33 PM	
Manganese	2.25	0.002	0.100	NA		mg/L	1/28/2015 9:04 PM	PA/VA
Nickel	0.023	0.005	0.100	NA	J	mg/L	1/28/2015 9:04 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	1/28/2015 9:04 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	1/28/2015 9:04 PM	PA/VA
Strontium	4.12	0.001	0.010	NA		mg/L	1/29/2015 3:33 PM	PA
Vanadium	ND	0.005	0.100	NA		mg/L	1/28/2015 9:04 PM	PA/VA
Zinc	0.010	0.003	0.050	NA	J	mg/L	1/28/2015 9:04 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	1/28/2015 11:10 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0101	NA		mg/L	1/30/2015 2:46 PM	
1,4-Napthoquinone	ND	NA	0.0101	NA		mg/L	1/30/2015 2:46 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0503	NA		mg/L	1/30/2015 2:46 PM	
Pentachloronitrobenzene	ND	NA	0.0101	NA		mg/L	1/30/2015 2:46 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0050	0.0101	NA		mg/L	1/30/2015 2:46 PM	PA/VA
Butyl benzyl phthalate	ND	0.0050	0.0101	NA		mg/L	1/30/2015 2:46 PM	PA/VA
Di-n-butyl phthalate	ND	0.0050	0.0101	NA		mg/L	1/30/2015 2:46 PM	PA/VA
Diethyl phthalate	ND	0.0020	0.0101	NA		mg/L	1/30/2015 2:46 PM	PA/VA
Dimethyl phthalate	ND	0.0020	0.0101	NA		mg/L	1/30/2015 2:46 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0020	0.0101	NA		mg/L	1/30/2015 2:46 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0020	0.0101	NA		mg/L	1/30/2015 2:46 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1501P19

Date Reported: 2/4/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	1/26/2015 10:30:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	1/26/2015
Lab ID:	1501P19-01A	**Matrix:**	Liquid
Client Sample ID:	1-WETZEL CO LF	**Site ID:**	WETZEL CO. LANDFILL/WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0050	0.0101	NA		mg/L	1/30/2015 2:46 PM	PA/VA
Fluoranthene	ND	0.0020	0.0101	NA		mg/L	1/30/2015 2:46 PM	PA/VA
Nitrobenzene	ND	0.0020	0.0101	NA		mg/L	1/30/2015 2:46 PM	PA/VA
Surr: 2-Fluorophenol	26.9	NA	32.9-110	NA	S	%REC	1/30/2015 2:46 PM	
Surr: Phenol-d5	21.2	NA	25.8-110	NA	S	%REC	1/30/2015 2:46 PM	
Surr: 2,4,6-Tribromophenol	54.6	NA	63.8-110	NA	S	%REC	1/30/2015 2:46 PM	
Surr: Nitrobenzene-d5	56.5	NA	61.8-110	NA	S	%REC	1/30/2015 2:46 PM	
Surr: 2-Fluorobiphenyl	53.1	NA	58.6-110	NA	S	%REC	1/30/2015 2:46 PM	
Surr: 4-Terphenyl-d14	50.2	NA	55.1-110	NA	S	%REC	1/30/2015 2:46 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	0.660	0.500	1.00	NA	J	µg/L	1/30/2015 6:21 PM	PA/VA
Chlorobenzene	3.23	0.500	1.00	NA		µg/L	1/30/2015 6:21 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	1/30/2015 6:21 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	1/30/2015 6:21 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	1/30/2015 6:21 PM	PA/VA
1,4-Dichlorobenzene	1.07	0.500	1.00	NA		µg/L	1/30/2015 6:21 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	114	NA	68.7-129	NA		%REC	1/30/2015 6:21 PM	
Surr: 4-Bromofluorobenzene	80.2	NA	71.8-127	NA		%REC	1/30/2015 6:21 PM	
Surr: Dibromofluoromethane	112	NA	74.3-124	NA		%REC	1/30/2015 6:21 PM	
Surr: Toluene-d8	65.8	NA	71.4-129	NA	S	%REC	1/30/2015 6:21 PM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: VR**	
Biochemical Oxygen Demand	18	2	5	NA		mg/L	1/27/2015 12:48 PM	PA/VA

Notes:

Results of the GGA standard analysis for this sample exceeded REIC control limits.

Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	140	20	50	NA		mg/L	1/28/2015 8:30 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0001	0.0010	NA		mg/L	1/27/2015 2:23 PM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	1,300	5.00	50.0	NA		mg/L	1/27/2015 9:47 AM	PA/VA
Fluoride	1.01	0.05	0.20	NA		mg/L	1/27/2015 9:47 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1501P19

Date Reported: 2/4/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	1/26/2015 10:30:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	1/26/2015
Lab ID:	1501P19-01A	**Matrix:**	Liquid
Client Sample ID:	1-WETZEL CO LF	**Site ID:**	WETZEL CO. LANDFILL/WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Sulfate	98.0	5.00	25.0	NA		mg/L	1/27/2015 9:47 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	0.35	0.02	0.10	NA		mg/L	1/27/2015 9:47 AM	PA/VA
Nitrogen, Nitrite	ND	0.25	2.50	NA		mg/L	1/27/2015 9:47 AM	PA/VA
Notes:								
Elevated PQLs are due to matrix interference.								
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	70.2	4.00	20.0	NA		mg/L	1/28/2015 6:49 PM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	3.1	2.0	5.0	NA	J	mg/L	1/28/2015 2:00 PM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	1/29/2015 1:34 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	75.0	2.08	5.20	NA		mg/L	1/27/2015 5:49 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	6,120	NA	NA	NA		µmhos/cm	1/28/2015 10:00 AM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	3,500	10	20	NA		mg/L	1/27/2015 4:09 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	11.0	2.0	10	NA		mg/L	1/27/2015 3:54 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	89.1	1.0	10	NA		mg/L	1/27/2015 10:38 AM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	826	1.0	20.0	NA		mg/L	1/27/2015 10:38 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1501P19

Date Reported: 2/4/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	1/26/2015 10:30:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	1/26/2015
Lab ID:	1501P19-01A	**Matrix:**	Liquid
Client Sample ID:	1-WETZEL CO LF	**Site ID:**	WETZEL CO. LANDFILL/WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	7.44	NA	NA	NA		SU	1/27/2015 10:38 AM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1501P19

Date Reported: 2/4/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	1/26/2015 10:30:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	1/26/2015
Lab ID:	1501P19-01B	**Matrix:**	Liquid
Client Sample ID:	1-WETZEL CO LF	**Site ID:**	WETZEL CO. LANDFILL/WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	0.683	0.010	0.100	NA		mg/L	1/28/2015 9:08 PM	PA/VA
Manganese	2.20	0.002	0.100	NA		mg/L	1/28/2015 9:08 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1501P19

Date Reported: 2/4/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	1/26/2015 10:50:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	1/26/2015
Lab ID:	1501P19-02A	**Matrix:**	Liquid
Client Sample ID:	2-WETZEL CO LF WWTP EFFLUENT	**Site ID:**	WETZEL CO. LANDFILL/WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.668	0.005	0.100	NA		mg/L	1/28/2015 9:11 PM	PA/VA
Antimony	ND	0.020	0.200	NA		mg/L	1/28/2015 9:11 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	1/28/2015 9:11 PM	PA/VA
Barium	0.953	0.002	0.100	NA		mg/L	1/28/2015 9:11 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	1/28/2015 9:11 PM	PA/VA
Boron	1.90	0.020	0.100	NA		mg/L	1/30/2015 6:42 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	1/28/2015 9:11 PM	PA/VA
Chromium	0.005	0.005	0.100	NA	J	mg/L	1/28/2015 9:11 PM	PA/VA
Copper	0.006	0.005	0.100	NA	J	mg/L	1/28/2015 9:11 PM	PA/VA
Iron	3.32	0.010	0.100	NA		mg/L	1/28/2015 9:11 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	1/28/2015 9:11 PM	PA/VA
Lithium	0.043	0.020	0.100	NA	J	mg/L	1/29/2015 3:36 PM	
Manganese	1.30	0.002	0.100	NA		mg/L	1/28/2015 9:11 PM	PA/VA
Nickel	0.029	0.005	0.100	NA	J	mg/L	1/28/2015 9:11 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	1/28/2015 9:11 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	1/28/2015 9:11 PM	PA/VA
Strontium	4.22	0.001	0.010	NA		mg/L	1/29/2015 3:36 PM	PA
Vanadium	0.006	0.005	0.100	NA	J	mg/L	1/28/2015 9:11 PM	PA/VA
Zinc	0.016	0.003	0.050	NA	J	mg/L	1/28/2015 9:11 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	1/28/2015 11:12 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0111	NA		mg/L	1/30/2015 3:07 PM	
1,4-Napthoquinone	ND	NA	0.0111	NA		mg/L	1/30/2015 3:07 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0554	NA		mg/L	1/30/2015 3:07 PM	
Pentachloronitrobenzene	ND	NA	0.0111	NA		mg/L	1/30/2015 3:07 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0055	0.0111	NA		mg/L	1/30/2015 3:07 PM	PA/VA
Butyl benzyl phthalate	ND	0.0055	0.0111	NA		mg/L	1/30/2015 3:07 PM	PA/VA
Di-n-butyl phthalate	ND	0.0055	0.0111	NA		mg/L	1/30/2015 3:07 PM	PA/VA
Diethyl phthalate	ND	0.0022	0.0111	NA		mg/L	1/30/2015 3:07 PM	PA/VA
Dimethyl phthalate	ND	0.0022	0.0111	NA		mg/L	1/30/2015 3:07 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0022	0.0111	NA		mg/L	1/30/2015 3:07 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0022	0.0111	NA		mg/L	1/30/2015 3:07 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1501P19

Date Reported: 2/4/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	1/26/2015 10:50:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	1/26/2015
Lab ID:	1501P19-02A	**Matrix:**	Liquid
Client Sample ID:	2-WETZEL CO LF WWTP EFFLUENT	**Site ID:**	WETZEL CO. LANDFILL/WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0055	0.0111	NA		mg/L	1/30/2015 3:07 PM	PA/VA
Fluoranthene	ND	0.0022	0.0111	NA		mg/L	1/30/2015 3:07 PM	PA/VA
Nitrobenzene	ND	0.0022	0.0111	NA		mg/L	1/30/2015 3:07 PM	PA/VA
Surr: 2-Fluorophenol	40.5	NA	32.9-110	NA		%REC	1/30/2015 3:07 PM	
Surr: Phenol-d5	31.0	NA	25.8-110	NA		%REC	1/30/2015 3:07 PM	
Surr: 2,4,6-Tribromophenol	79.0	NA	63.8-110	NA		%REC	1/30/2015 3:07 PM	
Surr: Nitrobenzene-d5	83.5	NA	61.8-110	NA		%REC	1/30/2015 3:07 PM	
Surr: 2-Fluorobiphenyl	75.5	NA	58.6-110	NA		%REC	1/30/2015 3:07 PM	
Surr: 4-Terphenyl-d14	70.9	NA	55.1-110	NA		%REC	1/30/2015 3:07 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	1/30/2015 6:54 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	1/30/2015 6:54 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	1/30/2015 6:54 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	1/30/2015 6:54 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	1/30/2015 6:54 PM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	1/30/2015 6:54 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	91.0	NA	68.7-129	NA		%REC	1/30/2015 6:54 PM	
Surr: 4-Bromofluorobenzene	192	NA	71.8-127	NA	S	%REC	1/30/2015 6:54 PM	
Surr: Dibromofluoromethane	89.6	NA	74.3-124	NA		%REC	1/30/2015 6:54 PM	
Surr: Toluene-d8	86.0	NA	71.4-129	NA		%REC	1/30/2015 6:54 PM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: VR**	
Biochemical Oxygen Demand	19	2	5	NA		mg/L	1/27/2015 1:24 PM	PA/VA

Notes:

Results of the GGA standard analysis for this sample exceeded REIC control limits.

Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	142	4	10	NA		mg/L	1/27/2015 8:55 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0001	0.0010	NA		mg/L	1/27/2015 2:36 PM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	1,550	12.5	125	NA		mg/L	1/27/2015 10:05 AM	PA/VA
Fluoride	0.86	0.05	0.20	NA		mg/L	1/27/2015 10:05 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1501P19

Date Reported: 2/4/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	1/26/2015 10:50:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	1/26/2015
Lab ID:	1501P19-02A	**Matrix:**	Liquid
Client Sample ID:	2-WETZEL CO LF WWTP EFFLUENT	**Site ID:**	WETZEL CO. LANDFILL/WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Sulfate	92.5	5.00	25.0	NA		mg/L	1/27/2015 10:05 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	35.0	2.50	12.5	NA		mg/L	1/27/2015 10:05 AM	PA/VA
Nitrogen, Nitrite	ND	0.25	2.50	NA		mg/L	1/27/2015 10:05 AM	PA/VA
Notes:								
Elevated PQLs are due to matrix interference.								
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	37.4	0.80	4.00	NA		mg/L	1/28/2015 10:12 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	2.2	2.0	5.0	NA	J	mg/L	1/28/2015 2:00 PM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	1/29/2015 1:35 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	36.3	1.04	2.60	NA		mg/L	1/27/2015 5:33 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	6,560	NA	NA	NA		µmhos/cm	1/28/2015 10:00 AM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	3,770	10	20	NA		mg/L	1/27/2015 4:09 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	42.0	2.0	10	NA		mg/L	1/27/2015 3:54 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	24.3	1.0	10	NA		mg/L	1/27/2015 10:38 AM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	475	1.0	10	NA		mg/L	1/27/2015 10:38 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1501P19

Date Reported: 2/4/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	1/26/2015 10:50:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	1/26/2015
Lab ID:	1501P19-02A	**Matrix:**	Liquid
Client Sample ID:	2-WETZEL CO LF WWTP EFFLUENT	**Site ID:**	WETZEL CO. LANDFILL/WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	7.82	NA	NA	NA		SU	1/27/2015 10:38 AM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1501P19

Date Reported: 2/4/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	1/26/2015 10:50:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	1/26/2015
Lab ID:	1501P19-02B	**Matrix:**	Liquid
Client Sample ID:	2-WETZEL CO LF WWTP EFFLUENT	**Site ID:**	WETZEL CO. LANDFILL/WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	0.113	0.010	0.100	NA		mg/L	1/28/2015 9:14 PM	PA/VA
Manganese	1.12	0.002	0.100	NA		mg/L	1/28/2015 9:14 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1501P19

Date Reported: 2/4/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	1/26/2015 12:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	1/26/2015
Lab ID:	1501P19-03A	**Matrix:**	Trip Blank
Client Sample ID:	TRIP BLANK	**Site ID:**	WETZEL CO. LANDFILL/WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	1/30/2015 7:27 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	1/30/2015 7:27 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	1/30/2015 7:27 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	1/30/2015 7:27 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	1/30/2015 7:27 PM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	1/30/2015 7:27 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	114	NA	68.7-129	NA		%REC	1/30/2015 7:27 PM	
Surr: 4-Bromofluorobenzene	119	NA	71.8-127	NA		%REC	1/30/2015 7:27 PM	
Surr: Dibromofluoromethane	110	NA	74.3-124	NA		%REC	1/30/2015 7:27 PM	
Surr: Toluene-d8	59.4	NA	71.4-129	NA	S	%REC	1/30/2015 7:27 PM	

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Improving the environment, one client at a time...

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Wednesday, February 18, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/LEACHATE ANALYSIS

Work Order #: 1501P23

Dear GEORGE CARICO:

Kathy Berry

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1501P23

Date Reported: 2/18/2015

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,

Project: DRILL CUTTING/LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1501P23

Date Reported: 2/18/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	1/26/2015 10:30:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	1/26/2015
Lab ID:	1501P23-01A	**Matrix:**	Liquid
Client Sample ID:	1-WETZEL CO LF	**Site ID:**	WETZEL CO LANDFILL/WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1501P23

Date Reported: 2/18/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	1/26/2015 10:50:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	1/26/2015
Lab ID:	1501P23-02A	**Matrix:**	Liquid
Client Sample ID:	2-WETZEL CO LF WWTP EFFLUENT	**Site ID:**	WETZEL CO LANDFILL/WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

February 13, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1501P23
Pace Project No.: 30139618

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on January 28, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1501P23
Pace Project No.: 30139618

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1501P23
Pace Project No.: 30139618

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30139618001	**1501P23-01A**	Water	01/26/15 10:30	01/28/15 14:35
30139618002	**1501P23-02A**	Water	01/26/15 10:50	01/28/15 14:35

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SAMPLE ANALYTE COUNT

Project: 1501P23
Pace Project No.: 30139618

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30139618001	**1501P23-01A**	SM 7110C	FCC	1
		SM 7500Rn-B	FCC	1
		EPA 900.0	FCC	1
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1
30139618002	**1501P23-02A**	SM 7110C	FCC	1
		SM 7500Rn-B	FCC	1
		EPA 900.0	FCC	1
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1

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(724)850-5600

PROJECT NARRATIVE

Project: 1501P23
Pace Project No.: 30139618

Method: **SM 7110C**
Description: 7110C Gross Alpha
Client: REI Consultants, Inc.
Date: February 13, 2015

General Information:
2 samples were analyzed for SM 7110C. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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(724)850-5600

PROJECT NARRATIVE

Project: 1501P23
Pace Project No.: 30139618

Method: **SM 7500Rn-B**
Description: 7500RnB Radon
Client: REI Consultants, Inc.
Date: February 13, 2015

General Information:
2 samples were analyzed for SM 7500Rn-B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Batch Comments:

13007LCS3 fails low at 89.76% for Rn-222 batch 23199. Samples were collected on 1/26/15, and the initial count was on 1/30/15. Any recount would impact the recommended hold time of four days from collection.

- QC Batch: RADC / 23199

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PROJECT NARRATIVE

Project: 1501P23
Pace Project No.: 30139618

Method: **EPA 900.0**
Description: 900.0 Gross Alpha/Beta
Client: REI Consultants, Inc.
Date: February 13, 2015

General Information:
2 samples were analyzed for EPA 900.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 1501P23
Pace Project No.: 30139618

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: REI Consultants, Inc.
Date: February 13, 2015

General Information:
2 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 1501P23
Pace Project No.: 30139618

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: REI Consultants, Inc.
Date: February 13, 2015

General Information:
2 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 1501P23
Pace Project No.: 30139618

Method: **ASTM D5811-95**
Description: ASTM D5811 Sr 89/90 Eichrom
Client: REI Consultants, Inc.
Date: February 13, 2015

General Information:
2 samples were analyzed for ASTM D5811-95. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: RADC/23197

N2: The lab does not hold TNI accreditation for this parameter.

- 1501P23-01A (Lab ID: 30139618001)
  - Strontium-90
- 1501P23-02A (Lab ID: 30139618002)
  - Strontium-90
- BLANK (Lab ID: 848157)
  - Strontium-90

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, Inc.
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1501P23
Pace Project No.: 30139618

Sample: 1501P23-01A **Lab ID: 30139618001** Collected: 01/26/15 10:30 Received: 01/28/15 14:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	SM 7110C	**6.26 ± 4.40 (7.32) C:NA T:NA**	pCi/L	02/07/15 17:12	12587-46-1	
Radon	SM 7500Rn-B	**4.8 ± 39.8 (69.0) C:NA T:NA**	pCi/L	01/30/15 10:09	10043-92-2	
Gross Beta	EPA 900.0	**34.3 ± 7.65 (6.10) C:NA T:NA**	pCi/L	02/02/15 19:42	12587-47-2	
Radium-226	EPA 903.1	**5.47 ± 2.48 (0.741) C:NA T:90%**	pCi/L	02/11/15 10:33	13982-63-3	
Radium-228	EPA 904.0	**0.751 ± 2.39 (5.23) C:85% T:75%**	pCi/L	02/12/15 16:12	15262-20-1	
Strontium-90	ASTM D5811-95	**-0.107 ± 0.857 (1.48) C:104% T:NA**	pCi/L	01/30/15 19:47	10098-97-2	N2

Sample: 1501P23-02A **Lab ID: 30139618002** Collected: 01/26/15 10:50 Received: 01/28/15 14:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	SM 7110C	**3.56 ± 4.38 (7.93) C:NA T:NA**	pCi/L	02/07/15 17:12	12587-46-1	
Radon	SM 7500Rn-B	**-41.8 ± 38.4 (69.4) C:NA T:NA**	pCi/L	01/30/15 11:15	10043-92-2	
Gross Beta	EPA 900.0	**38.9 ± 8.84 (7.18) C:NA T:NA**	pCi/L	01/31/15 21:27	12587-47-2	
Radium-226	EPA 903.1	**3.87 ± 2.47 (2.57) C:NA T:75%**	pCi/L	02/11/15 10:42	13982-63-3	
Radium-228	EPA 904.0	**-0.835 ± 1.31 (3.09) C:83% T:69%**	pCi/L	02/12/15 16:12	15262-20-1	
Strontium-90	ASTM D5811-95	**-0.757 ± 0.831 (1.46) C:105% T:NA**	pCi/L	01/30/15 20:50	10098-97-2	N2

Pace Analytical Services, Inc.
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1501P23
Pace Project No.: 30139618

QC Batch: RADC/23197
Analysis Method: ASTM D5811-95
QC Batch Method: ASTM D5811-95
Analysis Description: ASTM D5811 Sr 89/90 Eichrom
Associated Lab Samples: 30139618001, 30139618002

METHOD BLANK: 848157
Matrix: Water
Associated Lab Samples: 30139618001, 30139618002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Strontium-90	-0.495 ± 0.671 (1.61) C:90% T:NA	pCi/L	01/30/15 18:08	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1501P23
Pace Project No.: 30139618

QC Batch: RADC/23220 | Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 | Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30139618001, 30139618002

METHOD BLANK: 848993 | Matrix: Water
Associated Lab Samples: 30139618001, 30139618002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Beta	0.340 ± 0.748 (1.75) C:NA T:NA	pCi/L	02/01/15 11:44	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
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Greensburg, PA 15601
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1501P23
Pace Project No.: 30139618

QC Batch: RADC/23199 | Analysis Method: SM 7500Rn-B
QC Batch Method: SM 7500Rn-B | Analysis Description: 7500Rn B Radon
Associated Lab Samples: 30139618001, 30139618002

METHOD BLANK: 848159 | Matrix: Water
Associated Lab Samples: 30139618001, 30139618002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radon	-14.7 ± 18.7 (33.5) C:NA T:NA	pCi/L	01/30/15 09:36	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
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Greensburg, PA 15601
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1501P23
Pace Project No.: 30139618

QC Batch: RADC/23297 | Analysis Method: SM 7110C
QC Batch Method: SM 7110C | Analysis Description: 7110C Gross Alpha
Associated Lab Samples: 30139618001, 30139618002

METHOD BLANK: 851088 | Matrix: Water
Associated Lab Samples: 30139618001, 30139618002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.140 ± 0.762 (2.00) C:NA T:NA	pCi/L	02/08/15 12:18	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
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Greensburg, PA 15601
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1501P23
Pace Project No.: 30139618

QC Batch: RADC/23233 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30139618001, 30139618002

METHOD BLANK: 849471 | Matrix: Water
Associated Lab Samples: 30139618001, 30139618002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0496 ± 0.288 (0.683) C:84% T:82%	pCi/L	02/12/15 16:11	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1501P23
Pace Project No.: 30139618

QC Batch: RADC/23229 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30139618001, 30139618002

METHOD BLANK: 849467 | Matrix: Water
Associated Lab Samples: 30139618001, 30139618002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.270 ± 0.438 (0.762) C:NA T:91%	pCi/L	02/11/15 09:45	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1501P23
Pace Project No.: 30139618

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

N2 The lab does not hold TNI accreditation for this parameter.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3261	PAGE: 1	OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: **PACE_PA** COMPANY: **PACE ANALYTICAL SERVIC**

ADDRESS: **1638 ROSEYTOWN ROAD**

CITY, STATE, ZIP: **GREENSBURG, PA 15601**

PHONE: **(724) 850-5600** FAX:

ACCOUNT #: **050719EVF1** EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:

State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. All results to Kathy Berry at kberry@reiclabs.com.

ANALYTICAL PARAMETERS

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

30139618

ITEM #	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	GROSS_ALPHA_SUB (EPA 900.0)	GROSS_BETA_SUB (EPA 900.0)	RADIUM_226_SUB (EPA 903.1)	RADIUM_228_SUB (EPA 904.0)	RADON (913.0)	STRONTIUM_90_SUB (EPA 905.0)	COMMENTS
						*	2	2	2	2	0	2	
1	1501P23-01A	1-WETZEL CO LF	.	Liquid	1/26/2015 10:30:00 AM	3	√	√	√	√	√	√	001
2	1501P23-02A	2-WETZEL CO LF WWTP EFFLUENT	.	Liquid	1/26/2015 10:50:00 AM	4	√	√	√	√	√	√	002

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Brad Sr	1/27/15	16:00	MSC		
Stephens-Weigl	1/28/15	12:04	Cliff Mt by PACE	1/28/15	12:04
Cliff Mt by PACE	1/28/15	2:35	Scott Cunningham Pace	1-28-15	1435

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool ? _____

Comments: _____

Sample Condition Upon Receipt

Pace Analytical

Client Name: RETC

Project # 30139618

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no **Biological Tissue is Frozen:** Yes No

Packing Material: Bubble Wrap X Bubble Bags ____ None ____ Other _____

Thermometer Used # NA **Type of Ice:** (Wet) Blue None ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.:_____°C **Correction Factor:** _____°C **Final Temp:**_____°C

Date and Initials of person examining contents: SRA 1-28-15

Temp should be above freezing to 6°C

		Comments:
Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☒No ☐N/A	4. Waiver on file CAF 1/28/15
Samples Arrived within Hold Time:	☒Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☒Yes ☐No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☒No ☐N/A	7.
Sufficient Volume:	☒Yes ☐No ☐N/A	8.
Correct Containers Used:	☒Yes ☐No ☐N/A	9.
-Pace Containers Used:	☐Yes ☒No ☐N/A	
Containers Intact:	☒Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT		
All containers needing preservation have been checked.	☒Yes ☐No ☐N/A	13. PHL2
All containers needing preservation are found to be in compliance with EPA recommendation.	☒Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☒No	Initial when completed SRA / Lot # of added preservative
Samples checked for dechlorination:	☐Yes ☐No ☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☒N/A	15.
Trip Blank Present:	☐Yes ☒No ☐N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carrie Benzo **Date:** 1/28/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

page 2

Project Number: 30139618

Client Name: KETC

										25	26	Item No.
										✓	✓	Matrix Code
												Glass Jar (120 / 250 / 500 / 1L)
												Soil kit (2 SB, 1M, soil jar)
												Chemistry (250 / 500 / 1L)
												Organics (1L)
												Nutrient (250 / 500)
												Phenolics (250 ml)
												TOC (40 ml / 250 ml)
												TOX (250 ml)
												Total Metals
												Dissolved Metals preserved Y N
												O & G (1L)
												TPH (1L)
												VOA (40 ml 30 ml)
												Cyanide (250 ml)
												Sulfide (500 ml)
												Bacteria (120 ml)
												Wipes / swipe/ smear/ filter
										✓	✓	Radchem Nalgene (125 / 250 / 500 / 1L)
												Radchem Nalgene (1/2 gal. / 1 gal.L)
												Cubitainer (500 ml / 4L)
												Ziploc
										✓	✓	Other radons
												Other

CHAIN OF CUSTODY RECORD

v10-0114 REIC use ONLY CLIENT ID MAR071 DATE _____ SHEET ____

REIC

Research Environmental & Industrial Consultants, Inc.

MAIN LABORATORY & CORPORATE HEADQUARTERS:
P.O. Box 286 • 225 Industrial Park Rd, Beaver, WV 25813
800-999-0105 • 304-255-2500 • www.reiclabs.com

MID-OHIO VALLEY Service Center
101 17th Street
Ashland, KY 41101
606-393-5027

SHENANDOAH Service Center
1557 Commerce Rd., Ste 201
Verona, VA 24482
540-248-0183

ROANOKE Service Center
3029-C Peters Creek Rd
Roanoke, VA 24019
540-777-1276

MORGANTOWN Service Center
16 Commerce Drive
Westover, WV 26501
304-241-5861

Client: Marshall University Center for Environmental, Geotechnical and Applied Sciences PO # _____

Contact Person George Carico/Jamie Wolfe Phone 304-696-5456

Address One John Marshall Drive City Huntington State WV Zip 25755

Billing Address (if different) _____

City _____ State _____ Zip _____

Site ID & State Phase II Project ID Drill Cutting/Leachate Analysis Sampler J McGee

SAMPLE LOG & ANALYSIS REQUEST

TURNAROUND TIME

(•) NORMAL

RUSH TURNAROUND*: ( ) 5 DAY ( ) 3 DAY ( ) 2 DAY ( ) 1 DAY

*Rush work needs prior laboratory approval and will incur additional charges

ANALYSIS & METHOD REQUESTED

See Attachment

Field Readings: pH Temp Cond

6.14 - 10.4 - 6,910

7.11 - 12.3 - 4,140

MSC Sampling Fee--- 5 HAS

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	#0	#1	#2	#3	#5	#10	#	#	#
1-Wetzel Co LF	20	3/23/15 @ 1020	Water	Grab	X						X		X
2-Wetzel Co LF WWTP Effluent	23	1010	Water	Grab	X							X	
Trip Blank	1		Water	Grab	X								
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									

ENTER PRESERVATIVE CODE(S):

0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Bisulfate/Methanol
9 Ammonium Chloride
10 AS/AH *
11 _____ *

*(Use blanks for preservatives not listed.)

COMMENTS:

Dissolved Metals are Field Filtered

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: °C ICED? Y___ N___

Containers provided by: [✓] REIC [ ] Client

1		2		3	
Relinquished by (signature)	Date/Time 3-23-15 1020	Relinquished by (signature)	Date/Time	Relinquished by (signature)	Date/Time
Received by (signature) Wade Smith	Date/Time 3-23-15 1020	Received by (signature)	Date/Time	Received by (signature)	Date/Time

REI Consultants, Inc.

FIELD LOG: pH Calibration Records 6-2010.Rev.1

Client Name: Marshall University Site Location: Landfill / Potts

Date: 7/23/15 Analyst: [illegible]

Calibration Location: Field / Laboratory Instrument: Oakton pH Meter

4.0 Buffer Lot #: D085-14
7.0 Buffer Lot #: D115.04
10.0 Buffer Lot #: D112.08

pH (SU) - SM4500-H+B, 18th Edition				
Standard	Initial Reading	Reading After Calibration	Temperature °C	Comments
4.0 Buffer	4.01	4.01	19.8	
7.0 Buffer	6.58	7.00	↓	
10.0 Buffer	9.96	10.01	↓	

Slope: 96.77

Comments:

Calibration at the laboratory requires a pH 7.0 QC Check

All field pH analysis must be followed by a Post Analysis pH Check

Quality Control Samples	Reading	Acceptance Range:
QC Check, 7.0	7.00	True Value ± 0.1 (6.9 - 7.1)
Post Analysis QC Check, 7.0	7.02	

REI Consultants, Inc. P.O. Box 286 Beaver, WV 25813 Phone: 800-999-0105 Fax: 304-255-2572 www.reiclabs.com

WVDEP Drill Cutting / Leachate Analysis List

Aluminum

Antimony

Arsenic

Barium

Beryllium

Boron

Cadmium

Chromium

Hexavalent Chromium

Copper

Lead

Lithium

Mercury

Nickel

Selenium

Silver

Strontium

Vanadium

Zinc

Chloride

Fluoride

Nitrate as Nitrogen

Nitrite as Nitrogen

Sulfate

Total Suspended Solids

Free Cyanide

Benzene

Chlorobenzene

Chlorodibromomethane

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

1,4-Dinitrobenzene

1,4-Naphthoquinone

2,4-Dinitrotoluene

2,6-Dinitrotoluene

4-Nitroquinoline-1-oxide

bis(2-ethylhexyl) phthalate

Butyl benzylphthalate

Di-N-Butyl Phthalate

Di-N-Octylphthalate Diethyl Phthalate

Dimethyl Phthalate

Flouranthene

Nitrobenzene

Pentachloronitrobenzene

Gross Alpha

Gross Beta

Radium 226

Radium 228

Strontium 90

Radon

pH

Total Dissolved Solids

Total Suspended Solids

BOD 5-Day

Ammonia as Nitrogen

Total Kjeldahl Nitrogen

Oil & Grease

Acidity to pH 8.3

Specific Conductance

Alkalinity to pH 4.5

Chemical Oxygen Demand

Dissolved Iron and Iron

Manganese and Dissolved Manganese

CHAIN OF CUSTODY RECORD

v10-0114

REIC use ONLY — CLIENT ID MAR071 DATE ____ SHEET ____

REIC
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ROANOKE Service Center
3029-C Peters Creek Rd
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540-777-1276

MORGANTOWN Service Center
16 Commerce Drive
Westover, WV 26501
304-241-5861

Client: Marshall University Center for Environmental, Geotechnical and Applied Sciences PO # ____

Contact Person George Carico/Jamie Wolfe Phone 304-696-5456

Address One John Marshall Drive City Huntington State WV Zip 25755

Billing Address (if different) ____

City ____ State ____ Zip ____

Site ID & State Wetzel Co Landfill/WWTP Project ID Drill Cutting/Leachate Analysis Sampler J McGee

SAMPLE LOG & ANALYSIS REQUEST

TURNAROUND TIME	RUSH TURNAROUND*
⊙ NORMAL	○ 5 DAY ○ 3 DAY ○ 2 DAY ○ 1 DAY

*Rush work needs prior laboratory approval and will incur additional charges

ANALYSIS & METHOD REQUESTED

- Gross Alpha/Gross Beta
- Radium 226 & 228
- Strontium 90
- Extra Container
- MSC Sampling Fee---$0.00 (5 Hrs)

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	2	2	2	0					
1-Wetzel Co LF	4 P	5/14/15 1012	Water	Grab	X	X	X	X					X
2-Wetzel Co LF WWTP Effluent	4 P	1031	Water	Grab	X	X	X	X					
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									

ENTER PRESERVATIVE CODE(S):

0 None	6 Sodium Hydroxide
1 Hydrochloric Acid	7 Ascorbic Acid
2 Nitric Acid	8 Sodium Bisulfate/Methanol
3 Sulfuric Acid	9 Ammonium Chloride
4 Sodium Thiosulfate	10 ____*
5 Sodium Hydroxide/ Sodium Arsenite	11 ____*

(Use blanks for preservatives not listed.)

COMMENTS:

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: 1.1 °C ICED? Y ___ N ___

Containers provided by: [✓] REIC [ ] Client

1 Relinquished by (signature)	5-14-15 Date/Time	2 Relinquished by (signature)	5-14-15 Date/Time 1605	3 Relinquished by (signature)	Date/Time
Received by (signature)	5-14-15 Date/Time 2100	Received by (signature)	5/14/15 Date/Time 1615	Received by (signature)	Date/Time

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 4415 | PAGE: 1 | OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA
COMPANY: PACE ANALYTICAL SERVI
ADDRESS: 1638 ROSEYTOWN ROAD
CITY, STATE, ZIP: GREENSBURG, PA 15601
PHONE: (724) 850-5600
FAX:
ACCOUNT #: 050719EVF1
EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:
State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. Please email results to kberry@reiclabs.com Thank you

ANALYTICAL PARAMETERS

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	GROSS_ALPHA_SUB (EPA 900.0)	GROSS_BETA_SUB (EPA 900.0)	RADIUM_226_SUB (EPA 903.1)	RADIUM_228_SUB (EPA 904.0)	STRONTIUM_90_SUB (EPA 905.0)
						*	2	2	2	2	2
1	1505H96-01A	1-WETZEL CO. LF	.	Liquid	5/14/2015 10:25:00 AM	1	√	√	√	√	√
2	1505H96-02A	2-WETZEL CO LF WWTP EFFLUENT	.	Liquid	5/14/2015 10:35:00 AM	1	√	√	√	√	√

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride
11 CR6 Buffer Solution
COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
MAHolley	5/18/15	4:00PM	UPS	5/18/15	4:00PM
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples _____ °C Attempt to Cool ? _____
Comments: _____

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

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Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Saturday, April 11, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/LEACHATE ANALYSIS

Work Order #: 1503Q84

Dear GEORGE CARICO:

REI Consultants, Inc. received 3 sample(s) on 3/23/2015 for the analyses presented in the following report.

Sincerely,

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1503Q84

Date Reported: 4/11/2015

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project: DRILL CUTTING/LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1503Q84

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/23/2015 10:20:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/23/2015
Lab ID:	1503Q84-01A	**Matrix:**	Liquid
Client Sample ID:	1-WETZEL CO LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	ND	0.005	0.100	NA		mg/L	3/26/2015 11:12 PM	PA/VA
Antimony	ND	0.020	0.200	NA		mg/L	3/26/2015 11:12 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	3/26/2015 11:12 PM	PA/VA
Barium	1.04	0.002	0.100	NA		mg/L	3/26/2015 11:12 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	3/26/2015 11:12 PM	PA/VA
Boron	2.16	0.035	0.100	NA		mg/L	3/30/2015 9:38 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	3/26/2015 11:12 PM	PA/VA
Chromium	0.006	0.005	0.100	NA	J	mg/L	3/26/2015 11:12 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	3/26/2015 11:12 PM	PA/VA
Iron	4.28	0.010	0.100	NA		mg/L	3/26/2015 11:12 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	3/26/2015 11:12 PM	PA/VA
Lithium	0.041	0.020	0.100	NA	J	mg/L	3/25/2015 2:53 PM	
Manganese	2.52	0.002	0.100	NA		mg/L	3/26/2015 11:12 PM	PA/VA
Nickel	0.025	0.005	0.100	NA	J	mg/L	3/26/2015 11:12 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	3/26/2015 11:12 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	3/30/2015 9:38 PM	PA/VA
Strontium	3.60	0.001	0.010	NA		mg/L	3/25/2015 2:53 PM	PA
Vanadium	ND	0.005	0.100	NA		mg/L	3/26/2015 11:12 PM	PA/VA
Zinc	0.010	0.003	0.050	NA	J	mg/L	3/26/2015 11:12 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	3/25/2015 10:11 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0109	NA		mg/L	3/27/2015 9:25 PM	
1,4-Napthoquinone	ND	NA	0.0109	NA		mg/L	3/30/2015 7:39 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0546	NA		mg/L	3/30/2015 7:39 PM	
Pentachloronitrobenzene	ND	NA	0.0109	NA		mg/L	3/30/2015 7:39 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0055	0.0109	NA		mg/L	3/27/2015 9:25 PM	PA/VA
Butyl benzyl phthalate	ND	0.0055	0.0109	NA		mg/L	3/27/2015 9:25 PM	PA/VA
Di-n-butyl phthalate	ND	0.0055	0.0109	NA		mg/L	3/27/2015 9:25 PM	PA/VA
Diethyl phthalate	ND	0.0022	0.0109	NA		mg/L	3/27/2015 9:25 PM	PA/VA
Dimethyl phthalate	ND	0.0022	0.0109	NA		mg/L	3/27/2015 9:25 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0022	0.0109	NA		mg/L	3/27/2015 9:25 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0022	0.0109	NA		mg/L	3/27/2015 9:25 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503Q84

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/23/2015 10:20:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/23/2015
Lab ID:	1503Q84-01A	**Matrix:**	Liquid
Client Sample ID:	1-WETZEL CO LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0055	0.0109	NA		mg/L	3/27/2015 9:25 PM	PA/VA
Fluoranthene	ND	0.0022	0.0109	NA		mg/L	3/27/2015 9:25 PM	PA/VA
Nitrobenzene	ND	0.0022	0.0109	NA		mg/L	3/27/2015 9:25 PM	PA/VA
Surr: 2-Fluorophenol	47.5	NA	32.9-110	NA		%REC	3/27/2015 9:25 PM	
Surr: Phenol-d5	34.3	NA	25.8-110	NA		%REC	3/27/2015 9:25 PM	
Surr: 2,4,6-Tribromophenol	99.6	NA	63.8-110	NA		%REC	3/27/2015 9:25 PM	
Surr: Nitrobenzene-d5	114	NA	61.8-110	NA	S	%REC	3/27/2015 9:25 PM	
Surr: 2-Fluorobiphenyl	93.2	NA	58.6-110	NA		%REC	3/27/2015 9:25 PM	
Surr: 4-Terphenyl-d14	87.7	NA	55.1-110	NA		%REC	3/27/2015 9:25 PM	

VOLATILE ORGANIC COMPOUNDS-8260 **Method: SW8260B (1996)** **Analyst: JM**

Benzene	ND	5.00	10.0	NA		µg/L	4/4/2015 4:12 AM	PA/VA
Chlorobenzene	ND	5.00	10.0	NA		µg/L	4/4/2015 4:12 AM	PA/VA
Dibromochloromethane	ND	5.00	10.0	NA		µg/L	4/4/2015 4:12 AM	PA/VA
1,2-Dichlorobenzene	ND	5.00	10.0	NA		µg/L	4/4/2015 4:12 AM	PA/VA
1,3-Dichlorobenzene	ND	5.00	10.0	NA		µg/L	4/4/2015 4:12 AM	PA/VA
1,4-Dichlorobenzene	ND	5.00	10.0	NA		µg/L	4/4/2015 4:12 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	106	NA	68.7-129	NA		%REC	4/4/2015 4:12 AM	
Surr: 4-Bromofluorobenzene	103	NA	71.8-127	NA		%REC	4/4/2015 4:12 AM	
Surr: Dibromofluoromethane	107	NA	74.3-124	NA		%REC	4/4/2015 4:12 AM	
Surr: Toluene-d8	86.5	NA	71.4-129	NA		%REC	4/4/2015 4:12 AM	

Notes:

Elevated PQLs are due to matrix interference. Sample foamed during analysis.

BOD, 5 Day, 20°C **Method: SM5210 B-2001** **Analyst: CB**

Biochemical Oxygen Demand	38	2	5	NA		mg/L	3/24/2015 3:40 PM	PA/VA

Notes:

The dilution water blank for the reported BOD fell outside REIC control limits.

Chemical Oxygen Demand **Method: EPA 410.4, Rev. 2 (1993)** **Analyst: SF**

Chemical Oxygen Demand	180	20	50	NA		mg/L	3/24/2015 8:25 AM	PA/VA

HEXAVALENT CHROMIUM BY IC **Method: EPA 218.6, Rev. 3.3 (1994)** **Analyst: CF**

Chromium (VI)	ND	0.0003	0.0010	NA		mg/L	3/24/2015 4:11 PM	

ANIONS by ION CHROMATOGRAPHY **Method: EPA 300.0, Rev.2.1 (1993)** **Analyst: CF**

Chloride	1,840	5.00	50.0	NA		mg/L	3/24/2015 9:57 AM	

REI Consultants, Inc. - Analytical Report

WO#: 1503Q84

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/23/2015 10:20:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/23/2015
Lab ID:	1503Q84-01A	**Matrix:**	Liquid
Client Sample ID:	1-WETZEL CO LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Fluoride	1.35	0.25	1.00	NA		mg/L	3/24/2015 9:57 AM	
Sulfate	78.0	5.00	25.0	NA		mg/L	3/24/2015 9:57 AM	

Notes:

Matrix spike recoveries were not within method criteria due to matrix interference. LCS recoveries indicate method was in control.

ANIONS by ION CHROMATOGRAPHY-48 HOUR — **Method: EPA 300.0, Rev.2.1 (1993)** — **Analyst: CF**

Nitrogen, Nitrate	0.06	0.02	0.10	NA	J	mg/L	3/24/2015 9:57 AM	
Nitrogen, Nitrite	2.50	2.50	25.0	NA	J	mg/L	3/24/2015 9:57 AM	

Notes:

Elevated PQLs are due to matrix interference.

Matrix spike recoveries were not within method criteria due to matrix interference. LCS recoveries indicate method was in control.

TOTAL KJELDAHL NITROGEN (TKN) — **Method: EPA 351.2, Rev. 2.0 (1993)** — **Analyst: JH**

Nitrogen, Kjeldahl, Total	80.3	4.00	20.0	NA		mg/L	3/27/2015 1:49 PM	PA/VA

OIL and GREASE — **Method: EPA 1664 Rev. A** — **Analyst: CC**

Oil & Grease	2.0	2.0	5.0	NA	J	mg/L	3/26/2015 11:45 AM	PA/VA

CYANIDE, Free — **Method: SM4500-CN I-1997** — **Analyst: JH**

Cyanide, Free	ND	0.005	0.020	NA		mg/L	3/30/2015 9:31 AM	

AMMONIA NITROGEN — **Method: EPA 350.1, Rev.2. (1993)** — **Analyst: JH**

Nitrogen, Ammonia (As N)	87.1	2.08	5.20	NA		mg/L	3/27/2015 10:12 AM	PA/VA

CONDUCTIVITY — **Method: SM2510 B - 1997** — **Analyst: KY**

Specific Conductivity	6,410	NA	NA	NA		µmhos/cm	3/24/2015 12:10 PM	PA/VA

TOTAL DISSOLVED SOLIDS — **Method: SM2540 C-1997** — **Analyst: KY**

Total Dissolved Solids	3,570	5	10	NA		mg/L	3/24/2015 3:17 PM	PA/VA

TOTAL SUSPENDED SOLIDS — **Method: SM2540 D-1997** — **Analyst: KY**

Total Suspended Solids	10	2.0	10	NA		mg/L	3/24/2015 3:17 PM	PA/VA

ACIDITY — **Method: SM2310 B-1997** — **Analyst: DSD**

Acidity, Total	130	1.0	10	NA		mg/L	3/24/2015 2:44 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503Q84

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/23/2015 10:20:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/23/2015
Lab ID:	1503Q84-01A	**Matrix:**	Liquid
Client Sample ID:	1-WETZEL CO LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	983	2.0	20.0	NA		mg/L	3/24/2015 2:44 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	7.57	NA	NA	NA		SU	3/24/2015 2:44 PM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1503Q84

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/23/2015 10:20:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/23/2015
Lab ID:	1503Q84-01B	**Matrix:**	Liquid
Client Sample ID:	1-WETZEL CO LF	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	0.298	0.010	0.100	NA		mg/L	3/26/2015 11:15 PM	PA/VA
Manganese	2.89	0.002	0.100	NA		mg/L	3/26/2015 11:15 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503Q84

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/23/2015 10:50:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/23/2015
Lab ID:	1503Q84-02A	**Matrix:**	Liquid
Client Sample ID:	2-WETZEL CO LF WWTP EFFLUENT	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.206	0.005	0.100	NA		mg/L	3/26/2015 11:18 PM	PA/VA
Antimony	ND	0.020	0.200	NA		mg/L	3/26/2015 11:18 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	3/26/2015 11:18 PM	PA/VA
Barium	0.598	0.002	0.100	NA		mg/L	3/26/2015 11:18 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	3/26/2015 11:18 PM	PA/VA
Boron	1.07	0.035	0.100	NA		mg/L	3/30/2015 9:41 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	3/26/2015 11:18 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	3/26/2015 11:18 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	3/26/2015 11:18 PM	PA/VA
Iron	1.32	0.010	0.100	NA		mg/L	3/26/2015 11:18 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	3/26/2015 11:18 PM	PA/VA
Lithium	0.033	0.020	0.100	NA	J	mg/L	3/25/2015 2:56 PM	
Manganese	1.26	0.002	0.100	NA		mg/L	3/26/2015 11:18 PM	PA/VA
Nickel	0.015	0.005	0.100	NA	J	mg/L	3/26/2015 11:18 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	3/26/2015 11:18 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	3/30/2015 9:41 PM	PA/VA
Strontium	2.65	0.001	0.010	NA		mg/L	3/25/2015 2:56 PM	PA
Vanadium	ND	0.005	0.100	NA		mg/L	3/26/2015 11:18 PM	PA/VA
Zinc	0.015	0.003	0.050	NA	J	mg/L	3/26/2015 11:18 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	3/25/2015 10:13 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0104	NA		mg/L	3/27/2015 9:46 PM	
1,4-Napthoquinone	ND	NA	0.0104	NA		mg/L	3/30/2015 8:06 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0520	NA		mg/L	3/30/2015 8:06 PM	
Pentachloronitrobenzene	ND	NA	0.0104	NA		mg/L	3/30/2015 8:06 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0052	0.0104	NA		mg/L	3/27/2015 9:46 PM	PA/VA
Butyl benzyl phthalate	ND	0.0052	0.0104	NA		mg/L	3/27/2015 9:46 PM	PA/VA
Di-n-butyl phthalate	ND	0.0052	0.0104	NA		mg/L	3/27/2015 9:46 PM	PA/VA
Diethyl phthalate	ND	0.0021	0.0104	NA		mg/L	3/27/2015 9:46 PM	PA/VA
Dimethyl phthalate	ND	0.0021	0.0104	NA		mg/L	3/27/2015 9:46 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0021	0.0104	NA		mg/L	3/27/2015 9:46 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0021	0.0104	NA		mg/L	3/27/2015 9:46 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503Q84

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/23/2015 10:50:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/23/2015
Lab ID:	1503Q84-02A	**Matrix:**	Liquid
Client Sample ID:	2-WETZEL CO LF WWTP EFFLUENT	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0052	0.0104	NA		mg/L	3/27/2015 9:46 PM	PA/VA
Fluoranthene	ND	0.0021	0.0104	NA		mg/L	3/27/2015 9:46 PM	PA/VA
Nitrobenzene	ND	0.0021	0.0104	NA		mg/L	3/27/2015 9:46 PM	PA/VA
Surr: 2-Fluorophenol	39.1	NA	32.9-110	NA		%REC	3/27/2015 9:46 PM	
Surr: Phenol-d5	32.1	NA	25.8-110	NA		%REC	3/27/2015 9:46 PM	
Surr: 2,4,6-Tribromophenol	92.6	NA	63.8-110	NA		%REC	3/27/2015 9:46 PM	
Surr: Nitrobenzene-d5	107	NA	61.8-110	NA		%REC	3/27/2015 9:46 PM	
Surr: 2-Fluorobiphenyl	88.2	NA	58.6-110	NA		%REC	3/27/2015 9:46 PM	
Surr: 4-Terphenyl-d14	81.9	NA	55.1-110	NA		%REC	3/27/2015 9:46 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	5.00	10.0	NA		µg/L	4/4/2015 4:46 AM	PA/VA
Chlorobenzene	ND	5.00	10.0	NA		µg/L	4/4/2015 4:46 AM	PA/VA
Dibromochloromethane	ND	5.00	10.0	NA		µg/L	4/4/2015 4:46 AM	PA/VA
1,2-Dichlorobenzene	ND	5.00	10.0	NA		µg/L	4/4/2015 4:46 AM	PA/VA
1,3-Dichlorobenzene	ND	5.00	10.0	NA		µg/L	4/4/2015 4:46 AM	PA/VA
1,4-Dichlorobenzene	ND	5.00	10.0	NA		µg/L	4/4/2015 4:46 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	98.9	NA	68.7-129	NA		%REC	4/4/2015 4:46 AM	
Surr: 4-Bromofluorobenzene	101	NA	71.8-127	NA		%REC	4/4/2015 4:46 AM	
Surr: Dibromofluoromethane	106	NA	74.3-124	NA		%REC	4/4/2015 4:46 AM	
Surr: Toluene-d8	87.5	NA	71.4-129	NA		%REC	4/4/2015 4:46 AM	

Notes:

Elevated PQLs are due to matrix interference. Sample foamed during analysis.

BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: CB**	
Biochemical Oxygen Demand	33	2	5	NA		mg/L	3/24/2015 3:40 PM	PA/VA

Notes:

The dilution water blank for the reported BOD fell outside REIC control limits.

Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	93	4	10	NA		mg/L	3/24/2015 8:25 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	0.0013	0.0003	0.0010	NA		mg/L	3/24/2015 4:11 PM	
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	825	5.00	50.0	NA		mg/L	3/24/2015 10:15 AM	

REI Consultants, Inc. - Analytical Report

WO#: 1503Q84

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/23/2015 10:50:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/23/2015
Lab ID:	1503Q84-02A	**Matrix:**	Liquid
Client Sample ID:	2-WETZEL CO LF WWTP EFFLUENT	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Fluoride	0.82	0.05	0.20	NA		mg/L	3/24/2015 10:15 AM	
Sulfate	77.2	1.00	5.00	NA		mg/L	3/24/2015 10:15 AM	
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	16.5	1.00	5.00	NA		mg/L	3/24/2015 10:15 AM	
Nitrogen, Nitrite	3.80	0.10	1.00	NA		mg/L	3/24/2015 10:15 AM	
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	20.8	0.50	2.50	NA		mg/L	3/27/2015 1:15 PM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	3.1	2.0	5.0	NA	J	mg/L	3/26/2015 11:45 AM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	0.018	0.005	0.020	NA	J	mg/L	3/30/2015 9:32 AM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	18.9	0.64	1.60	NA		mg/L	3/27/2015 9:40 AM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	3,860	NA	NA	NA		µmhos/cm	3/24/2015 12:10 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	2,140	5	10	NA		mg/L	3/24/2015 3:17 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	13.0	2.0	10	NA		mg/L	3/24/2015 3:17 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	36.2	1.0	10	NA		mg/L	3/24/2015 2:43 PM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	450	1.0	10	NA		mg/L	3/24/2015 2:43 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503Q84

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/23/2015 10:50:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/23/2015
Lab ID:	1503Q84-02A	**Matrix:**	Liquid
Client Sample ID:	2-WETZEL CO LF WWTP EFFLUENT	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	7.63	NA	NA	NA		SU	3/24/2015 2:43 PM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1503Q84

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/23/2015 10:50:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/23/2015
Lab ID:	1503Q84-02B	**Matrix:**	Liquid
Client Sample ID:	2-WETZEL CO LF WWTP EFFLUENT	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	0.074	0.010	0.100	NA	J	mg/L	3/26/2015 11:22 PM	PA/VA
Manganese	1.18	0.002	0.100	NA		mg/L	3/26/2015 11:22 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503Q84

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/23/2015 12:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	3/23/2015
Lab ID:	1503Q84-03A	**Matrix:**	Trip Blank
Client Sample ID:	TRIP BLANK	**Site ID:**	PHASE II

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	4/4/2015 5:19 AM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	4/4/2015 5:19 AM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	4/4/2015 5:19 AM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	4/4/2015 5:19 AM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	4/4/2015 5:19 AM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	4/4/2015 5:19 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	104	NA	68.7-129	NA		%REC	4/4/2015 5:19 AM	
Surr: 4-Bromofluorobenzene	103	NA	71.8-127	NA		%REC	4/4/2015 5:19 AM	
Surr: Dibromofluoromethane	104	NA	74.3-124	NA		%REC	4/4/2015 5:19 AM	
Surr: Toluene-d8	91.0	NA	71.4-129	NA		%REC	4/4/2015 5:19 AM	

REI Consultants, Inc.
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Improving the environment, one client at a time...

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GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
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HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/LEACHATE ANALYSIS

Work Order #: 1503Q86

Dear GEORGE CARICO:

REI Consultants, Inc. received 2 sample(s) on 3/23/2015 for the analyses presented in the following report.

Sincerely,

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1503Q86

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project: DRILL CUTTING/LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387
1503Q86
RADON has been Sub Contracted.
1503Q86
RADON has been Sub Contracted.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

March 30, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1503Q86
Pace Project No.: 30143786

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on March 25, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1503Q86
Pace Project No.: 30143786

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1503Q86
Pace Project No.: 30143786

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30143786001	**1503Q86-01A**	Water	03/23/15 10:20	03/25/15 10:15
30143786002	**1503Q86-02A**	Water	03/23/15 10:50	03/25/15 10:15

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1503Q86
Pace Project No.: 30143786

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30143786001	**1503Q86-01A**	SM 7500Rn-B	FCC	1
30143786002	**1503Q86-02A**	SM 7500Rn-B	FCC	1

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503Q86
Pace Project No.: 30143786

Method: **SM 7500Rn-B**
Description: 7500RnB Radon
Client: REI Consultants, Inc.
Date: March 30, 2015

General Information:
2 samples were analyzed for SM 7500Rn-B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1503Q86
Pace Project No.: 30143786

Sample: 1503Q86-01A **Lab ID: 30143786001** Collected: 03/23/15 10:20 Received: 03/25/15 10:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**33.3 ± 34.9 (57.3)** **C:NA T:NA**	pCi/L	03/26/15 13:25	10043-92-2	

Sample: 1503Q86-02A **Lab ID: 30143786002** Collected: 03/23/15 10:50 Received: 03/25/15 10:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**-25.4 ± 31.9 (57.5)** **C:NA T:NA**	pCi/L	03/26/15 14:17	10043-92-2	

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503Q86
Pace Project No.: 30143786

QC Batch: RADC/23832 | Analysis Method: SM 7500Rn-B
QC Batch Method: SM 7500Rn-B | Analysis Description: 7500Rn B Radon
Associated Lab Samples: 30143786001, 30143786002

METHOD BLANK: 869570 | Matrix: Water
Associated Lab Samples: 30143786001, 30143786002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radon	1.2 ± 18.7 (32.5) C:NA T:NA	pCi/L	03/26/15 09:03	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1503Q86
Pace Project No.: 30143786

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3470 | PAGE: 1 | OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: pace_Pa COMPANY: PACE ANALYTICAL SERVIC
ADDRESS: 1638 ROSEYTOWN ROAD
CITY, STATE, ZIP: GREENSBURG, PA 15601
PHONE: (724) 850-5600 FAX:
ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:
State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. All results to Kathy Berry at kberry@reiclabs.com.

ANALYTICAL PARAMETERS

30143786

ITEM #	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	RADON (913.0)														
						*	0														
1	1503Q86-01A	1-WETZEL CO LF	.	Liquid	3/23/2015 10:20:00 AM	3	√														001
2	1503Q86-02A	2-WETZEL CO LF EETP EFFLUENT	.	Liquid	3/23/2015 10:50:00 AM	3	√														002

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[illegible]	3/24/15	16:00	UPS	3/24/15	16:00
			[illegible]	3/25/15	1015

TAT: Standard ☐ RUSH Next BD ☑ 2nd BD ☐ 3rd BD ☐
Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples NA °C Attempt to Cool ? _____
Comments: _____

Sample Condition Upon Receipt

Pace Analytical

Client Name: REIC

Project # 30143786

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1Z 260 713 13 7639 6178

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no **Biological Tissue is Frozen:** Yes No

Packing Material: Bubble Wrap ☒ Bubble Bags ____ None ____ Other _____

Thermometer Used NA **Type of Ice:** Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.: NA °C **Correction Factor:** NA °C **Final Temp:** NA °C

Date and initials of person examining contents: AM 3/25/15

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☒No	☐N/A	4.
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☒Yes	☐No	☐N/A	6.
Rush Turn Around Time Requested:	☒Yes	☐No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☒No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11.
Sample Labels match COC:	☒Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT				
All containers needing preservation have been checked.	☐Yes	☐No	☒N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☒N/A	
exceptions: VOA, coliform, TOC, O&G, Phenols	☒Yes	☐No		Initial when completed AM / Lot # of added preservative
Samples checked for dechlorination:	☐Yes	☐No	☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☒N/A	15.
Trip Blank Present:	☐Yes	☐No	☒N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carmen Serna **Date:** 3/25/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30143786

Client Name: REIC

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other 12 ADON	Other
001	WT																						3	
002	WT																						3	

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Friday, May 29, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/LEACHATE ANALYSIS

Work Order #: 1505H96

Dear GEORGE CARICO:

REI Consultants, Inc. received 2 sample(s) on 5/14/2015 for the analyses presented in the following report.

Sincerely,

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1505H96

Date Reported: 5/29/2015

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project: DRILL CUTTING/LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1505H96

Date Reported: 5/29/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	5/14/2015 10:25:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	5/14/2015
Lab ID:	1505H96-01A	**Matrix:**	Liquid
Client Sample ID:	1-WETZEL CO. LF	**Site ID:**	WETZEL CO. LANDFILL/WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA		pci/L		
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA		pci/L		
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA		pci/L		
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA		pci/L		
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1505H96

Date Reported: 5/29/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	5/14/2015 10:35:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	5/14/2015
Lab ID:	1505H96-02A	**Matrix:**	Liquid
Client Sample ID:	2-WETZEL CO LF WWTP EFFLUENT	**Site ID:**	WETZEL CO. LANDFILL/WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA		pci/L		
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA		pci/L		
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA		pci/L		
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA		pci/L		
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304)255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

Sample Receipt Checklist

Client Name:	**MAR071**			Work Order Number:	**1505H96**
RCPNo:	**1**	Date and Time Received:	**5/14/2015 6:15:00 PM**	Received by:	**Whitney Williams**
Completed By:	**Mary Ann Holley**	Reviewed By:			
Completed Date:	**5/15/2015 8:43:48 AM**	Reviewed Date:			

Carrier Name: REIC

1.	Chain of custody present?	Yes [x]	No [ ]	
2.	Chain of custody signed when relinquished and received?	Yes [x]	No [ ]	
3.	Are matrices correctly identified on Chain of custody?	Yes [x]	No [ ]	
4.	Is it clear what analyses were requested?	Yes [x]	No [ ]	
5.	Custody seals intact?	Yes [ ]	No [ ]	Not Present [x]
6.	Samples in proper container type and preservative?	Yes [x]	No [ ]	
7.	Were correct preservatives noted on COC?	Yes [x]	No [ ]	NA [ ]
8.	Sample containers intact?	Yes [x]	No [ ]	
9.	Sufficient sample volume for indicated test?	Yes [x]	No [ ]	
10.	Were container labels complete?	Yes [x]	No [ ]	
11.	All samples received within holding time?	Yes [x]	No [ ]	
12.	Was an attempt made to cool the samples?	Yes [x]	No [ ]	NA [ ]
13.	Sample Temp. taken and recorded upon receipt?	Yes [x]	No [ ]	To 1 ºC
14.	Water - Were bubbles absent in VOC vials?	Yes [ ]	No [ ]	No Vials [x]
15.	Are Samples considered acceptable?	Yes [x]	No [ ]	
16.	COC filled out properly?	Yes [x]	No [ ]	

Client Notification/Response

Client Name: **MAR071** Work Order Number: **1505H96**

Comment:

Client Contacted: Yes [ ] No [ ] NA [x] Person Contacted:

Contact Mode: Phone [ ] Fax: [ ] Email: [ ] In Person: [ ]

Date Contacted: Contacted By:

Regarding:

Client Instructions:

Corrective Action:

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

May 28, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1505H96
Pace Project No.: 30148621

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on May 20, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1505H96
Pace Project No.: 30148621

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1505H96
Pace Project No.: 30148621

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30148621001	**1505H96-01A**	Water	05/14/15 10:25	05/20/15 09:40
30148621002	**1505H96-02A**	Water	05/14/15 10:35	05/20/15 09:40

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1505H96
Pace Project No.: 30148621

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30148621001	**1505H96-01A**	EPA 900.0	FCC	2
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1
30148621002	**1505H96-02A**	EPA 900.0	FCC	2
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1505H96
Pace Project No.: 30148621

Method: **EPA 900.0**
Description: 900.0 Gross Alpha/Beta
Client: REI Consultants, Inc.
Date: May 28, 2015

General Information:
2 samples were analyzed for EPA 900.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1505H96
Pace Project No.: 30148621

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: REI Consultants, Inc.
Date: May 28, 2015

General Information:
2 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1505H96
Pace Project No.: 30148621

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: REI Consultants, Inc.
Date: May 28, 2015

General Information:
2 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1505H96
Pace Project No.: 30148621

Method: **ASTM D5811-95**
Description: ASTM D5811 Sr 89/90 Eichrom
Client: REI Consultants, Inc.
Date: May 28, 2015

General Information:
2 samples were analyzed for ASTM D5811-95. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: RADC/24528

N2: The lab does not hold TNI accreditation for this parameter.

- 1505H96-01A (Lab ID: 30148621001)
  - Strontium-90
- 1505H96-02A (Lab ID: 30148621002)
  - Strontium-90
- BLANK (Lab ID: 896233)
  - Strontium-90

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, Inc.
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Greensburg, PA 15601
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1505H96
Pace Project No.: 30148621

Sample: 1505H96-01A **Lab ID: 30148621001** Collected: 05/14/15 10:25 Received: 05/20/15 09:40 Matrix: Water
PWS: Site ID: Sample Type:

Comments: •
• Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**18.4 ± 15.9 (27.3) C:NA T:NA**	pCi/L	05/27/15 19:11	12587-46-1	
Gross Beta	EPA 900.0	**56.2 ± 13.7 (13.6) C:NA T:NA**	pCi/L	05/27/15 19:11	12587-47-2	
Radium-226	EPA 903.1	**1.18 ± 1.01 (1.22) C:NA T:85%**	pCi/L	05/27/15 14:51	13982-63-3	
Radium-228	EPA 904.0	**1.45 ± 0.529 (0.771) C:79% T:78%**	pCi/L	05/26/15 16:57	15262-20-1	
Strontium-90	ASTM D5811-95	**1.09 ± 1.08 (1.94) C:99% T:NA**	pCi/L	05/22/15 18:37	10098-97-2	N2

Sample: 1505H96-02A **Lab ID: 30148621002** Collected: 05/14/15 10:35 Received: 05/20/15 09:40 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, six mls of nitric acid were added to 1 of 3 of the sample containers to meet the sample preservation requirement of pH <2 for radiochemistry analysis.
• Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**9.03 ± 5.85 (9.21) C:NA T:NA**	pCi/L	05/27/15 19:11	12587-46-1	
Gross Beta	EPA 900.0	**28.3 ± 6.61 (5.75) C:NA T:NA**	pCi/L	05/27/15 19:11	12587-47-2	
Radium-226	EPA 903.1	**0.582 ± 0.809 (1.16) C:NA T:81%**	pCi/L	05/27/15 14:13	13982-63-3	
Radium-228	EPA 904.0	**0.503 ± 0.401 (0.791) C:83% T:70%**	pCi/L	05/26/15 16:57	15262-20-1	
Strontium-90	ASTM D5811-95	**5.78 ± 1.49 (1.78) C:97% T:NA**	pCi/L	05/22/15 18:38	10098-97-2	N2

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1505H96
Pace Project No.: 30148621

QC Batch: RADC/24521 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30148621001, 30148621002

METHOD BLANK: 896222 | Matrix: Water
Associated Lab Samples: 30148621001, 30148621002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.056 ± 0.512 (0.939) C:NA T:82%	pCi/L	05/27/15 14:13	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1505H96
Pace Project No.: 30148621

QC Batch: RADC/24579 | Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 | Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30148621001, 30148621002

METHOD BLANK: 898455 | Matrix: Water
Associated Lab Samples: 30148621001, 30148621002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.019 ± 0.634 (1.72) C:NA T:NA	pCi/L	05/28/15 06:18	
Gross Beta	-0.388 ± 0.676 (1.82) C:NA T:NA	pCi/L	05/28/15 06:18	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1505H96
Pace Project No.: 30148621

QC Batch: RADC/24524 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30148621001, 30148621002

METHOD BLANK: 896225 | Matrix: Water
Associated Lab Samples: 30148621001, 30148621002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.389 ± 0.344 (0.697) C:89% T:87%	pCi/L	05/26/15 17:03	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1505H96
Pace Project No.: 30148621

QC Batch: RADC/24528 | Analysis Method: ASTM D5811-95
QC Batch Method: ASTM D5811-95 | Analysis Description: ASTM D5811 Sr 89/90 Eichrom
Associated Lab Samples: 30148621001, 30148621002

METHOD BLANK: 896233 | Matrix: Water
Associated Lab Samples: 30148621001, 30148621002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Strontium-90	0.131 ± 0.359 (0.791) C:86% T:NA	pCi/L	05/23/15 13:05	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1505H96
Pace Project No.: 30148621

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

N2 The lab does not hold TNI accreditation for this parameter.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 4415	PAGE: 1	OF: 1

ADDRESS

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA COMPANY: PACE ANALYTICAL SERVI

ADDRESS: 1638 ROSEYTOWN ROAD

CITY, STATE, ZIP: GREENSBURG, PA 15601

PHONE: (724) 850-5600 FAX:

ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:

State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. Please email results to kberry@reiclabs.com Thank you

ANALYTICAL PARAMETERS

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	GROSS_ALPHA_SUB (EPA 900.0)	GROSS_BETA_SUB (EPA 900.0)	RADIUM_226_SUB (EPA 903.1)	RADIUM_228_SUB (EPA 904.0)	STRONTIUM_90_SUB (EPA 905.0)	
						*	2	2	2	2	2	
1	1505H96-01A	1-WETZEL CO. LF	.	Liquid	5/14/2015 10:25:00 AM	1	√	√	√	√	√	001
2	1505H96-02A	2-WETZEL CO LF WWTP EFFLUENT	.	Liquid	5/14/2015 10:35:00 AM	1	√	√	√	√	√	002

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride
11 CR6 Buffer Solution

COMMENTS:

30148621

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
MHolley	5/18/15	4:00PM	UPS	5/18/15	4:00PM
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
				5/20/15	0940
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ **RUSH** Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples NA °C Attempt to Cool ? _____

Comments: _____

Sample Condition Upon Receipt

Pace Analytical

Client Name: REIC

Project # 30148621

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1Z 26X713 03 7779 3112

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no **Biological Tissue is Frozen:** Yes No

Packing Material: Bubble Wrap ✓ Bubble Bags ____ None ____ Other _____

Thermometer Used NA **Type of Ice:** Wet Blue (None) ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.: NA °C **Correction Factor:** NA °C **Final Temp:** NA °C

Temp should be above freezing to 6°C

Date and initials of person examining contents: Am 5/20/15

Comments:

				Comments
Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☒No	☐N/A	4.
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes	☒No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☒No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11.
Sample Labels match COC:	☒Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT				
All containers needing preservation have been checked.	☒Yes	☐No	☐N/A	13. added 6ml HNO_3 to all bottles in COI + 1 of 3 in 002 pH<2 Am 5/20/15 1745
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☒No	☐N/A	
exceptions: VOA, coliform, TOC, O&G, Phenols	☐Yes	☒No		Initial when completed Am / Lot # of added preservative DU5-0433
Samples checked for dechlorination:	☐Yes	☐No	☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☒N/A	15.
Trip Blank Present:	☐Yes	☐No	☒N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [signature] **Date:** 5/21/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30148621

Client Name: REIC

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other	Other
001	WT																		3					
002	WT																		3					

CHAIN OF CUSTODY RECORD

v10-0114

REIC use ONLY — CLIENT ID MAR071 DATE ____ SHEET ____

REIC
Research Environmental & Industrial Consultants, Inc.
MAIN LABORATORY & CORPORATE HEADQUARTERS:
P.O. Box 286 • 225 Industrial Park Rd, Beaver, WV 25813
800-999-0105 • 304-255-2500 • www.reiclabs.com

MID-OHIO VALLEY Service Center
101 17th Street
Ashland, KY 41101
606-393-5027

SHENANDOAH Service Center
1557 Commerce Rd., Ste 201
Verona, VA 24482
540-248-0183

ROANOKE Service Center
3029-C Peters Creek Rd
Roanoke, VA 24019
540-777-1276

MORGANTOWN Service Center
16 Commerce Drive
Westover, WV 26501
304-241-5861

Client: Marshall University Center for Environmental, Geotechnical and Applied Sciences PO # ____

Contact Person George Carico/Jamie Wolfe Phone 304-696-5456

Address One John Marshall Drive City Huntington State WV Zip 25755

Billing Address (if different) ____

City ____ State ____ Zip ____

Site ID & State Northwestern Landfill/Parkersburg WWTP Project ID Drill Cutting/Leachate Analysis Sampler J McGee

SAMPLE LOG & ANALYSIS REQUEST

TURNAROUND TIME: (•) NORMAL — RUSH TURNAROUND*: ( ) 5 DAY ( ) 3 DAY ( ) 2 DAY ( ) 1 DAY

*Rush work needs prior laboratory approval and will incur additional charges

ANALYSIS & METHOD REQUESTED: See Attachment

Field Readings: pH 7.44, Temp 17.7, Cond 10,050; 6.28, 15.7, 1,045

MSC Sampling Fee--- 6 HRS

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	*0	*1	*2	*3	*5	*10	*	*	*
1-Northwestern LF	20	12/15/14 @ 09:00	Water	Grab	X				X				X
2-Parkersburg WWTP Effluent	23	10:00	Water	Grab	X					X			
Trip Blank	1		Water	Grab	X								
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									

ENTER PRESERVATIVE CODE(S):
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Bisulfate/Methanol
9 Ammonium Chloride
10 AS/AH *
11 ____ *
* (Use blanks for preservatives not listed.)

COMMENTS:
Dissolved Metals are Field Filtered

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: 1 °C ICED? Y___ N___

Containers provided by: [ ] REIC [ ] Client

1 Relinquished by (signature)	12.15.14 1300 Date/Time	2 Relinquished by (signature)	Date/Time	3 Relinquished by (signature)	Date/Time
Received by (signature)	12/15/14 1300 Date/Time	Received by (signature)	Date/Time	Received by (signature)	Date/Time

pt 1 of 3

WVDEP Drill Cutting / Leachate Analysis List

Aluminum

Antimony

Arsenic

Barium

Beryllium

Boron

Cadmium

Chromium

Hexavalent Chromium

Copper

Lead

Lithium

Mercury

Nickel

Selenium

Silver

Strontium

Vanadium

Zinc

Chloride

Fluoride

Nitrate as Nitrogen

Nitrite as Nitrogen

Sulfate

Total Suspended Solids

Free Cyanide

Benzene

Chlorobenzene

Chlorodibromomethane

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

1,4-Dinitrobenzene

1,4-Naphthoquinone

2,4-Dinitrotoluene

2,6-Dinitrotoluene

4-Nitroquinoline-1-oxide

bis(2-ethylhexyl) phthalate

Butyl benzylphthalate

Di-N-Butyl Phthalate

Di-N-Octylphthalate Diethyl Phthalate

Dimethyl Phthalate

Flouranthene

Nitrobenzene

Pentachloronitrobenzene

Gross Alpha

Gross Beta

Radium 226

Radium 228

Strontium 90

Radon

pH

Total Dissolved Solids

Total Suspended Solids

BOD 5-Day

Ammonia as Nitrogen

Total Kjeldahl Nitrogen

Oil & Grease

Acidity to pH 8.3

Specific Conductance

Alkalinity to pH 4.5

Chemical Oxygen Demand

Dissolved Iron and Iron

Manganese and Dissolved Manganese

REI Consultants, Inc.

FIELD LOG: pH Calibration Records 6-2010.Rev.1

Client Name: Marshall University Site Location: Parkersburg WV

Date: 12/15/14 Analyst: [signature]

Calibration Location: Field / Laboratory Instrument: Oakton pH Meter

4.0 Buffer Lot #: D085-14
7.0 Buffer Lot #: D119-04
10.0 Buffer Lot #: D112-08

pH (SU) - SM4500-H+B, 18th Edition				
Standard	Initial Reading	Reading After Calibration	Temperature °C	Comments
4.0 Buffer	4.07	4.01	20.6	
7.0 Buffer	7.08	7.00	↓	
10.0 Buffer	9.96	10.01	↓	

Slope: 97.9%

Comments:

Calibration at the laboratory requires a pH 7.0 QC Check

All field pH analysis must be followed by a Post Analysis pH Check

Quality Control Samples	Reading	Acceptance Range:
QC Check, 7.0	7.09	True Value ± 0.1 (6.9 - 7.1)
Post Analysis QC Check, 7.0	7.02	

REI Consultants, Inc. P.O. Box 286 Beaver, WV 25813 Phone: 800-999-0105 Fax: 304-255-2572 www.reiclabs.com

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
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Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Wednesday, December 31, 2014

GEORGE CARICO
MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/LEACHATE ANALYSIS

Work Order #: 1412J73

Dear GEORGE CARICO:

REI Consultants, Inc. received 3 sample(s) on 12/15/2014 for the analyses presented in the following report.

Kathy Berry

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1412J73

Date Reported: 12/31/2014

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,

Project: DRILL CUTTING/LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1412J73

Date Reported: 12/31/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/15/2014 9:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/15/2014
Lab ID:	1412J73-01A	**Matrix:**	Liquid
Client Sample ID:	1-NORTHWESTERN LF	**Site ID:**	NORTHWESTERN LANDFILL/PARKERSBURG WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.012	0.005	0.100	NA	J	mg/L	12/18/2014 7:54 PM	PA/VA
Antimony	ND	0.020	0.200	NA		mg/L	12/18/2014 7:54 PM	PA/VA
Arsenic	0.352	0.020	0.200	NA		mg/L	12/18/2014 7:54 PM	PA/VA
Barium	3.08	0.002	0.100	NA		mg/L	12/18/2014 7:54 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	12/18/2014 7:54 PM	PA/VA
Boron	42.8	0.020	0.100	NA		mg/L	12/18/2014 7:54 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	12/18/2014 7:54 PM	PA/VA
Chromium	0.014	0.005	0.100	NA	J	mg/L	12/18/2014 7:54 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	12/18/2014 7:54 PM	PA/VA
Iron	17.5	0.010	0.100	NA		mg/L	12/18/2014 7:54 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	12/18/2014 7:54 PM	PA/VA
Lithium	0.082	0.020	0.100	NA	J	mg/L	12/18/2014 1:53 PM	
Manganese	0.550	0.002	0.100	NA		mg/L	12/18/2014 7:54 PM	PA/VA
Nickel	0.166	0.005	0.100	NA		mg/L	12/18/2014 7:54 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	12/18/2014 7:54 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	12/18/2014 7:54 PM	PA/VA
Strontium	5.71	0.001	0.010	NA		mg/L	12/18/2014 1:53 PM	PA
Vanadium	0.009	0.005	0.100	NA	J	mg/L	12/18/2014 7:54 PM	PA/VA
Zinc	0.005	0.003	0.050	NA	J	mg/L	12/18/2014 7:54 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	12/17/2014 3:53 PM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0514	NA		mg/L	12/19/2014 6:24 PM	
1,4-Napthoquinone	ND	NA	0.0514	NA		mg/L	12/19/2014 6:24 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.257	NA		mg/L	12/19/2014 6:24 PM	
Pentachloronitrobenzene	ND	NA	0.0514	NA		mg/L	12/19/2014 6:24 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0257	0.0514	NA		mg/L	12/19/2014 6:24 PM	PA/VA
Butyl benzyl phthalate	ND	0.0257	0.0514	NA		mg/L	12/19/2014 6:24 PM	PA/VA
Di-n-butyl phthalate	ND	0.0257	0.0514	NA		mg/L	12/19/2014 6:24 PM	PA/VA
Diethyl phthalate	ND	0.0103	0.0514	NA		mg/L	12/19/2014 6:24 PM	PA/VA
Dimethyl phthalate	ND	0.0103	0.0514	NA		mg/L	12/19/2014 6:24 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0103	0.0514	NA		mg/L	12/19/2014 6:24 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412J73

Date Reported: 12/31/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/15/2014 9:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/15/2014
Lab ID:	1412J73-01A	**Matrix:**	Liquid
Client Sample ID:	1-NORTHWESTERN LF	**Site ID:**	NORTHWESTERN LANDFILL/PARKERSBURG WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
2,6-Dinitrotoluene	ND	0.0103	0.0514	NA		mg/L	12/19/2014 6:24 PM	PA/VA
Di-n-octyl phthalate	ND	0.0257	0.0514	NA		mg/L	12/19/2014 6:24 PM	PA/VA
Fluoranthene	ND	0.0103	0.0514	NA		mg/L	12/19/2014 6:24 PM	PA/VA
Nitrobenzene	ND	0.0103	0.0514	NA		mg/L	12/19/2014 6:24 PM	PA/VA
Surr: 2-Fluorophenol	37.8	NA	32.9-110	NA		%REC	12/19/2014 6:24 PM	
Surr: Phenol-d5	28.2	NA	25.8-110	NA		%REC	12/19/2014 6:24 PM	
Surr: 2,4,6-Tribromophenol	75.0	NA	63.8-110	NA		%REC	12/19/2014 6:24 PM	
Surr: Nitrobenzene-d5	74.9	NA	61.8-110	NA		%REC	12/19/2014 6:24 PM	
Surr: 2-Fluorobiphenyl	72.2	NA	58.6-110	NA		%REC	12/19/2014 6:24 PM	
Surr: 4-Terphenyl-d14	64.2	NA	55.1-110	NA		%REC	12/19/2014 6:24 PM	

Notes:

Elevated PQLs are due to matrix interference.

VOLATILE ORGANIC COMPOUNDS-8260 **Method: SW8260B (1996)** **Analyst: JM**

Benzene	ND	50.0	100	NA		µg/L	12/18/2014 11:27 PM	PA/VA
Chlorobenzene	ND	50.0	100	NA		µg/L	12/18/2014 11:27 PM	PA/VA
Dibromochloromethane	ND	50.0	100	NA		µg/L	12/18/2014 11:27 PM	PA/VA
1,2-Dichlorobenzene	ND	50.0	100	NA		µg/L	12/18/2014 11:27 PM	PA/VA
1,3-Dichlorobenzene	ND	50.0	100	NA		µg/L	12/18/2014 11:27 PM	PA/VA
1,4-Dichlorobenzene	ND	50.0	100	NA		µg/L	12/18/2014 11:27 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	117	NA	68.7-129	NA		%REC	12/18/2014 11:27 PM	
Surr: 4-Bromofluorobenzene	91.0	NA	71.8-127	NA		%REC	12/18/2014 11:27 PM	
Surr: Dibromofluoromethane	115	NA	74.3-124	NA		%REC	12/18/2014 11:27 PM	
Surr: Toluene-d8	85.2	NA	71.4-129	NA		%REC	12/18/2014 11:27 PM	

Notes:

Elevated PQLs are due to matrix interference. Sample foamed during analysis.

BOD, 5 Day, 20°C **Method: SM5210 B-2001** **Analyst: CB**

Biochemical Oxygen Demand	74	2	5	NA		mg/L	12/16/2014 1:04 PM	PA/VA

Chemical Oxygen Demand **Method: EPA 410.4, Rev. 2 (1993)** **Analyst: SF**

Chemical Oxygen Demand	130	4	10	NA		mg/L	12/16/2014 10:00 AM	PA/VA

HEXAVALENT CHROMIUM BY IC **Method: EPA 218.6, Rev. 3.3 (1994)** **Analyst: CF**

Chromium (VI)	ND	0.0001	0.0010	NA		mg/L	12/18/2014 12:21 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412J73

Date Reported: 12/31/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/15/2014 9:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/15/2014
Lab ID:	1412J73-01A	**Matrix:**	Liquid
Client Sample ID:	1-NORTHWESTERN LF	**Site ID:**	NORTHWESTERN LANDFILL/PARKERSBURG WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	4,420	25.0	250	NA		mg/L	12/16/2014 9:29 AM	PA/VA
Fluoride	0.34	0.05	0.20	NA		mg/L	12/16/2014 9:29 AM	PA/VA
Sulfate	75.6	1.00	5.00	NA		mg/L	12/16/2014 9:29 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	1.46	0.02	0.10	NA		mg/L	12/16/2014 9:29 AM	PA/VA
Nitrogen, Nitrite	ND	0.05	0.50	NA		mg/L	12/16/2014 9:29 AM	PA/VA
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	410	10.0	50.0	NA		mg/L	12/18/2014 10:51 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: KS**	
Oil & Grease	ND	2.0	5.0	NA		mg/L	12/17/2014 3:30 PM	PA/VA

Notes:

Sample acidity or alkalinity exceeded the added preservative, so that the required preservation pH was not achieved.

CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	0.015	0.005	0.020	NA	J	mg/L	12/16/2014 12:07 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	405	16.0	40.0	NA		mg/L	12/17/2014 1:27 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	18,300	NA	NA	NA		µmhos/cm	12/16/2014 10:45 AM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: CC**	
Total Dissolved Solids	9,140	20	40	NA		mg/L	12/16/2014 5:51 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: DSD**	
Total Suspended Solids	104	8.0	40.0	NA		mg/L	12/16/2014 5:37 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	152	1.0	10	NA		mg/L	12/17/2014 9:27 AM	PA/VA

REI Consultants, Inc. - Analytical Report

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Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/15/2014 9:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/15/2014
Lab ID:	1412J73-01A	**Matrix:**	Liquid
Client Sample ID:	1-NORTHWESTERN LF	**Site ID:**	NORTHWESTERN LANDFILL/PARKERSBURG WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	1,940	4.0	40.0	NA		mg/L	12/17/2014 9:27 AM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	7.80	NA	NA	NA		SU	12/17/2014 9:27 AM	PA

REI Consultants, Inc. - Analytical Report

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Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/15/2014 9:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/15/2014
Lab ID:	1412J73-01B	**Matrix:**	Liquid
Client Sample ID:	1-NORTHWESTERN LF	**Site ID:**	NORTHWESTERN LANDFILL/PARKERSBURG WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	1.27	0.010	0.100	NA		mg/L	12/18/2014 8:04 PM	PA/VA
Manganese	0.528	0.002	0.100	NA		mg/L	12/18/2014 8:04 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412J73

Date Reported: 12/31/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/15/2014 10:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/15/2014
Lab ID:	1412J73-02A	**Matrix:**	Liquid
Client Sample ID:	2-PARKERSBURG WWTP EFFLUENT	**Site ID:**	NORTHWESTERN LANDFILL/PARKERSBURG WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.042	0.005	0.100	NA	J	mg/L	12/22/2014 12:32 PM	PA/VA
Antimony	ND	0.020	0.200	NA		mg/L	12/23/2014 10:48 AM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	12/22/2014 12:32 PM	PA/VA
Barium	0.030	0.002	0.100	NA	J	mg/L	12/23/2014 10:48 AM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	12/22/2014 12:32 PM	PA/VA
Boron	0.305	0.020	0.100	NA		mg/L	12/23/2014 10:48 AM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	12/23/2014 10:48 AM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	12/22/2014 12:32 PM	PA/VA
Copper	0.013	0.005	0.100	NA	J	mg/L	12/23/2014 10:48 AM	PA/VA
Iron	0.077	0.010	0.100	NA	J	mg/L	12/22/2014 12:32 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	12/23/2014 10:48 AM	PA/VA
Lithium	ND	0.020	0.100	NA		mg/L	12/18/2014 2:36 PM	
Manganese	0.031	0.002	0.100	NA	J	mg/L	12/22/2014 12:32 PM	PA/VA
Nickel	ND	0.005	0.100	NA		mg/L	12/23/2014 10:48 AM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	12/23/2014 10:48 AM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	12/22/2014 12:32 PM	PA/VA
Strontium	0.251	0.001	0.010	NA		mg/L	12/18/2014 2:36 PM	PA
Vanadium	ND	0.005	0.100	NA		mg/L	12/22/2014 12:32 PM	PA/VA
Zinc	0.046	0.003	0.050	NA	J	mg/L	12/23/2014 10:48 AM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	12/17/2014 10:28 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0100	NA		mg/L	12/19/2014 6:01 PM	
1,4-Napthoquinone	ND	NA	0.0100	NA		mg/L	12/19/2014 6:01 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0498	NA		mg/L	12/19/2014 6:01 PM	
Pentachloronitrobenzene	ND	NA	0.0100	NA		mg/L	12/19/2014 6:01 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0050	0.0100	NA		mg/L	12/19/2014 6:01 PM	PA/VA
Butyl benzyl phthalate	ND	0.0050	0.0100	NA		mg/L	12/19/2014 6:01 PM	PA/VA
Di-n-butyl phthalate	ND	0.0050	0.0100	NA		mg/L	12/19/2014 6:01 PM	PA/VA
Diethyl phthalate	ND	0.0020	0.0100	NA		mg/L	12/19/2014 6:01 PM	PA/VA
Dimethyl phthalate	ND	0.0020	0.0100	NA		mg/L	12/19/2014 6:01 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0020	0.0100	NA		mg/L	12/19/2014 6:01 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412J73

Date Reported: 12/31/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/15/2014 10:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/15/2014
Lab ID:	1412J73-02A	**Matrix:**	Liquid
Client Sample ID:	2-PARKERSBURG WWTP EFFLUENT	**Site ID:**	NORTHWESTERN LANDFILL/PARKERSBURG WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
2,6-Dinitrotoluene	ND	0.0020	0.0100	NA		mg/L	12/19/2014 6:01 PM	PA/VA
Di-n-octyl phthalate	ND	0.0050	0.0100	NA		mg/L	12/19/2014 6:01 PM	PA/VA
Fluoranthene	ND	0.0020	0.0100	NA		mg/L	12/19/2014 6:01 PM	PA/VA
Nitrobenzene	ND	0.0020	0.0100	NA		mg/L	12/19/2014 6:01 PM	PA/VA
Surr: 2-Fluorophenol	32.0	NA	32.9-110	NA	S	%REC	12/19/2014 6:01 PM	
Surr: Phenol-d5	23.1	NA	25.8-110	NA	S	%REC	12/19/2014 6:01 PM	
Surr: 2,4,6-Tribromophenol	64.8	NA	63.8-110	NA		%REC	12/19/2014 6:01 PM	
Surr: Nitrobenzene-d5	73.7	NA	61.8-110	NA		%REC	12/19/2014 6:01 PM	
Surr: 2-Fluorobiphenyl	69.6	NA	58.6-110	NA		%REC	12/19/2014 6:01 PM	
Surr: 4-Terphenyl-d14	76.1	NA	55.1-110	NA		%REC	12/19/2014 6:01 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	12/19/2014 12:00 AM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	12/19/2014 12:00 AM	PA/VA
Dibromochloromethane	1.45	0.500	1.00	NA		µg/L	12/19/2014 12:00 AM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/19/2014 12:00 AM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/19/2014 12:00 AM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/19/2014 12:00 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	114	NA	68.7-129	NA		%REC	12/19/2014 12:00 AM	
Surr: 4-Bromofluorobenzene	90.2	NA	71.8-127	NA		%REC	12/19/2014 12:00 AM	
Surr: Dibromofluoromethane	112	NA	74.3-124	NA		%REC	12/19/2014 12:00 AM	
Surr: Toluene-d8	89.1	NA	71.4-129	NA		%REC	12/19/2014 12:00 AM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: CB**	
Biochemical Oxygen Demand	4	2	5	NA	J	mg/L	12/16/2014 1:04 PM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	17	4	10	NA		mg/L	12/17/2014 8:40 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	0.0002	0.0001	0.0010	NA	J	mg/L	12/18/2014 12:34 PM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	141	0.50	5.00	NA		mg/L	12/16/2014 9:48 AM	PA/VA
Fluoride	0.68	0.05	0.20	NA		mg/L	12/16/2014 9:48 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412J73

Date Reported: 12/31/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/15/2014 10:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/15/2014
Lab ID:	1412J73-02A	**Matrix:**	Liquid
Client Sample ID:	2-PARKERSBURG WWTP EFFLUENT	**Site ID:**	NORTHWESTERN LANDFILL/PARKERSBURG WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Sulfate	74.8	1.00	5.00	NA		mg/L	12/16/2014 9:48 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	19.8	0.50	2.50	NA		mg/L	12/16/2014 9:48 AM	PA/VA
Nitrogen, Nitrite	ND	0.05	0.50	NA		mg/L	12/16/2014 9:48 AM	PA/VA
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	0.82	0.10	0.50	NA		mg/L	12/17/2014 9:36 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: KS**	
Oil & Grease	2.1	2.0	5.0	NA	J	mg/L	12/17/2014 3:30 PM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	12/17/2014 4:48 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	0.18	0.04	0.10	NA		mg/L	12/16/2014 4:21 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	1,020	NA	NA	NA		µmhos/cm	12/16/2014 10:45 AM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: CC**	
Total Dissolved Solids	583	5	10	NA		mg/L	12/16/2014 5:51 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: DSD**	
Total Suspended Solids	3.0	1.0	5.0	NA	J	mg/L	12/16/2014 5:37 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	9.9	1.0	10	NA	J	mg/L	12/17/2014 9:27 AM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	98.3	1.0	10	NA		mg/L	12/17/2014 9:27 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412J73

Date Reported: 12/31/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/15/2014 10:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/15/2014
Lab ID:	1412J73-02A	**Matrix:**	Liquid
Client Sample ID:	2-PARKERSBURG WWTP EFFLUENT	**Site ID:**	NORTHWESTERN LANDFILL/PARKERSBURG WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	7.13	NA	NA	NA		SU	12/17/2014 9:27 AM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1412J73

Date Reported: 12/31/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/15/2014 10:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/15/2014
Lab ID:	1412J73-02B	**Matrix:**	Liquid
Client Sample ID:	2-PARKERSBURG WWTP EFFLUENT	**Site ID:**	NORTHWESTERN LANDFILL/PARKERSBURG WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	0.046	0.010	0.100	NA	J	mg/L	12/18/2014 8:07 PM	PA/VA
Manganese	0.007	0.002	0.100	NA	J	mg/L	12/18/2014 8:07 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412J73

Date Reported: 12/31/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/15/2014 12:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/15/2014
Lab ID:	1412J73-03A	**Matrix:**	Trip Blank
Client Sample ID:	TRIP BLANK	**Site ID:**	NORTHWESTERN LANDFILL/PARKERSBURG WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	12/19/2014 12:33 AM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	12/19/2014 12:33 AM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	12/19/2014 12:33 AM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/19/2014 12:33 AM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/19/2014 12:33 AM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/19/2014 12:33 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	108	NA	68.7-129	NA		%REC	12/19/2014 12:33 AM	
Surr: 4-Bromofluorobenzene	91.0	NA	71.8-127	NA		%REC	12/19/2014 12:33 AM	
Surr: Dibromofluoromethane	107	NA	74.3-124	NA		%REC	12/19/2014 12:33 AM	
Surr: Toluene-d8	90.8	NA	71.4-129	NA		%REC	12/19/2014 12:33 AM	

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Friday, January 09, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/LEACHATE ANALYSIS

Work Order #: 1412J77

Dear GEORGE CARICO:

REI Consultants, Inc. received 2 sample(s) on 12/15/2014 for the analyses presented in the following report.

Kathy Berry

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1412J77

Date Reported: 1/9/2015

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,

Project: DRILL CUTTING/LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1412J77

Date Reported: 1/9/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/15/2014 9:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/15/2014
Lab ID:	1412J77-01A	**Matrix:**	Liquid
Client Sample ID:	1-NORTHWESTERN LF	**Site ID:**	NORTHWESTERN LANDFILL/PARKERSBURG WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA			1/9/2015 8:43 AM	
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA			1/9/2015 8:43 AM	
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA			1/9/2015 8:43 AM	
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA			1/9/2015 8:43 AM	
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA			1/9/2015 8:43 AM	

REI Consultants, Inc. - Analytical Report

WO#: 1412J77

Date Reported: 1/9/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/15/2014 10:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/15/2014
Lab ID:	1412J77-02A	**Matrix:**	Liquid
Client Sample ID:	2-PARKERSBURG WWTP EFFLUENT	**Site ID:**	NORTHWESTERN LANDFILL/PARKERSBURG WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA			1/9/2015 8:43 AM	
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA			1/9/2015 8:43 AM	
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA			1/9/2015 8:43 AM	
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA			1/9/2015 8:43 AM	
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA			1/9/2015 8:43 AM	

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

January 08, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1412J77
Pace Project No.: 30136905

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on December 17, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1412J77
Pace Project No.: 30136905

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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SAMPLE SUMMARY

Project: 1412J77
Pace Project No.: 30136905

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30136905001	**1412J77-01A**	Water	12/15/14 09:00	12/17/14 09:45
30136905002	**1412J77-02A**	Water	12/15/14 10:00	12/17/14 09:45

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SAMPLE ANALYTE COUNT

Project: 1412J77
Pace Project No.: 30136905

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30136905001	**1412J77-01A**	SM 7500Rn-B	FCC	1
		EPA 900.0	FCC	2
		EPA 903.1	JC2	1
		EPA 904.0	JAL	1
		ASTM D5811-95	LAL	1
30136905002	**1412J77-02A**	SM 7500Rn-B	FCC	1
		EPA 900.0	FCC	2
		EPA 903.1	JC2	1
		EPA 904.0	JAL	1
		ASTM D5811-95	LAL	1

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(724)850-5600

PROJECT NARRATIVE

Project: 1412J77
Pace Project No.: 30136905

Method: **SM 7500Rn-B**
Description: 7500RnB Radon
Client: REI Consultants, Inc.
Date: January 08, 2015

General Information:
2 samples were analyzed for SM 7500Rn-B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Upon receipt at the laboratory, 3 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

- 1412J77-01A (Lab ID: 30136905001)

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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1412J77
Pace Project No.: 30136905

Method: **EPA 900.0**
Description: 900.0 Gross Alpha/Beta
Client: REI Consultants, Inc.
Date: January 08, 2015

General Information:
2 samples were analyzed for EPA 900.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Upon receipt at the laboratory, 3 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

- 1412J77-01A (Lab ID: 30136905001)

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PROJECT NARRATIVE

Project: 1412J77
Pace Project No.: 30136905

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: REI Consultants, Inc.
Date: January 08, 2015

General Information:
2 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Upon receipt at the laboratory, 3 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

- 1412J77-01A (Lab ID: 30136905001)

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1412J77
Pace Project No.: 30136905

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: REI Consultants, Inc.
Date: January 08, 2015

General Information:
2 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Upon receipt at the laboratory, 3 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

- 1412J77-01A (Lab ID: 30136905001)

Pace Analytical Services, Inc.
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(724)850-5600

PROJECT NARRATIVE

Project: 1412J77
Pace Project No.: 30136905

Method: **ASTM D5811-95**
Description: 905.0 Strontium 89/90 Eichrom
Client: REI Consultants, Inc.
Date: January 08, 2015

General Information:
2 samples were analyzed for ASTM D5811-95. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Upon receipt at the laboratory, 3 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

- 1412J77-01A (Lab ID: 30136905001)

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1412J77
Pace Project No.: 30136905

Sample: 1412J77-01A **Lab ID: 30136905001** Collected: 12/15/14 09:00 Received: 12/17/14 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 3 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**-45.3 ± 41.3 (74.6) C:NA T:NA**	pCi/L	12/19/14 19:05	10043-92-2	
Gross Alpha	EPA 900.0	**-10.7 ± 33.1 (65.8) C:NA T:NA**	pCi/L	01/03/15 21:54	12587-46-1	
Gross Beta	EPA 900.0	**1,174 ± 214 (24.3) C:NA T:NA**	pCi/L	01/03/15 21:54	12587-47-2	
Radium-226	EPA 903.1	**11.1 ± 3.36 (0.613) C:NA T:95%**	pCi/L	12/31/14 11:46	13982-63-3	
Radium-228	EPA 904.0	**6.33 ± 1.44 (1.18) C:79% T:78%**	pCi/L	01/06/15 17:10	15262-20-1	
Strontium-90	ASTM D5811-95	**0.566 ± 0.815 (1.37) C:107% T:NA**	pCi/L	12/19/14 22:07	10098-97-2	

Sample: 1412J77-02A **Lab ID: 30136905002** Collected: 12/15/14 10:00 Received: 12/17/14 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**-45.4 ± 41.2 (74.4) C:NA T:NA**	pCi/L	12/19/14 19:38	10043-92-2	
Gross Alpha	EPA 900.0	**-1.44 ± 1.48 (3.25) C:NA T:NA**	pCi/L	01/03/15 21:54	12587-46-1	
Gross Beta	EPA 900.0	**8.74 ± 2.48 (2.97) C:NA T:NA**	pCi/L	01/03/15 21:54	12587-47-2	
Radium-226	EPA 903.1	**0.342 ± 0.319 (0.420) C:NA T:84%**	pCi/L	12/31/14 11:46	13982-63-3	
Radium-228	EPA 904.0	**0.543 ± 0.514 (1.02) C:75% T:63%**	pCi/L	01/06/15 16:53	15262-20-1	
Strontium-90	ASTM D5811-95	**-0.549 ± 0.901 (1.58) C:94% T:NA**	pCi/L	12/19/14 22:07	10098-97-2	

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412J77
Pace Project No.: 30136905

QC Batch: RADC/22653
Analysis Method: ASTM D5811-95
QC Batch Method: ASTM D5811-95
Analysis Description: 905.0 Strontium 89/90 Eichrom
Associated Lab Samples: 30136905001, 30136905002

METHOD BLANK: 832585
Matrix: Water
Associated Lab Samples: 30136905001, 30136905002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Strontium-90	-0.528 ± 0.439 (1.13) C:91% T:NA	pCi/L	12/19/14 17:49	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412J77
Pace Project No.: 30136905

QC Batch: RADC/22644 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30136905001, 30136905002

METHOD BLANK: 832576 | Matrix: Water
Associated Lab Samples: 30136905001, 30136905002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.124 ± 0.340 (0.822) C:80% T:90%	pCi/L	01/06/15 17:00	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412J77
Pace Project No.: 30136905

QC Batch: RADC/22763 | Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 | Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30136905001, 30136905002

METHOD BLANK: 836604 | Matrix: Water
Associated Lab Samples: 30136905001, 30136905002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.649 ± 0.458 (0.717) C:NA T:NA	pCi/L	01/04/15 10:09	
Gross Beta	0.725 ± 0.612 (1.21) C:NA T:NA	pCi/L	01/04/15 10:09	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412J77
Pace Project No.: 30136905

QC Batch: RADC/22629 | Analysis Method: SM 7500Rn-B
QC Batch Method: SM 7500Rn-B | Analysis Description: 7500Rn B Radon
Associated Lab Samples: 30136905001, 30136905002

METHOD BLANK: 831827 | Matrix: Water
Associated Lab Samples: 30136905001, 30136905002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radon	-12.5 ± 18.7 (33.5) C:NA T:NA	pCi/L	12/19/14 18:32	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412J77
Pace Project No.: 30136905

QC Batch: RADC/22639 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30136905001, 30136905002

METHOD BLANK: 832571 | Matrix: Water
Associated Lab Samples: 30136905001, 30136905002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.306 ± 0.426 (0.719) C:NA T:108%	pCi/L	12/31/14 12:02	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1412J77
Pace Project No.: 30136905

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3175 PAGE: 1 OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA COMPANY: PACE ANALYTICAL SERVIC
ADDRESS: 1638 ROSEYTOWN ROAD
CITY STATE ZIP: GREENSBURG, PA 15601
PHONE: (724) 850-5600 FAX:
ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS
State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. All results to Kathy Berry at kberry@reiclabs.com.

ANALYTICAL PARAMETERS

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	GROSS_ALPHA_SUB (EPA 900.0)	GROSS_BETA_SUB (EPA 900.0)	RADIUM_226_SUB (EPA 903.1)	RADIUM_228_SUB (EPA 904.0)	RADON (913.0)	STRONTIUM_90_SUB (EPA 905.0)
						*	2	2	2	2	2	2
1	1412J77-01A	1-NORTHWESTERN LF		Liquid	12/15/2014 9:00:00 AM	1	√	√	√	√	√	√
2	1412J77-02A	2-PARKERSBURG WWTP EFFLUENT		Liquid	12/15/2014 10:00:00 AM	1	√	√	√	√	√	√

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS: 30136905

* May use method 7110C if needed KB 12/16/14

001
002

Relinquished By	Date	Time	Received By	Date	Time
Brian E	12/16/14	16:00	UPS	12/16/14	16:00
Relinquished By	Date	Time	Received By	Date	Time
			Scott Curtis	12/17/14	0945
Relinquished By	Date	Time	Received By	Date	Time

TAT: Standard ✓ RUSH Next BD [ ] 2nd BD [ ] 3rd BD [ ]

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED
[ ] HARDCOPY (extra cost) [ ] FAX [✓] EMAIL [ ] ONLINE

FOR LAB USE ONLY
Temp of samples ____ °C Attempt to Cool ? ____
Comments ____

Sample Condition Upon Receipt

Pace Analytical

Client Name: REIC

Project # 30136905

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1Z76X713 B603 3058

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no **Biological Tissue is Frozen:** Yes No

Packing Material: Bubble Wrap X Bubble Bags ____ None ____ Other _____

Thermometer Used NA **Type of Ice:** Wet Blue (None) ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.: _____ °C **Correction Factor:** _____ °C **Final Temp:** _____ °C

Date and Initials of person examining contents: SPA 12-17-14

Temp should be above freezing to 6°C

		Comments:
Chain of Custody Present:	☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out:	☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished:	☒ Yes ☐ No ☐ N/A	3.
Sampler Name & Signature on COC:	☐ Yes ☒ No ☐ N/A	4.
Samples Arrived within Hold Time:	☒ Yes ☐ No ☐ N/A	5.
Short Hold Time Analysis (<72hr):	☒ Yes ☐ No ☐ N/A	6.
Rush Turn Around Time Requested:	☐ Yes ☒ No ☐ N/A	7.
Sufficient Volume:	☒ Yes ☐ No ☐ N/A	8.
Correct Containers Used:	☒ Yes ☐ No ☐ N/A	9.
-Pace Containers Used: SPA 12-17-14	☒ Yes ☒ No ☐ N/A	
Containers Intact:	☒ Yes ☐ No ☐ N/A	10.
Filtered volume received for Dissolved tests	☐ Yes ☐ No ☒ N/A	11.
Sample Labels match COC:	☒ Yes ☐ No ☐ N/A	12.
-Includes date/time/ID/Analysis Matrix: wt		
All containers needing preservation have been checked.	☒ Yes ☐ No ☐ N/A	13. Added 3ml HNO3 to Sample #1 All bottles From @ 1015 12-17-14 SPA SPA 12-17-14
All containers needing preservation are found to be in compliance with EPA recommendation.	☐ Yes ☒ No ☐ N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐ Yes ☒ No	Initial when completed SPA / Lot # of added preservative DLH-1163
Samples checked for dechlorination:	☐ Yes ☐ No ☒ N/A	14.
Headspace in VOA Vials (>6mm):	☐ Yes ☐ No ☒ N/A	15.
Trip Blank Present:	☐ Yes ☒ No ☐ N/A	16.
Trip Blank Custody Seals Present	☐ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carrie Serio **Date:** 12/17/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

PaceAnalytical

page 2

Project Number: 30136905

Client Name: REI

Item No.												
Matrix Code	WT											
Glass Jar (120 / 250 / 500 / 1L)												
Soil kit (2 SB, 1M, soil jar)												
Chemistry (250 / 500 / 1L)												
Organics (1L)												
Nutrient (250 / 500)												
Phenolics (250 ml)												
TOC (40 ml / 250 ml)												
TOX (250 ml)												
Total Metals												
Dissolved Metals preserved Y N												
O & G (1L)												
TPH (1L)												
VOA (40 ml 30 ml)												
Cyanide (250 ml)												
Sulfide (500 ml)												
Bacteria (120 ml)												
Wipes / swipe/ smear/ filter												
Radchem Nalgene (125 / 250 / 500 / 1L)	W											
Radchem Nalgene (1/2 gal. / 1 gal.L)												
Cubitainer (500 ml / 4L)												
Ziploc												
Other Radon	W											
Other												

CHAIN OF CUSTODY RECORD

v10-0114

REIC use ONLY — CLIENT ID MAR071 DATE ____ SHEET ____

REIC
Research Environmental & Industrial Consultants, Inc.
MAIN LABORATORY & CORPORATE HEADQUARTERS:
P.O. Box 286 • 225 Industrial Park Rd, Beaver, WV 25813
800-999-0105 • 304-255-2500 • www.reiclabs.com

MID-OHIO VALLEY Service Center
101 17th Street
Ashland, KY 41101
606-393-5027

SHENANDOAH Service Center
1557 Commerce Rd., Ste 201
Verona, VA 24482
540-248-0183

ROANOKE Service Center
3029-C Peters Creek Rd
Roanoke, VA 24019
540-777-1276

MORGANTOWN Service Center
16 Commerce Drive
Westover, WV 26501
304-241-5861

Client: Marshall University Center for Environmental, Geotechnical and Applied Sciences PO # ____

Contact Person: George Carico/Jamie Wolfe Phone: 304-696-5456

Address: One John Marshall Drive City: Huntington State: WV Zip: 25755

Billing Address (if different) ____

City ____ State ____ Zip ____

Site ID & State: Phase II Project ID: Drill Cutting/Leachate Analysis Sampler: J McGee

SAMPLE LOG & ANALYSIS REQUEST

TURNAROUND TIME	RUSH TURNAROUND*			
◉ NORMAL	○ 5 DAY	○ 3 DAY	○ 2 DAY	○ 1 DAY

*Rush work needs prior laboratory approval and will incur additional charges

ANALYSIS & METHOD REQUESTED: See Attachment

Field Readings: pH | Temp | Cond
6.05 | 10.2 | 572
6.84 | 19.2 | 11,890
6.56 | 20.1 | 25,100
6.20 | 10.9 | 913

MSC Sampling Fee--- 7 HRS

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	0	1	2	3	5	10			
1-Parkersburg POTW	20	3/16/15 @ 0855	Water	Grab	X				X				X
2-Northwestern LF	20	0945	Water	Grab	X					X			
3-Meadowfill LF	20	1150	Water	Grab	X						X		
4-Bridgeport POTW	23	1240	Water	Grab	X							X	
Trip Blank	1		Water	Grab	X								
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									

ENTER PRESERVATIVE CODE(S):
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Bisulfate/Methanol
9 Ammonium Chloride
10 AS/AH *
11 ____ *
* (Use blanks for preservatives not listed.)

COMMENTS:
Dissolved Metals are Field Filtered

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: ____ °C ICED? Y ____ N ____

Containers provided by: [✓] REIC [ ] Client

1		2		3	
Relinquished by (signature)	Date/Time 3-16-15 1400	Relinquished by (signature)	Date/Time	Relinquished by (signature)	Date/Time
Received by (signature)	Date/Time 3/16/15 1400	Received by (signature)	Date/Time	Received by (signature)	Date/Time

REI Consultants, Inc.

FIELD LOG: pH Calibration Records 6-2010.Rev.1

Client Name: Marshall Univ. Site Location: LF / Poty's

Date: 3/16/15 Analyst: [illegible]

Calibration Location: Field / Laboratory Instrument: Oakton pH Meter

4.0 Buffer Lot #: 0085-14

7.0 Buffer Lot #: 0119-04

10.0 Buffer Lot #: 0112-08

pH (SU) - SM4500-H+B, 18th Edition				
Standard	Initial Reading	Reading After Calibration	Temperature °C	Comments
4.0 Buffer	4.03	4.01	20.0	
7.0 Buffer	7.00	7.00		
10.0 Buffer	9.95	10.01		

Slope: 96.7%

Comments:

Calibration at the laboratory requires a pH 7.0 QC Check

All field pH analysis must be followed by a Post Analysis pH Check

Quality Control Samples	Reading	Acceptance Range:
QC Check, 7.0	7.01	True Value ± 0.1 (6.9 - 7.1)
Post Analysis QC Check, 7.0	6.94	

REI Consultants, Inc. P.O. Box 286 Beaver, WV 25813 Phone: 800-999-0105 Fax: 304-255-2572 www.reiclabs.com

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Tuesday, March 31, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/ LEACHATE ANALYSIS

Work Order #: 1503I23

Dear GEORGE CARICO:

REI Consultants, Inc. received 5 sample(s) on 3/16/2015 for the analyses presented in the following report.

Sincerely,

Kathy Berry

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1503I23

Date Reported: 3/31/2015

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project: DRILL CUTTING/ LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 8:55:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-01A	**Matrix:**	Liquid
Client Sample ID:	1- PARKERSBURG POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Aluminum	0.221	0.006	0.100	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Antimony	ND	0.040	0.200	NA		mg/L	3/28/2015 12:34 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Barium	0.044	0.002	0.100	NA	J	mg/L	3/25/2015 10:20 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Boron	0.082	0.035	0.100	NA	J	mg/L	3/25/2015 10:20 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Copper	0.010	0.005	0.100	NA	J	mg/L	3/25/2015 10:20 PM	PA/VA
Iron	0.497	0.010	0.100	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Lithium	ND	0.020	0.100	NA		mg/L	3/25/2015 2:19 PM	
Manganese	0.156	0.002	0.100	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Nickel	ND	0.005	0.100	NA		mg/L	3/28/2015 12:34 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Strontium	0.182	0.001	0.010	NA		mg/L	3/25/2015 2:19 PM	PA
Vanadium	ND	0.005	0.100	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Zinc	0.021	0.003	0.050	NA	J	mg/L	3/25/2015 10:20 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	3/18/2015 11:17 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0105	NA		mg/L	3/19/2015 6:39 PM	
1,4-Napthoquinone	ND	NA	0.0105	NA		mg/L	3/19/2015 6:39 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0524	NA		mg/L	3/19/2015 6:39 PM	
Pentachloronitrobenzene	ND	NA	0.0105	NA		mg/L	3/19/2015 6:39 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0052	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
Butyl benzyl phthalate	ND	0.0052	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
Di-n-butyl phthalate	ND	0.0052	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
Diethyl phthalate	ND	0.0021	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
Dimethyl phthalate	ND	0.0021	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0021	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0021	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 8:55:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-01A	**Matrix:**	Liquid
Client Sample ID:	1- PARKERSBURG POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0052	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
Fluoranthene	ND	0.0021	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
Nitrobenzene	ND	0.0021	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
Surr: 2-Fluorophenol	41.7	NA	32.9-110	NA		%REC	3/19/2015 6:39 PM	
Surr: Phenol-d5	30.4	NA	25.8-110	NA		%REC	3/19/2015 6:39 PM	
Surr: 2,4,6-Tribromophenol	76.8	NA	63.8-110	NA		%REC	3/19/2015 6:39 PM	
Surr: Nitrobenzene-d5	80.9	NA	61.8-110	NA		%REC	3/19/2015 6:39 PM	
Surr: 2-Fluorobiphenyl	82.4	NA	58.6-110	NA		%REC	3/19/2015 6:39 PM	
Surr: 4-Terphenyl-d14	78.9	NA	55.1-110	NA		%REC	3/19/2015 6:39 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	3/27/2015 5:28 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	3/27/2015 5:28 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	3/27/2015 5:28 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/27/2015 5:28 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/27/2015 5:28 PM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/27/2015 5:28 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	108	NA	68.7-129	NA		%REC	3/27/2015 5:28 PM	
Surr: 4-Bromofluorobenzene	110	NA	71.8-127	NA		%REC	3/27/2015 5:28 PM	
Surr: Dibromofluoromethane	96.3	NA	74.3-124	NA		%REC	3/27/2015 5:28 PM	
Surr: Toluene-d8	89.9	NA	71.4-129	NA		%REC	3/27/2015 5:28 PM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: VR**	
Biochemical Oxygen Demand	7	2	5	NA		mg/L	3/17/2015 1:20 PM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	24	4	10	NA		mg/L	3/17/2015 8:09 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0003	0.0010	NA		mg/L	3/18/2015 11:44 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	75.0	0.50	5.00	NA		mg/L	3/17/2015 9:07 AM	PA/VA
Fluoride	0.14	0.05	0.20	NA	J	mg/L	3/17/2015 9:07 AM	PA/VA
Sulfate	39.8	5.00	25.0	NA		mg/L	3/17/2015 9:07 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 8:55:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-01A	**Matrix:**	Liquid
Client Sample ID:	1- PARKERSBURG POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	5.50	0.10	0.50	NA		mg/L	3/17/2015 9:07 AM	PA/VA
Nitrogen, Nitrite	ND	0.05	0.50	NA		mg/L	3/17/2015 9:07 AM	PA/VA
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	1.15	0.10	0.50	NA		mg/L	3/19/2015 8:32 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	2.0	2.0	5.0	NA	J	mg/L	3/25/2015 1:00 PM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	3/17/2015 2:04 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	ND	0.04	0.10	NA		mg/L	3/19/2015 4:55 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	605	NA	NA	NA		µmhos/cm	3/17/2015 1:00 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	307	5	10	NA		mg/L	3/18/2015 6:30 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	16.5	1.0	5.0	NA		mg/L	3/17/2015 5:53 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	19.0	1.0	10	NA		mg/L	3/17/2015 12:09 PM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	70.8	1.0	10	NA		mg/L	3/17/2015 12:09 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	6.46	NA	NA	NA		SU	3/17/2015 12:09 PM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 8:55:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-01B	**Matrix:**	Liquid
Client Sample ID:	1- PARKERSBURG POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Iron	0.061	0.010	0.100	NA	J	mg/L	3/25/2015 10:23 PM	PA/VA
Manganese	0.005	0.002	0.100	NA	J	mg/L	3/25/2015 10:23 PM	PA/VA

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WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 9:45:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-02A	**Matrix:**	Liquid
Client Sample ID:	2- NORTHWESTERN LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Aluminum	0.018	0.006	0.100	NA	J	mg/L	3/25/2015 10:32 PM	PA/VA
Antimony	ND	0.040	0.200	NA		mg/L	3/28/2015 12:37 PM	PA/VA
Arsenic	0.423	0.020	0.200	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Barium	2.27	0.002	0.100	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Boron	23.9	0.035	0.100	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Chromium	0.011	0.005	0.100	NA	J	mg/L	3/25/2015 10:32 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Iron	15.4	0.010	0.100	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Lithium	0.060	0.020	0.100	NA	J	mg/L	3/25/2015 2:22 PM	
Manganese	1.77	0.002	0.100	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Nickel	0.088	0.005	0.100	NA	J	mg/L	3/28/2015 12:37 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Strontium	4.37	0.001	0.010	NA		mg/L	3/25/2015 2:22 PM	PA
Vanadium	0.011	0.005	0.100	NA	J	mg/L	3/25/2015 10:32 PM	PA/VA
Zinc	0.004	0.003	0.050	NA	J	mg/L	3/25/2015 10:32 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	3/18/2015 11:24 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0102	NA		mg/L	3/19/2015 7:01 PM	
1,4-Napthoquinone	ND	NA	0.0102	NA		mg/L	3/19/2015 7:01 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0510	NA		mg/L	3/19/2015 7:01 PM	
Pentachloronitrobenzene	ND	NA	0.0102	NA		mg/L	3/19/2015 7:01 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
Butyl benzyl phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
Di-n-butyl phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
Diethyl phthalate	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
Dimethyl phthalate	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 9:45:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-02A	**Matrix:**	Liquid
Client Sample ID:	2- NORTHWESTERN LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
Fluoranthene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
Nitrobenzene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
Surr: 2-Fluorophenol	43.0	NA	32.9-110	NA		%REC	3/19/2015 7:01 PM	
Surr: Phenol-d5	34.4	NA	25.8-110	NA		%REC	3/19/2015 7:01 PM	
Surr: 2,4,6-Tribromophenol	94.6	NA	63.8-110	NA		%REC	3/19/2015 7:01 PM	
Surr: Nitrobenzene-d5	94.1	NA	61.8-110	NA		%REC	3/19/2015 7:01 PM	
Surr: 2-Fluorobiphenyl	86.3	NA	58.6-110	NA		%REC	3/19/2015 7:01 PM	
Surr: 4-Terphenyl-d14	70.2	NA	55.1-110	NA		%REC	3/19/2015 7:01 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	3.05	0.500	1.00	NA		µg/L	3/30/2015 3:32 PM	PA/VA
Chlorobenzene	65.0	5.00	10.0	NA		µg/L	3/27/2015 6:02 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	3/30/2015 3:32 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/30/2015 3:32 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/30/2015 3:32 PM	PA/VA
1,4-Dichlorobenzene	6.52	0.500	1.00	NA		µg/L	3/30/2015 3:32 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	114	NA	68.7-129	NA		%REC	3/30/2015 3:32 PM	
Surr: 4-Bromofluorobenzene	115	NA	71.8-127	NA		%REC	3/30/2015 3:32 PM	
Surr: Dibromofluoromethane	112	NA	74.3-124	NA		%REC	3/30/2015 3:32 PM	
Surr: Toluene-d8	74.5	NA	71.4-129	NA		%REC	3/30/2015 3:32 PM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: VR**	
Biochemical Oxygen Demand	ND	120	300	NA		mg/L	3/17/2015 1:20 PM	PA/VA

Notes:

BOD PQL was elevated due to insufficient oxygen depletion in all dilutions.

Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	410	20	50	NA		mg/L	3/17/2015 8:09 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0003	0.0010	NA		mg/L	3/18/2015 11:57 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	2,570	10.0	100	NA		mg/L	3/17/2015 9:27 AM	PA/VA
Fluoride	0.83	0.05	0.20	NA		mg/L	3/17/2015 9:27 AM	PA/VA

REI Consultants, Inc. - Analytical Report

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Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 9:45:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-02A	**Matrix:**	Liquid
Client Sample ID:	2- NORTHWESTERN LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Sulfate	42.6	1.00	5.00	NA		mg/L	3/17/2015 9:27 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	ND	0.02	0.10	NA		mg/L	3/17/2015 9:27 AM	PA/VA
Nitrogen, Nitrite	ND	0.50	5.00	NA		mg/L	3/17/2015 9:27 AM	PA/VA

Notes:

Elevated PQLs are due to matrix interference.

TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	233	8.00	40.0	NA		mg/L	3/20/2015 10:08 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	ND	2.0	5.0	NA		mg/L	3/25/2015 1:00 PM	PA/VA

Notes:

Sample acidity or alkalinity exceeded the added preservative, so that the required preservation pH was not achieved.

CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	3/17/2015 2:07 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	233	6.40	16.0	NA		mg/L	3/19/2015 7:48 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	11,400	NA	NA	NA		µmhos/cm	3/17/2015 1:00 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	6,040	10	20	NA		mg/L	3/18/2015 6:30 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	30.0	4.0	20.0	NA		mg/L	3/17/2015 5:53 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	413	1.0	10	NA		mg/L	3/17/2015 12:09 PM	PA/VA

REI Consultants, Inc. - Analytical Report

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Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 9:45:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-02A	**Matrix:**	Liquid
Client Sample ID:	2- NORTHWESTERN LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	1,530	4.0	40.0	NA		mg/L	3/17/2015 12:09 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	6.96	NA	NA	NA		SU	3/17/2015 12:09 PM	PA

REI Consultants, Inc. - Analytical Report

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Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 9:45:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-02B	**Matrix:**	Liquid
Client Sample ID:	2- NORTHWESTERN LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Iron	10.3	0.010	0.100	NA		mg/L	3/25/2015 10:35 PM	PA/VA
Manganese	1.50	0.002	0.100	NA		mg/L	3/25/2015 10:35 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 11:50:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-03A	**Matrix:**	Liquid
Client Sample ID:	3- MEADOWFILL LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Aluminum	0.376	0.006	0.100	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Antimony	ND	0.040	0.200	NA		mg/L	3/28/2015 12:40 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Barium	0.612	0.002	0.100	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Boron	3.92	0.035	0.100	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Iron	18.9	0.010	0.100	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Lithium	0.449	0.020	0.100	NA		mg/L	3/25/2015 2:25 PM	
Manganese	16.8	0.002	0.100	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Nickel	0.010	0.005	0.100	NA	J	mg/L	3/28/2015 12:40 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Strontium	9.51	0.001	0.010	NA		mg/L	3/25/2015 2:25 PM	PA
Vanadium	0.044	0.005	0.100	NA	J	mg/L	3/25/2015 10:38 PM	PA/VA
Zinc	0.007	0.003	0.050	NA	J	mg/L	3/25/2015 10:38 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	3/19/2015 12:07 PM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0106	NA		mg/L	3/19/2015 7:22 PM	
1,4-Napthoquinone	ND	NA	0.0106	NA		mg/L	3/19/2015 7:22 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0532	NA		mg/L	3/19/2015 7:22 PM	
Pentachloronitrobenzene	ND	NA	0.0106	NA		mg/L	3/19/2015 7:22 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0053	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
Butyl benzyl phthalate	ND	0.0053	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
Di-n-butyl phthalate	ND	0.0053	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
Diethyl phthalate	ND	0.0021	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
Dimethyl phthalate	ND	0.0021	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0021	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0021	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 11:50:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-03A	**Matrix:**	Liquid
Client Sample ID:	3- MEADOWFILL LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0053	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
Fluoranthene	ND	0.0021	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
Nitrobenzene	ND	0.0021	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
Surr: 2-Fluorophenol	42.9	NA	32.9-110	NA		%REC	3/19/2015 7:22 PM	
Surr: Phenol-d5	34.3	NA	25.8-110	NA		%REC	3/19/2015 7:22 PM	
Surr: 2,4,6-Tribromophenol	83.1	NA	63.8-110	NA		%REC	3/19/2015 7:22 PM	
Surr: Nitrobenzene-d5	83.3	NA	61.8-110	NA		%REC	3/19/2015 7:22 PM	
Surr: 2-Fluorobiphenyl	82.2	NA	58.6-110	NA		%REC	3/19/2015 7:22 PM	
Surr: 4-Terphenyl-d14	69.2	NA	55.1-110	NA		%REC	3/19/2015 7:22 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	3.26	0.500	1.00	NA		µg/L	3/30/2015 4:05 PM	PA/VA
Chlorobenzene	1.47	0.500	1.00	NA		µg/L	3/30/2015 4:05 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	3/30/2015 4:05 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/30/2015 4:05 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/30/2015 4:05 PM	PA/VA
1,4-Dichlorobenzene	9.40	0.500	1.00	NA		µg/L	3/30/2015 4:05 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	107	NA	68.7-129	NA		%REC	3/30/2015 4:05 PM	
Surr: 4-Bromofluorobenzene	108	NA	71.8-127	NA		%REC	3/30/2015 4:05 PM	
Surr: Dibromofluoromethane	97.6	NA	74.3-124	NA		%REC	3/30/2015 4:05 PM	
Surr: Toluene-d8	93.9	NA	71.4-129	NA		%REC	3/30/2015 4:05 PM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: VR**	
Biochemical Oxygen Demand	ND	120	300	NA		mg/L	3/17/2015 1:20 PM	PA/VA

Notes:

BOD PQL was elevated due to insufficient oxygen depletion in all dilutions.

Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	252	20	50	NA		mg/L	3/18/2015 8:12 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0003	0.0010	NA		mg/L	3/18/2015 12:10 PM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	5,750	25.0	250	NA		mg/L	3/17/2015 9:48 AM	PA/VA
Fluoride	ND	0.05	0.20	NA		mg/L	3/17/2015 9:48 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 11:50:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-03A	**Matrix:**	Liquid
Client Sample ID:	3- MEADOWFILL LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Sulfate	872	25.0	125	NA		mg/L	3/17/2015 9:48 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	ND	0.02	0.10	NA		mg/L	3/17/2015 9:48 AM	PA/VA
Nitrogen, Nitrite	ND	1.25	12.5	NA		mg/L	3/17/2015 9:48 AM	PA/VA

Notes:

Elevated PQLs are due to matrix interference.

TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	5.16	0.20	1.00	NA		mg/L	3/19/2015 8:34 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	15.1	2.0	5.0	NA		mg/L	3/25/2015 1:00 PM	PA/VA

Notes:

Sample acidity or alkalinity exceeded the added preservative, so that the required preservation pH was not achieved.

CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	3/17/2015 2:07 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	3.34	0.40	1.00	NA		mg/L	3/19/2015 4:56 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	22,900	NA	NA	NA		µmhos/cm	3/17/2015 1:00 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	15,100	10	20	NA		mg/L	3/18/2015 6:30 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	26.0	4.0	20.0	NA		mg/L	3/17/2015 5:53 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	264	1.0	10	NA		mg/L	3/17/2015 12:09 PM	PA/VA

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Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 11:50:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-03A	**Matrix:**	Liquid
Client Sample ID:	3- MEADOWFILL LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	848	2.0	20.0	NA		mg/L	3/17/2015 12:09 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	6.92	NA	NA	NA		SU	3/17/2015 12:09 PM	PA

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Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-03B	**Matrix:**	Liquid
Client Sample ID:	3- MEADOWFILL LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Iron	0.215	0.010	0.100	NA		mg/L	3/25/2015 10:41 PM	PA/VA
Manganese	12.6	0.002	0.100	NA		mg/L	3/25/2015 10:41 PM	PA/VA

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WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 12:40:00 PM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-04A	**Matrix:**	Liquid
Client Sample ID:	4- BRIDGEPORT POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Aluminum	0.027	0.006	0.100	NA	J	mg/L	3/25/2015 10:44 PM	PA/VA
Antimony	ND	0.040	0.200	NA		mg/L	3/28/2015 12:43 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Barium	0.051	0.002	0.100	NA	J	mg/L	3/25/2015 10:44 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Boron	0.373	0.035	0.100	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Iron	0.089	0.010	0.100	NA	J	mg/L	3/25/2015 10:44 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Lithium	ND	0.020	0.100	NA		mg/L	3/25/2015 2:28 PM	
Manganese	0.019	0.002	0.100	NA	J	mg/L	3/25/2015 10:44 PM	PA/VA
Nickel	ND	0.005	0.100	NA		mg/L	3/28/2015 12:43 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Strontium	0.202	0.001	0.010	NA		mg/L	3/25/2015 2:28 PM	PA
Vanadium	ND	0.005	0.100	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Zinc	0.047	0.003	0.050	NA	J	mg/L	3/25/2015 10:44 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	3/19/2015 12:09 PM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0102	NA		mg/L	3/19/2015 7:44 PM	
1,4-Napthoquinone	ND	NA	0.0102	NA		mg/L	3/19/2015 7:44 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0512	NA		mg/L	3/19/2015 7:44 PM	
Pentachloronitrobenzene	ND	NA	0.0102	NA		mg/L	3/19/2015 7:44 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
Butyl benzyl phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
Di-n-butyl phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
Diethyl phthalate	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
Dimethyl phthalate	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA

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WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 12:40:00 PM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-04A	**Matrix:**	Liquid
Client Sample ID:	4- BRIDGEPORT POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
Fluoranthene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
Nitrobenzene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
Surr: 2-Fluorophenol	40.7	NA	32.9-110	NA		%REC	3/19/2015 7:44 PM	
Surr: Phenol-d5	31.8	NA	25.8-110	NA		%REC	3/19/2015 7:44 PM	
Surr: 2,4,6-Tribromophenol	83.0	NA	63.8-110	NA		%REC	3/19/2015 7:44 PM	
Surr: Nitrobenzene-d5	81.9	NA	61.8-110	NA		%REC	3/19/2015 7:44 PM	
Surr: 2-Fluorobiphenyl	80.9	NA	58.6-110	NA		%REC	3/19/2015 7:44 PM	
Surr: 4-Terphenyl-d14	83.3	NA	55.1-110	NA		%REC	3/19/2015 7:44 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	3/27/2015 7:08 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	3/27/2015 7:08 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	3/27/2015 7:08 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/27/2015 7:08 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/27/2015 7:08 PM	PA/VA
1,4-Dichlorobenzene	1.03	0.500	1.00	NA		µg/L	3/27/2015 7:08 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	108	NA	68.7-129	NA		%REC	3/27/2015 7:08 PM	
Surr: 4-Bromofluorobenzene	119	NA	71.8-127	NA		%REC	3/27/2015 7:08 PM	
Surr: Dibromofluoromethane	94.1	NA	74.3-124	NA		%REC	3/27/2015 7:08 PM	
Surr: Toluene-d8	90.7	NA	71.4-129	NA		%REC	3/27/2015 7:08 PM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: VR**	
Biochemical Oxygen Demand	ND	2	5	NA		mg/L	3/17/2015 1:20 PM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	25	4	10	NA		mg/L	3/17/2015 8:09 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0003	0.0010	NA		mg/L	3/18/2015 12:23 PM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	124	1.00	10.0	NA		mg/L	3/17/2015 10:08 AM	PA/VA
Fluoride	0.30	0.05	0.20	NA		mg/L	3/17/2015 10:08 AM	PA/VA
Sulfate	74.6	1.00	5.00	NA		mg/L	3/17/2015 10:08 AM	PA/VA

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Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 12:40:00 PM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-04A	**Matrix:**	Liquid
Client Sample ID:	4- BRIDGEPORT POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	9.30	0.20	1.00	NA		mg/L	3/17/2015 10:08 AM	PA/VA
Nitrogen, Nitrite	ND	0.05	0.50	NA		mg/L	3/17/2015 10:08 AM	PA/VA
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	1.51	0.10	0.50	NA		mg/L	3/19/2015 8:34 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	ND	2.0	5.0	NA		mg/L	3/25/2015 1:00 PM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	3/17/2015 2:08 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	0.08	0.04	0.10	NA	J	mg/L	3/19/2015 5:00 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	957	NA	NA	NA		µmhos/cm	3/17/2015 1:00 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	543	5	10	NA		mg/L	3/18/2015 6:30 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	3.5	1.0	5.0	NA	J	mg/L	3/17/2015 5:53 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	7.9	1.0	10	NA	J	mg/L	3/17/2015 12:09 PM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	72.7	1.0	10	NA		mg/L	3/17/2015 12:09 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	7.07	NA	NA	NA		SU	3/17/2015 12:09 PM	PA

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Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 12:40:00 PM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-04B	**Matrix:**	Liquid
Client Sample ID:	4- BRIDGEPORT POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Iron	0.068	0.010	0.100	NA	J	mg/L	3/25/2015 10:47 PM	PA/VA
Manganese	0.017	0.002	0.100	NA	J	mg/L	3/25/2015 10:47 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 12:00:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-05A	**Matrix:**	Trip Blank
Client Sample ID:	TRIP BLANK	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	3/28/2015 1:46 AM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	3/28/2015 1:46 AM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	3/28/2015 1:46 AM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/28/2015 1:46 AM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/28/2015 1:46 AM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/28/2015 1:46 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	98.4	NA	68.7-129	NA		%REC	3/28/2015 1:46 AM	
Surr: 4-Bromofluorobenzene	126	NA	71.8-127	NA		%REC	3/28/2015 1:46 AM	
Surr: Dibromofluoromethane	96.0	NA	74.3-124	NA		%REC	3/28/2015 1:46 AM	
Surr: Toluene-d8	89.7	NA	71.4-129	NA		%REC	3/28/2015 1:46 AM	

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Sunday, April 26, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/ LEACHATE ANALYSIS

Work Order #: 1503I30

Dear GEORGE CARICO:

Please find enclosed amended results. If you have any questions regarding these results, please do not hesitate to call.

Sincerely,

Kathy Berry

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1503I30

Date Reported: 4/26/2015

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project: DRILL CUTTING/ LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1503I30

Date Reported: 4/26/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 8:55:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I30-01A	**Matrix:**	Liquid
Client Sample ID:	1- PARKERSBURG POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1503I30

Date Reported: 4/26/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 9:45:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I30-02A	**Matrix:**	Liquid
Client Sample ID:	2- NORTHWESTERN LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1503I30

Date Reported: 4/26/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 11:50:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I30-03A	**Matrix:**	Liquid
Client Sample ID:	3-MEADOWFILL LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1503I30

Date Reported: 4/26/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 12:40:00 PM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I30-04A	**Matrix:**	Liquid
Client Sample ID:	4- BRIDGEPORT POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

June 10, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1503I30
Pace Project No.: 30143094

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on March 18, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1503I30
Pace Project No.: 30143094

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1503I30
Pace Project No.: 30143094

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30143094001	**1503I30-01A**	Water	03/16/15 08:55	03/18/15 10:20
30143094002	**1503I30-02A**	Water	03/16/15 09:45	03/18/15 10:20
30143094003	**1503I30-03A**	Water	03/16/15 11:50	03/18/15 10:20
30143094004	**1503I30-04A**	Water	03/16/15 12:40	03/18/15 10:20

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1503I30
Pace Project No.: 30143094

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30143094001	**1503I30-01A**	SM 7500Rn-B	JAL	1
30143094002	**1503I30-02A**	SM 7500Rn-B	JAL	1
30143094003	**1503I30-03A**	SM 7500Rn-B	JAL	1
30143094004	**1503I30-04A**	SM 7500Rn-B	JAL	1

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503I30
Pace Project No.: 30143094

Method: **SM 7500Rn-B**
Description: 7500RnB Radon
Client: REI Consultants, Inc.
Date: June 10, 2015

General Information:
4 samples were analyzed for SM 7500Rn-B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143094

Sample: 1503I30-01A **Lab ID: 30143094001** Collected: 03/16/15 08:55 Received: 03/18/15 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**-0.7 ± 27.1 (47.6)** **C:NA T:NA**	pCi/L	03/18/15 21:04	10043-92-2	

Sample: 1503I30-02A **Lab ID: 30143094002** Collected: 03/16/15 09:45 Received: 03/18/15 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**34.0 ± 29.5 (47.5)** **C:NA T:NA**	pCi/L	03/18/15 21:37	10043-92-2	

Sample: 1503I30-03A **Lab ID: 30143094003** Collected: 03/16/15 11:50 Received: 03/18/15 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**41.3 ± 29.9 (47.0)** **C:NA T:NA**	pCi/L	03/18/15 22:11	10043-92-2	

Sample: 1503I30-04A **Lab ID: 30143094004** Collected: 03/16/15 12:40 Received: 03/18/15 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**19.7 ± 28.1 (47.1)** **C:NA T:NA**	pCi/L	03/18/15 23:17	10043-92-2	

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143094

QC Batch: RADC/23736 Analysis Method: SM 7500Rn-B
QC Batch Method: SM 7500Rn-B Analysis Description: 7500Rn B Radon
Associated Lab Samples: 30143094001, 30143094002, 30143094003, 30143094004

METHOD BLANK: 865504 Matrix: Water
Associated Lab Samples: 30143094001, 30143094002, 30143094003, 30143094004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radon	7.1 ± 17.7 (30.2) C:NA T:NA	pCi/L	03/18/15 19:57	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1503I30
Pace Project No.: 30143094

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3436	PAGE: 1	OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA COMPANY: PACE ANALYTICAL SERVIC

ADDRESS: 1638 ROSEYTOWN ROAD

CITY, STATE, ZIP: GREENSBURG, PA 15601

PHONE: (724) 850-5600 FAX:

ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:

State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. Results to Kathy Berry at kberry@reiclabs.com

ANALYTICAL PARAMETERS

30143094

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	RADON (913.0)	
						*	0	
1	1503I30-01A	1- PARKERSBURG POTW	.	Liquid	3/16/2015 8:55:00 AM	3	√	001
2	1503I30-02A	2- NORTHWESTERN LF	.	Liquid	3/16/2015 9:45:00 AM	3	√	002
3	1503I30-03A	3-MEADOWFILL LF	.	Liquid	3/16/2015 11:50:00 AM	3	√	003
4	1503I30-04A	4- BRIDGEPORT POTW	.	Liquid	3/16/2015 12:40:00 PM	3	√	004

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[illegible]	3-16-15	1906	UPS	3-17-15	16:00
Relinquished By:	Date:	Time:	Received By: [illegible]	Date: 3/18/15	Time: 1020
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples NA °C Attempt to Cool ? _____

Comments: _____

Sample Condition Upon Receipt

Pace Analytical

Client Name: REIC

Project # 30143094

Courier: ☐ Fed Ex ☑ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1Z 26X 713 13 7796 5042

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no **Biological Tissue is Frozen:** Yes No

Packing Material: Bubble Wrap ✓ Bubble Bags ____ None ____ Other _____

Thermometer Used NA **Type of Ice:** (Wet) Blue None ☐ Samples on Ice, cooling process has begun

Cooler Temp.: Observed Temp.: NA °C **Correction Factor:** NA °C **Final Temp:** NA °C

Date and initials of person examining contents: Am 3/18/15

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☑Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☑Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☑No	☐N/A	4.
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☑Yes	☐No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☑No	☐N/A	7.
Sufficient Volume:	☑Yes	☐No	☐N/A	8.
Correct Containers Used:	☑Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☑No	☐N/A	
Containers Intact:	☑Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: WT	☐Yes	☑No	☐N/A	12. no date or time on samples
All containers needing preservation have been checked.	☐Yes	☐No	☑N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☑N/A	
exceptions: VOA, coliform, TOC, O&G, Phenols	☑Yes	☐No		Initial when completed Am / Lot # of added preservative
Samples checked for dechlorination:	☐Yes	☐No	☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☑N/A	15.
Trip Blank Present:	☐Yes	☐No	☑N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☑N/A	
Pace Trip Blank Lot # (if purchased): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carmen Serrano **Date:** 3/18/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

30143094

Pace Analytical

Project Number: _____

Client Name: REIC

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other RADON	Other
001	WT																						3	
004																								

SCURF Back (C016-4 15May2012).xls

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

April 03, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1503I30
Pace Project No.: 30143334

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on March 19, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1503I30
Pace Project No.: 30143334

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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Greensburg, PA 15601
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SAMPLE SUMMARY

Project: 1503I30
Pace Project No.: 30143334

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30143334001	**1503I30-01A**	Water	03/16/15 08:55	03/19/15 15:20
30143334002	**1503I30-02A**	Water	03/16/15 09:45	03/19/15 15:20
30143334003	**1503I30-03A**	Water	03/16/15 11:50	03/19/15 15:20
30143334004	**1503I30-04A**	Water	03/16/15 12:40	03/19/15 15:20

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SAMPLE ANALYTE COUNT

Project: 1503I30
Pace Project No.: 30143334

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30143334001	**1503I30-01A**	EPA 900.0	FCC	2
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1
30143334002	**1503I30-02A**	SM 7110C	FCC	1
		EPA 900.0	FCC	1
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1
30143334003	**1503I30-03A**	SM 7110C	FCC	1
		EPA 900.0	FCC	1
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1
30143334004	**1503I30-04A**	EPA 900.0	FCC	2
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1

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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503I30
Pace Project No.: 30143334

Method: **SM 7110C**
Description: 7110C Gross Alpha
Client: REI Consultants, Inc.
Date: April 03, 2015

General Information:
2 samples were analyzed for SM 7110C. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503I30
Pace Project No.: 30143334

Method: **EPA 900.0**
Description: 900.0 Gross Alpha/Beta
Client: REI Consultants, Inc.
Date: April 03, 2015

General Information:
4 samples were analyzed for EPA 900.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, Inc.
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(724)850-5600

PROJECT NARRATIVE

Project: 1503I30
Pace Project No.: 30143334

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: REI Consultants, Inc.
Date: April 03, 2015

General Information:
4 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503I30
Pace Project No.: 30143334

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: REI Consultants, Inc.
Date: April 03, 2015

General Information:
4 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 1503I30
Pace Project No.: 30143334

Method: **ASTM D5811-95**
Description: ASTM D5811 Sr 89/90 Eichrom
Client: REI Consultants, Inc.
Date: April 03, 2015

General Information:
4 samples were analyzed for ASTM D5811-95. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: RADC/23846

N2: The lab does not hold TNI accreditation for this parameter.

- 1503I30-01A (Lab ID: 30143334001)
  - Strontium-90
- 1503I30-02A (Lab ID: 30143334002)
  - Strontium-90
- 1503I30-03A (Lab ID: 30143334003)
  - Strontium-90
- 1503I30-04A (Lab ID: 30143334004)
  - Strontium-90
- BLANK (Lab ID: 870159)
  - Strontium-90

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143334

Sample: 1503I30-01A **Lab ID: 30143334001** Collected: 03/16/15 08:55 Received: 03/19/15 15:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**0.426 ± 0.648 (1.20) C:NA T:NA**	pCi/L	03/28/15 11:36	12587-46-1	
Gross Beta	EPA 900.0	**4.79 ± 1.42 (1.81) C:NA T:NA**	pCi/L	03/28/15 11:36	12587-47-2	
Radium-226	EPA 903.1	**0.310 ± 0.708 (0.420) C:NA T:91%**	pCi/L	04/01/15 11:37	13982-63-3	
Radium-228	EPA 904.0	**-0.291 ± 0.380 (0.969) C:73% T:75%**	pCi/L	04/01/15 15:48	15262-20-1	
Strontium-90	ASTM D5811-95	**-0.00400 ± 0.866 (1.58) C:99% T:NA**	pCi/L	03/27/15 21:40	10098-97-2	N2

Sample: 1503I30-02A **Lab ID: 30143334002** Collected: 03/16/15 09:45 Received: 03/19/15 15:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.
• Upon receipt at the laboratory, 3 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	SM 7110C	**12.8 ± 4.34 (4.52) C:NA T:NA**	pCi/L	04/01/15 18:57	12587-46-1	
Gross Beta	EPA 900.0	**776 ± 141 (16.0) C:NA T:NA**	pCi/L	03/28/15 11:36	12587-47-2	
Radium-226	EPA 903.1	**5.05 ± 2.10 (0.570) C:NA T:89%**	pCi/L	04/01/15 11:26	13982-63-3	
Radium-228	EPA 904.0	**3.27 ± 0.868 (0.921) C:70% T:79%**	pCi/L	04/01/15 15:48	15262-20-1	
Strontium-90	ASTM D5811-95	**0.0440 ± 0.747 (1.29) C:97% T:NA**	pCi/L	03/28/15 11:44	10098-97-2	N2

Sample: 1503I30-03A **Lab ID: 30143334003** Collected: 03/16/15 11:50 Received: 03/19/15 15:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	SM 7110C	**3.52 ± 1.77 (2.50) C:NA T:NA**	pCi/L	04/01/15 18:57	12587-46-1	
Gross Beta	EPA 900.0	**280 ± 55.7 (29.3) C:NA T:NA**	pCi/L	03/28/15 11:36	12587-47-2	
Radium-226	EPA 903.1	**1.26 ± 0.833 (0.378) C:NA T:92%**	pCi/L	04/01/15 11:25	13982-63-3	
Radium-228	EPA 904.0	**1.18 ± 0.553 (0.923) C:72% T:75%**	pCi/L	04/01/15 15:48	15262-20-1	
Strontium-90	ASTM D5811-95	**-0.131 ± 0.651 (1.14) C:107% T:NA**	pCi/L	03/28/15 11:45	10098-97-2	N2

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143334

Sample: 1503I30-04A **Lab ID: 30143334004** Collected: 03/16/15 12:40 Received: 03/19/15 15:20 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**-0.496 ± 1.31 (2.86)** **C:NA T:NA**	pCi/L	03/28/15 13:39	12587-46-1	
Gross Beta	EPA 900.0	**6.09 ± 1.73 (2.08)** **C:NA T:NA**	pCi/L	03/28/15 13:39	12587-47-2	
Radium-226	EPA 903.1	**0.742 ± 1.13 (0.670)** **C:NA T:75%**	pCi/L	04/01/15 11:36	13982-63-3	
Radium-228	EPA 904.0	**0.519 ± 0.440 (0.885)** **C:76% T:75%**	pCi/L	04/01/15 15:48	15262-20-1	
Strontium-90	ASTM D5811-95	**-0.0720 ± 0.579 (1.01)** **C:97% T:NA**	pCi/L	03/28/15 11:45	10098-97-2	N2

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143334

QC Batch: RADC/23795 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

METHOD BLANK: 868169 Matrix: Water
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0726 ± 0.367 (0.836) C:70% T:86%	pCi/L	04/01/15 11:10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143334

QC Batch: RADC/23855 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

METHOD BLANK: 870170 Matrix: Water
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	-0.372 ± 0.365 (1.45) C:NA T:NA	pCi/L	03/28/15 09:09	
Gross Beta	-0.356 ± 0.645 (1.77) C:NA T:NA	pCi/L	03/28/15 09:09	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143334

QC Batch: RADC/23792 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

METHOD BLANK: 868166 Matrix: Water
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.299 ± 0.310 (0.462) C:NA T:101%	pCi/L	04/01/15 11:27	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143334

QC Batch: RADC/23846 Analysis Method: ASTM D5811-95
QC Batch Method: ASTM D5811-95 Analysis Description: ASTM D5811 Sr 89/90 Eichrom
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

METHOD BLANK: 870159 Matrix: Water
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Strontium-90	-0.117 ± 0.329 (0.776) C:95% T:NA	pCi/L	03/28/15 11:44	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143334

QC Batch: RADC/23909 Analysis Method: SM 7110C
QC Batch Method: SM 7110C Analysis Description: 7110C Gross Alpha
Associated Lab Samples: 30143334002, 30143334003

METHOD BLANK: 873323 Matrix: Water
Associated Lab Samples: 30143334002, 30143334003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.503 ± 1.05 (2.45) C:NA T:NA	pCi/L	04/01/15 17:10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1503I30
Pace Project No.: 30143334

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

N2 The lab does not hold TNI accreditation for this parameter.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3437	PAGE: 1	OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA COMPANY: PACE ANALYTICAL SERVIC

ADDRESS: 1638 ROSEYTOWN ROAD

CITY, STATE, ZIP: GREENSBURG, PA 15601

PHONE: (724) 850-5600 FAX:

ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:

State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. Results to Kathy Berry at kberry@reiclabs.com

ANALYTICAL PARAMETERS

30143334

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	GROSS_ALPHA_SUB (EPA 900.0)	GROSS_BETA_SUB (EPA 900.0)	RADIUM_226_SUB (EPA 903.1)	RADIUM_228_SUB (EPA 904.0)	STRONTIUM_90_SUB (EPA 905.0)	
						*	2	2	2	2	2	
1	1503I30-01A	1- PARKERSBURG POTW	.	Liquid	3/16/2015 8:55:00 AM	1	√	√	√	√	√	001
2	1503I30-02A	2- NORTHWESTERN LF	.	Liquid	3/16/2015 9:45:00 AM	1	√	√	√	√	√	002
3	1503I30-03A	3-MEADOWFILL LF	.	Liquid	3/16/2015 11:50:00 AM	1	√	√	√	√	√	003
4	1503I30-04A	4- BRIDGEPORT POTW	.	Liquid	3/16/2015 12:40:00 PM	1	√	√	√	√	√	004

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[illegible]	3-16-15	1906	UPS	3-17-15	16:00
[illegible]	3/18/15	1021	[illegible]	3-18-15	11:41
[illegible]	3-19-15	15:20	Scott Cunnio Pace	3-19-15	1520

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples ____ °C Attempt to Cool ? ____

Comments: ____

Sample Condition Upon Receipt

Pace Analytical

Client Name: REIC

Project # 30143334

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no Biological Tissue is Frozen: Yes No

Packing Material: Bubble Wrap X Bubble Bags ____ None ____ Other _____

Thermometer Used NA Type of Ice: Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.:_____°C Correction Factor: _____°C Final Temp:_____°C

Date and initials of person examining contents: SMS-17-15

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☒No	☐N/A	4.
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes	☒No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☒No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: wt	☒Yes	☐No	☐N/A	12.
All containers needing preservation have been checked.	☒Yes	☐No	☐N/A	13. Sample #2 Added 3 ml HNO3 @ 1735 3-17-15 SRA
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☒No	☐N/A	Initial when completed SRA / Lot # of added preservative DL15-0162
exceptions: VOA, coliform, TOC, O&G, Phenols	☐Yes	☒No		
Samples checked for dechlorination:	☐Yes	☐No	☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☒N/A	15.
Trip Blank Present:	☐Yes	☒No	☐N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carmen Serrano **Date:** 3/20/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

page 2

Project Number: 30143334

Client Name: REFC

Item No.												
Matrix Code												
Glass Jar (120 / 250 / 500 / 1L)												
Soil kit (2 SB, 1M, soil jar)												
Chemistry (250 / 500 / 1L)												
Organics (1L)												
Nutrient (250 / 500)												
Phenolics (250 ml)												
TOC (40 ml / 250 ml)												
TOX (250 ml)												
Total Metals												
Dissolved Metals preserved Y N												
O & G (1L)												
TPH (1L)												
VOA (40 ml 30 ml)												
Cyanide (250 ml)												
Sulfide (500 ml)												
Bacteria (120 ml)												
Wipes / swipe/ smear/ filter												
Radchem Nalgene (125 / 250 / 500 / 1L)										4	5	
Radchem Nalgene (1/2 gal. / 1 gal.L)												
Cubitainer (500 ml / 4L)												
Ziploc												
Other												
Other												

SCURF Back (C016-4 15May2012).xls

CHAIN OF CUSTODY RECORD

v10-0114 REIC use ONLY CLIENT ID MAR071 DATE _____ SHEET _____

REIC
Research Environmental & Industrial Consultants, Inc.
MAIN LABORATORY & CORPORATE HEADQUARTERS:
P.O. Box 286 • 225 Industrial Park Rd, Beaver, WV 25813
800-999-0105 • 304-255-2500 • www.reiclabs.com

MID-OHIO VALLEY Service Center
101 17th Street
Ashland, KY 41101
606-393-5027

SHENANDOAH Service Center
1557 Commerce Rd., Ste 201
Verona, VA 24482
540-248-0183

ROANOKE Service Center
3029-C Peters Creek Rd
Roanoke, VA 24019
540-777-1276

MORGANTOWN Service Center
16 Commerce Drive
Westover, WV 26501
304-241-5861

Client: Marshall University Center for Environmental, Geotechnical and Applied Sciences PO # _____
Contact Person George Carico/Jamie Wolfe Phone 304-696-5456
Address One John Marshall Drive City Huntington State WV Zip 25755
Billing Address (if different) _____
City _____ State _____ Zip _____
Site ID & State Meadowfill Landfill/Bridgeport WWTP Project ID Drill Cutting/Leachate Analysis Sampler J McGee

SAMPLE LOG & ANALYSIS REQUEST

TURNAROUND TIME: (•) NORMAL — RUSH TURNAROUND*: ( ) 5 DAY ( ) 3 DAY ( ) 2 DAY ( ) 1 DAY

*Rush work needs prior laboratory approval and will incur additional charges

ANALYSIS & METHOD REQUESTED: See Attachment

Field Readings: pH / Temp / Cond.
6.51 / 17.7 / 25,200
5.76 / 10.8 / 1,110

MSC Sampling Fee-- 3 hrs

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	0	1	2	3	5	10			
1-Meadowfill LF	20	12/8/14 @ 0910	Water	Grab	X				X				X
2-Bridgeport WWTP Effluent	23	1020	Water	Grab	X					X			
Trip Blank	1		Water	Grab	X								
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									

ENTER PRESERVATIVE CODE(S):
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Bisulfate/Methanol
9 Ammonium Chloride
10 AS/AH *
11 _____ *
* (Use blanks for preservatives not listed.)

COMMENTS:
Dissolved Metals are Field Filtered

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: ___ °C ICED? Y ✓ N___

Containers provided by: [✓] REIC [ ] Client

1		2		3	
Relinquished by (signature)	Date/Time 12-8-14 1700	Relinquished by (signature)	Date/Time	Relinquished by (signature)	Date/Time
Received by (signature)	Date/Time 12/8/14 1300	Received by (signature)	Date/Time	Received by (signature)	Date/Time

WVDEP Drill Cutting / Leachate Analysis List

Aluminum

Antimony

Arsenic

Barium

Beryllium

Boron

Cadmium

Chromium

Hexavalent Chromium

Copper

Lead

Lithium

Mercury

Nickel

Selenium

Silver

Strontium

Vanadium

Zinc

Chloride

Fluoride

Nitrate as Nitrogen

Nitrite as Nitrogen

Sulfate

Total Suspended Solids

Free Cyanide

Benzene

Chlorobenzene

Chlorodibromomethane

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

1,4-Dinitrobenzene

1,4-Naphthoquinone

2,4-Dinitrotoluene

2,6-Dinitrotoluene

4-Nitroquinoline-1-oxide

bis(2-ethylhexyl) phthalate

Butyl benzylphthalate

Di-N-Butyl Phthalate

Di-N-Octylphthalate Diethyl Phthalate

Dimethyl Phthalate

Flouranthene

Nitrobenzene

Pentachloronitrobenzene

Gross Alpha

Gross Beta

Radium 226

Radium 228

Strontium 90

Radon

pH

Total Dissolved Solids

Total Suspended Solids

BOD 5-Day

Ammonia as Nitrogen

Total Kjeldahl Nitrogen

Oil & Grease

Acidity to pH 8.3

Specific Conductance

Alkalinity to pH 4.5

Chemical Oxygen Demand

Dissolved Iron and Iron

Manganese and Dissolved Manganese

REI Consultants, Inc.

FIELD LOG: pH Calibration Records 6-2010.Rev.1

Client Name: Marshall University Site Location: Meadowfill LF - Bridgeport WWTP

Date: 12/8/14 Analyst: [illegible]

Calibration Location: Field / Laboratory Instrument: Oakton pH Meter

4.0 Buffer Lot #: D085-14
7.0 Buffer Lot #: D115-04
10.0 Buffer Lot #: D112-08

pH (SU) - SM4500-H+B, 18th Edition				
Standard	Initial Reading	Reading After Calibration	Temperature °C	Comments
4.0 Buffer	4.05	4.01	20.5	
7.0 Buffer	7.02	7.01	↓	
10.0 Buffer	10.03	10.01	↓	

Slope: 97.9

Comments:

Calibration at the laboratory requires a pH 7.0 QC Check

All field pH analysis must be followed by a Post Analysis pH Check

Quality Control Samples	Reading	Acceptance Range:
QC Check, 7.0	6.99	*True Value ± 0.1 (6.9 - 7.1)*
Post Analysis QC Check, 7.0	7.00	

REI Consultants, Inc. P.O. Box 286 Beaver, WV 25813 Phone: 800-999-0105 Fax: 304-255-2572 www.reiclabs.com

REI Consultants, Inc.
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Improving the environment, one client at a time...

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1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Thursday, December 18, 2014

GEORGE CARICO
MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/LEACHATE ANALYSIS

Work Order #: 1412A31

Dear GEORGE CARICO:

REI Consultants, Inc. received 3 sample(s) on 12/8/2014 for the analyses presented in the following report.

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1412A31

Date Reported: 12/18/2014

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,

Project: DRILL CUTTING/LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1412A31

Date Reported: 12/18/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/8/2014 9:10:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/8/2014
Lab ID:	1412A31-01A	**Matrix:**	Liquid
Client Sample ID:	1-MEADOWFILL LF	**Site ID:**	MEADOWFILL LANDFILL/BRIDGEPORT WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.007	0.005	0.100	NA	J	mg/L	12/10/2014 5:47 PM	PA/VA
Antimony	ND	0.020	0.200	NA		mg/L	12/10/2014 5:47 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	12/10/2014 5:47 PM	PA/VA
Barium	0.681	0.002	0.100	NA		mg/L	12/10/2014 5:47 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	12/10/2014 5:47 PM	PA/VA
Boron	3.24	0.020	0.100	NA		mg/L	12/10/2014 5:47 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	12/10/2014 5:47 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	12/10/2014 5:47 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	12/10/2014 5:47 PM	PA/VA
Iron	1.67	0.010	0.100	NA		mg/L	12/10/2014 5:47 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	12/10/2014 5:47 PM	PA/VA
Lithium	0.461	0.020	0.100	NA		mg/L	12/10/2014 11:31 AM	
Manganese	12.2	0.002	0.100	NA		mg/L	12/10/2014 5:47 PM	PA/VA
Nickel	0.011	0.005	0.100	NA	J	mg/L	12/10/2014 5:47 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	12/10/2014 5:47 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	12/10/2014 5:47 PM	PA/VA
Strontium	16.0	0.010	0.100	NA		mg/L	12/10/2014 11:34 AM	PA
Vanadium	0.048	0.005	0.100	NA	J	mg/L	12/10/2014 5:47 PM	PA/VA
Zinc	ND	0.003	0.050	NA		mg/L	12/10/2014 5:47 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	12/10/2014 12:13 PM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0108	NA		mg/L	12/12/2014 12:07 AM	
1,4-Napthoquinone	ND	NA	0.0108	NA		mg/L	12/12/2014 12:07 AM	
4-Nitroquinoline-1-oxide	ND	NA	0.0539	NA		mg/L	12/12/2014 10:29 PM	
Pentachloronitrobenzene	ND	NA	0.0108	NA		mg/L	12/12/2014 12:07 AM	
Bis(2-ethylhexyl)phthalate	ND	0.0054	0.0108	NA		mg/L	12/12/2014 12:07 AM	PA/VA
Butyl benzyl phthalate	ND	0.0054	0.0108	NA		mg/L	12/12/2014 12:07 AM	PA/VA
Di-n-butyl phthalate	ND	0.0054	0.0108	NA		mg/L	12/12/2014 12:07 AM	PA/VA
Diethyl phthalate	ND	0.0022	0.0108	NA		mg/L	12/12/2014 12:07 AM	PA/VA
Dimethyl phthalate	ND	0.0022	0.0108	NA		mg/L	12/12/2014 12:07 AM	PA/VA
2,4-Dinitrotoluene	ND	0.0022	0.0108	NA		mg/L	12/12/2014 12:07 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412A31

Date Reported: 12/18/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/8/2014 9:10:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/8/2014
Lab ID:	1412A31-01A	**Matrix:**	Liquid
Client Sample ID:	1-MEADOWFILL LF	**Site ID:**	MEADOWFILL LANDFILL/BRIDGEPORT WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
2,6-Dinitrotoluene	ND	0.0022	0.0108	NA		mg/L	12/12/2014 12:07 AM	PA/VA
Di-n-octyl phthalate	ND	0.0054	0.0108	NA		mg/L	12/12/2014 12:07 AM	PA/VA
Fluoranthene	ND	0.0022	0.0108	NA		mg/L	12/12/2014 12:07 AM	PA/VA
Nitrobenzene	ND	0.0022	0.0108	NA		mg/L	12/12/2014 12:07 AM	PA/VA
Surr: 2-Fluorophenol	37.0	NA	32.9-110	NA		%REC	12/12/2014 12:07 AM	
Surr: Phenol-d5	28.9	NA	25.8-110	NA		%REC	12/12/2014 12:07 AM	
Surr: 2,4,6-Tribromophenol	73.1	NA	63.8-110	NA		%REC	12/12/2014 12:07 AM	
Surr: Nitrobenzene-d5	68.1	NA	61.8-110	NA		%REC	12/12/2014 12:07 AM	
Surr: 2-Fluorobiphenyl	63.6	NA	58.6-110	NA		%REC	12/12/2014 12:07 AM	
Surr: 4-Terphenyl-d14	72.3	NA	55.1-110	NA		%REC	12/12/2014 12:07 AM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: TC**	
Benzene	3.06	0.500	1.00	NA		µg/L	12/11/2014 2:27 PM	PA/VA
Chlorobenzene	1.83	0.500	1.00	NA		µg/L	12/11/2014 2:27 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	12/11/2014 2:27 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/11/2014 2:27 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/11/2014 2:27 PM	PA/VA
1,4-Dichlorobenzene	11.1	5.00	10.0	NA		µg/L	12/11/2014 5:18 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	104	NA	68.7-129	NA		%REC	12/11/2014 5:18 AM	
Surr: 4-Bromofluorobenzene	101	NA	71.8-127	NA		%REC	12/11/2014 5:18 AM	
Surr: Dibromofluoromethane	97.1	NA	74.3-124	NA		%REC	12/11/2014 5:18 AM	
Surr: Toluene-d8	101	NA	71.4-129	NA		%REC	12/11/2014 5:18 AM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: CB**	
Biochemical Oxygen Demand	285	2	5	NA		mg/L	12/9/2014 12:57 PM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	335	40	100	NA		mg/L	12/9/2014 7:45 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0001	0.0010	NA	H	mg/L	12/10/2014 11:21 AM	PA/VA

Notes:

Sample acidity or alkalinity exceeded the added preservative, so that the required preservation pH was not achieved.

REI Consultants, Inc. - Analytical Report

WO#: 1412A31

Date Reported: 12/18/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/8/2014 9:10:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/8/2014
Lab ID:	1412A31-01A	**Matrix:**	Liquid
Client Sample ID:	1-MEADOWFILL LF	**Site ID:**	MEADOWFILL LANDFILL/BRIDGEPORT WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	6,100	50.0	500	NA		mg/L	12/9/2014 9:39 AM	PA/VA
Fluoride	2.75	1.25	5.00	NA	J	mg/L	12/9/2014 9:39 AM	PA/VA
Sulfate	690	25.0	125	NA		mg/L	12/9/2014 9:39 AM	PA/VA

Notes:

Elevated PQLs are due to matrix interference.

ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	ND	0.02	0.10	NA		mg/L	12/9/2014 9:39 AM	PA/VA
Nitrogen, Nitrite	ND	1.25	12.5	NA		mg/L	12/9/2014 9:39 AM	PA/VA

Notes:

Elevated PQLs are due to matrix interference.

TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	9.04	0.20	1.00	NA		mg/L	12/10/2014 9:30 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: KS**	
Oil & Grease	ND	2.0	5.0	NA		mg/L	12/9/2014 9:10 AM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	12/10/2014 2:15 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	0.72	0.04	0.10	NA		mg/L	12/9/2014 4:58 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: CC**	
Specific Conductivity	23,400	NA	NA	NA		µmhos/cm	12/9/2014 4:30 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: CC**	
Total Dissolved Solids	15,400	10	20	NA		mg/L	12/9/2014 4:58 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: CC**	
Total Suspended Solids	26.0	4.0	20.0	NA		mg/L	12/9/2014 4:59 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412A31

Date Reported: 12/18/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/8/2014 9:10:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/8/2014
Lab ID:	1412A31-01A	**Matrix:**	Liquid
Client Sample ID:	1-MEADOWFILL LF	**Site ID:**	MEADOWFILL LANDFILL/BRIDGEPORT WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	232	1.0	10	NA		mg/L	12/9/2014 10:07 AM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	755	2.0	20.0	NA		mg/L	12/9/2014 10:07 AM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	6.83	NA	NA	NA		SU	12/9/2014 10:07 AM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1412A31

Date Reported: 12/18/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/8/2014 9:10:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/8/2014
Lab ID:	1412A31-01B	**Matrix:**	Liquid
Client Sample ID:	1-MEADOWFILL LF	**Site ID:**	MEADOWFILL LANDFILL/BRIDGEPORT WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	0.217	0.010	0.100	NA		mg/L	12/10/2014 5:53 PM	PA/VA
Manganese	12.2	0.002	0.100	NA		mg/L	12/10/2014 5:53 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412A31

Date Reported: 12/18/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/8/2014 10:20:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/8/2014
Lab ID:	1412A31-02A	**Matrix:**	Liquid
Client Sample ID:	2-BRIDGEPORT WWTP EFFLUENT	**Site ID:**	MEADOWFILL LANDFILL/BRIDGEPORT WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.025	0.005	0.100	NA	J	mg/L	12/10/2014 6:03 PM	PA/VA
Antimony	0.033	0.020	0.200	NA	J	mg/L	12/10/2014 6:03 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	12/10/2014 6:03 PM	PA/VA
Barium	0.047	0.002	0.100	NA	J	mg/L	12/10/2014 6:03 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	12/10/2014 6:03 PM	PA/VA
Boron	0.256	0.020	0.100	NA		mg/L	12/10/2014 6:03 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	12/10/2014 6:03 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	12/10/2014 6:03 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	12/10/2014 6:03 PM	PA/VA
Iron	0.095	0.010	0.100	NA	J	mg/L	12/10/2014 6:03 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	12/10/2014 6:03 PM	PA/VA
Lithium	ND	0.020	0.100	NA		mg/L	12/10/2014 11:37 AM	
Manganese	0.015	0.002	0.100	NA	J	mg/L	12/12/2014 11:36 AM	PA/VA
Nickel	ND	0.005	0.100	NA		mg/L	12/10/2014 6:03 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	12/10/2014 6:03 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	12/10/2014 6:03 PM	PA/VA
Strontium	0.249	0.001	0.010	NA		mg/L	12/10/2014 11:37 AM	PA
Vanadium	ND	0.005	0.100	NA		mg/L	12/10/2014 6:03 PM	PA/VA
Zinc	0.029	0.003	0.050	NA	J	mg/L	12/10/2014 6:03 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	12/11/2014 4:26 PM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0104	NA		mg/L	12/12/2014 12:33 AM	
1,4-Napthoquinone	ND	NA	0.0104	NA		mg/L	12/12/2014 12:33 AM	
4-Nitroquinoline-1-oxide	ND	NA	0.0518	NA		mg/L	12/12/2014 10:53 PM	
Pentachloronitrobenzene	ND	NA	0.0104	NA		mg/L	12/12/2014 12:33 AM	
Bis(2-ethylhexyl)phthalate	ND	0.0052	0.0104	NA		mg/L	12/12/2014 12:33 AM	PA/VA
Butyl benzyl phthalate	ND	0.0052	0.0104	NA		mg/L	12/12/2014 12:33 AM	PA/VA
Di-n-butyl phthalate	ND	0.0052	0.0104	NA		mg/L	12/12/2014 12:33 AM	PA/VA
Diethyl phthalate	ND	0.0021	0.0104	NA		mg/L	12/12/2014 12:33 AM	PA/VA
Dimethyl phthalate	ND	0.0021	0.0104	NA		mg/L	12/12/2014 12:33 AM	PA/VA
2,4-Dinitrotoluene	ND	0.0021	0.0104	NA		mg/L	12/12/2014 12:33 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412A31

Date Reported: 12/18/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/8/2014 10:20:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/8/2014
Lab ID:	1412A31-02A	**Matrix:**	Liquid
Client Sample ID:	2-BRIDGEPORT WWTP EFFLUENT	**Site ID:**	MEADOWFILL LANDFILL/BRIDGEPORT WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
2,6-Dinitrotoluene	ND	0.0021	0.0104	NA		mg/L	12/12/2014 12:33 AM	PA/VA
Di-n-octyl phthalate	ND	0.0052	0.0104	NA		mg/L	12/12/2014 12:33 AM	PA/VA
Fluoranthene	ND	0.0021	0.0104	NA		mg/L	12/12/2014 12:33 AM	PA/VA
Nitrobenzene	ND	0.0021	0.0104	NA		mg/L	12/12/2014 12:33 AM	PA/VA
Surr: 2-Fluorophenol	33.3	NA	32.9-110	NA		%REC	12/12/2014 12:33 AM	
Surr: Phenol-d5	24.8	NA	25.8-110	NA	S	%REC	12/12/2014 12:33 AM	
Surr: 2,4,6-Tribromophenol	67.1	NA	63.8-110	NA		%REC	12/12/2014 12:33 AM	
Surr: Nitrobenzene-d5	61.4	NA	61.8-110	NA	S	%REC	12/12/2014 12:33 AM	
Surr: 2-Fluorobiphenyl	62.2	NA	58.6-110	NA		%REC	12/12/2014 12:33 AM	
Surr: 4-Terphenyl-d14	70.1	NA	55.1-110	NA		%REC	12/12/2014 12:33 AM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	12/11/2014 5:51 AM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	12/11/2014 5:51 AM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	12/11/2014 5:51 AM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/11/2014 5:51 AM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/11/2014 5:51 AM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/11/2014 5:51 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	107	NA	68.7-129	NA		%REC	12/11/2014 5:51 AM	
Surr: 4-Bromofluorobenzene	97.9	NA	71.8-127	NA		%REC	12/11/2014 5:51 AM	
Surr: Dibromofluoromethane	100	NA	74.3-124	NA		%REC	12/11/2014 5:51 AM	
Surr: Toluene-d8	98.8	NA	71.4-129	NA		%REC	12/11/2014 5:51 AM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: CB**	
Biochemical Oxygen Demand	3	2	5	NA	J	mg/L	12/9/2014 12:57 PM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	33	4	10	NA		mg/L	12/9/2014 7:45 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0001	0.0010	NA		mg/L	12/10/2014 11:34 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	127	2.50	25.0	NA		mg/L	12/9/2014 9:57 AM	PA/VA
Fluoride	0.12	0.05	0.20	NA	J	mg/L	12/9/2014 9:57 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412A31

Date Reported: 12/18/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/8/2014 10:20:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/8/2014
Lab ID:	1412A31-02A	**Matrix:**	Liquid
Client Sample ID:	2-BRIDGEPORT WWTP EFFLUENT	**Site ID:**	MEADOWFILL LANDFILL/BRIDGEPORT WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Sulfate	78.9	1.00	5.00	NA		mg/L	12/9/2014 9:57 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	16.5	0.50	2.50	NA		mg/L	12/9/2014 9:57 AM	PA/VA
Nitrogen, Nitrite	ND	0.05	0.50	NA		mg/L	12/9/2014 9:57 AM	PA/VA
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	3.28	0.20	1.00	NA		mg/L	12/10/2014 9:31 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: KS**	
Oil & Grease	ND	2.0	5.0	NA		mg/L	12/9/2014 9:10 AM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	12/10/2014 2:18 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	ND	0.04	0.10	NA		mg/L	12/10/2014 5:47 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: CC**	
Specific Conductivity	976	NA	NA	NA		µmhos/cm	12/9/2014 4:30 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: CC**	
Total Dissolved Solids	522	5	10	NA		mg/L	12/9/2014 4:58 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: CC**	
Total Suspended Solids	9.0	2.0	10	NA	J	mg/L	12/9/2014 4:59 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	8.1	1.0	10	NA	J	mg/L	12/9/2014 10:07 AM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	60.4	1.0	10	NA		mg/L	12/9/2014 10:07 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412A31

Date Reported: 12/18/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/8/2014 10:20:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/8/2014
Lab ID:	1412A31-02A	**Matrix:**	Liquid
Client Sample ID:	2-BRIDGEPORT WWTP EFFLUENT	**Site ID:**	MEADOWFILL LANDFILL/BRIDGEPORT WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	6.84	NA	NA	NA		SU	12/9/2014 10:07 AM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1412A31

Date Reported: 12/18/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/8/2014 10:20:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/8/2014
Lab ID:	1412A31-02B	**Matrix:**	Liquid
Client Sample ID:	2-BRIDGEPORT WWTP EFFLUENT	**Site ID:**	MEADOWFILL LANDFILL/BRIDGEPORT WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	0.055	0.010	0.100	NA	J	mg/L	12/10/2014 6:09 PM	PA/VA
Manganese	0.009	0.002	0.100	NA	J	mg/L	12/12/2014 11:40 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412A31

Date Reported: 12/18/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/8/2014 12:00:00 AM
Project:	DRILL CUTTING/LEACHATE ANALYSIS	**Date Received:**	12/8/2014
Lab ID:	1412A31-03A	**Matrix:**	Trip Blank
Client Sample ID:	TRIP BLANK	**Site ID:**	MEADOWFILL LANDFILL/BRIDGEPORT WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	12/11/2014 6:24 AM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	12/11/2014 6:24 AM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	12/11/2014 6:24 AM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/11/2014 6:24 AM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/11/2014 6:24 AM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/11/2014 6:24 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	104	NA	68.7-129	NA		%REC	12/11/2014 6:24 AM	
Surr: 4-Bromofluorobenzene	98.2	NA	71.8-127	NA		%REC	12/11/2014 6:24 AM	
Surr: Dibromofluoromethane	102	NA	74.3-124	NA		%REC	12/11/2014 6:24 AM	
Surr: Toluene-d8	99.2	NA	71.4-129	NA		%REC	12/11/2014 6:24 AM	

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Tuesday, December 30, 2014

GEORGE CARICO
MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING.LEACHATE ANALYSIS

Work Order #: 1412A33

Dear GEORGE CARICO:

REI Consultants, Inc. received 2 sample(s) on 12/8/2014 for the analyses presented in the following report.

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1412A33

Date Reported: 12/30/2014

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,

Project: DRILL CUTTING.LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1412A33

Date Reported: 12/30/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/8/2014 9:10:00 AM
Project:	DRILL CUTTING.LEACHATE ANALYSIS	**Date Received:**	12/8/2014
Lab ID:	1412A33-01A	**Matrix:**	Liquid
Client Sample ID:	1-MEADOWFILL LF	**Site ID:**	MEADOWFILL LANDFILL/BRIDGEPORT WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1412A33

Date Reported: 12/30/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/8/2014 10:20:00 AM
Project:	DRILL CUTTING.LEACHATE ANALYSIS	**Date Received:**	12/8/2014
Lab ID:	1412A33-02A	**Matrix:**	Liquid
Client Sample ID:	2-BRIDGEPORT WWTP EFFLUENT	**Site ID:**	MEADOWFILL LANDFILL/BRIDGEPORT WWTP

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

December 24, 2014

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1412A33
Pace Project No.: 30136235

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on December 10, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1412A33
Pace Project No.: 30136235

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1412A33
Pace Project No.: 30136235

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30136235001	**1412A33-01A**	Water	12/08/14 10:00	12/10/14 09:50
30136235002	**1412A33-02A**	Water	12/08/14 10:20	12/10/14 09:50

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1412A33
Pace Project No.: 30136235

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30136235001	**1412A33-01A**	SM 7110C	FCC	1
		SM 7500Rn-B	FCC	1
		EPA 900.0	FCC	1
		EPA 903.1	JC2	1
		EPA 904.0	JAL	1
		ASTM D5811-95	LAL	1
30136235002	**1412A33-02A**	SM 7500Rn-B	FCC	1
		EPA 900.0	FCC	2
		EPA 903.1	JC2	1
		EPA 904.0	JAL	1
		ASTM D5811-95	LAL	1

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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1412A33
Pace Project No.: 30136235

Method: **SM 7110C**
Description: 7110C Gross Alpha
Client: REI Consultants, Inc.
Date: December 24, 2014

General Information:
1 sample was analyzed for SM 7110C. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Sample 30136235001 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.

- 1412A33-01A (Lab ID: 30136235001)

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PROJECT NARRATIVE

Project: 1412A33
Pace Project No.: 30136235

Method: **SM 7500Rn-B**
Description: 7500RnB Radon
Client: REI Consultants, Inc.
Date: December 24, 2014

General Information:
2 samples were analyzed for SM 7500Rn-B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Sample 30136235001 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412A33-01A (Lab ID: 30136235001)

Sample 30136235002 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412A33-02A (Lab ID: 30136235002)

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PROJECT NARRATIVE

Project: 1412A33
Pace Project No.: 30136235

Method: **EPA 900.0**
Description: 900.0 Gross Alpha/Beta
Client: REI Consultants, Inc.
Date: December 24, 2014

General Information:
2 samples were analyzed for EPA 900.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Sample 30136235001 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412A33-01A (Lab ID: 30136235001)

Sample 30136235002 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412A33-02A (Lab ID: 30136235002)

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PROJECT NARRATIVE

Project: 1412A33
Pace Project No.: 30136235

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: REI Consultants, Inc.
Date: December 24, 2014

General Information:
2 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Sample 30136235001 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412A33-01A (Lab ID: 30136235001)

Sample 30136235002 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412A33-02A (Lab ID: 30136235002)

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PROJECT NARRATIVE

Project: 1412A33
Pace Project No.: 30136235

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: REI Consultants, Inc.
Date: December 24, 2014

General Information:
2 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Sample 30136235001 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412A33-01A (Lab ID: 30136235001)

Sample 30136235002 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412A33-02A (Lab ID: 30136235002)

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PROJECT NARRATIVE

Project: 1412A33
Pace Project No.: 30136235

Method: **ASTM D5811-95**
Description: 905.0 Strontium 89/90 Eichrom
Client: REI Consultants, Inc.
Date: December 24, 2014

General Information:
2 samples were analyzed for ASTM D5811-95. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Sample 30136235001 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412A33-01A (Lab ID: 30136235001)

Sample 30136235002 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412A33-02A (Lab ID: 30136235002)

This data package has been reviewed for quality and completeness and is approved for release.

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1412A33
Pace Project No.: 30136235

Sample: 1412A33-01A **Lab ID: 30136235001** Collected: 12/08/14 10:00 Received: 12/10/14 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	SM 7110C	**5.36 ± 2.21 (2.86) C:NA T:NA**	pCi/L	12/23/14 13:45	12587-46-1	
Radon	SM 7500Rn-B	**38.7 ± 47.4 (78.6) C:NA T:NA**	pCi/L	12/16/14 17:16	10043-92-2	
Gross Beta	EPA 900.0	**136 ± 73.2 (120) C:NA T:NA**	pCi/L	12/18/14 19:57	12587-47-2	
Radium-226	EPA 903.1	**3.23 ± 2.14 (0.973) C:NA T:78%**	pCi/L	12/19/14 11:47	13982-63-3	
Radium-228	EPA 904.0	**1.41 ± 1.34 (2.66) C:75% T:84%**	pCi/L	12/23/14 15:04	15262-20-1	
Strontium-90	ASTM D5811-95	**0.775 ± 0.617 (1.05) C:95% T:NA**	pCi/L	12/16/14 19:05	10098-97-2	

Sample: 1412A33-02A **Lab ID: 30136235002** Collected: 12/08/14 10:20 Received: 12/10/14 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**27.1 ± 47.2 (79.3) C:NA T:NA**	pCi/L	12/16/14 18:50	10043-92-2	
Gross Alpha	EPA 900.0	**0.156 ± 1.40 (2.99) C:NA T:NA**	pCi/L	12/19/14 22:18	12587-46-1	
Gross Beta	EPA 900.0	**5.38 ± 1.63 (2.07) C:NA T:NA**	pCi/L	12/19/14 22:18	12587-47-2	
Radium-226	EPA 903.1	**1.67 ± 1.72 (0.906) C:NA T:85%**	pCi/L	12/19/14 12:10	13982-63-3	
Radium-228	EPA 904.0	**0.381 ± 0.389 (0.787) C:80% T:74%**	pCi/L	12/23/14 15:04	15262-20-1	
Strontium-90	ASTM D5811-95	**0.0520 ± 0.429 (0.775) C:96% T:NA**	pCi/L	12/16/14 19:05	10098-97-2	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412A33
Pace Project No.: 30136235

QC Batch: RADC/22542
Analysis Method: ASTM D5811-95
QC Batch Method: ASTM D5811-95
Analysis Description: 905.0 Strontium 89/90 Eichrom
Associated Lab Samples: 30136235001, 30136235002

METHOD BLANK: 828711
Matrix: Water
Associated Lab Samples: 30136235001, 30136235002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Strontium-90	-0.375 ± 0.377 (1.08) C:98% T:NA	pCi/L	12/15/14 06:50	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412A33
Pace Project No.: 30136235

QC Batch: RADC/22525 | Analysis Method: SM 7500Rn-B
QC Batch Method: SM 7500Rn-B | Analysis Description: 7500Rn B Radon
Associated Lab Samples: 30136235001, 30136235002

METHOD BLANK: 828072 | Matrix: Water
Associated Lab Samples: 30136235001, 30136235002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radon	-17.7 ± 18.3 (33.1) C:NA T:NA	pCi/L	12/15/14 18:45	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412A33
Pace Project No.: 30136235

QC Batch: RADC/22538 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30136235001, 30136235002

METHOD BLANK: 828707 | Matrix: Water
Associated Lab Samples: 30136235001, 30136235002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0489 ± 0.355 (0.789) C:72% T:80%	pCi/L	12/23/14 15:04	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412A33
Pace Project No.: 30136235

QC Batch: RADC/22582 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30136235001, 30136235002

METHOD BLANK: 830301 | Matrix: Water
Associated Lab Samples: 30136235001, 30136235002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.522 ± 0.569 (0.896) C:NA T:100%	pCi/L	12/19/14 11:59	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412A33
Pace Project No.: 30136235

QC Batch: RADC/22696 | Analysis Method: SM 7110C
QC Batch Method: SM 7110C | Analysis Description: 7110C Gross Alpha
Associated Lab Samples: 30136235001

METHOD BLANK: 834521 | Matrix: Water
Associated Lab Samples: 30136235001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.669 ± 0.692 (1.27) C:NA T:NA	pCi/L	12/24/14 07:05	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412A33
Pace Project No.: 30136235

QC Batch: RADC/22646 | Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 | Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30136235001, 30136235002

METHOD BLANK: 832578 | Matrix: Water
Associated Lab Samples: 30136235001, 30136235002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	-0.173 ± 0.290 (0.898) C:NA T:NA	pCi/L	12/19/14 07:37	
Gross Beta	0.507 ± 0.631 (1.35) C:NA T:NA	pCi/L	12/19/14 07:37	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1412A33
Pace Project No.: 30136235

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3157 PAGE 1 OF 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA COMPANY: PACE ANALYTICAL SERVIC
ADDRESS: 1638 ROSEYTOWN ROAD
CITY, STATE, ZIP: GREENSBURG, PA 15601
PHONE: (724) 850-5600 FAX:
ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS
State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. All results to Kathy Berry at kberry@reiclabs.com

ANALYTICAL PARAMETERS

30136235

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS *	GROSS_ALPHA_SUB (EPA 900.0)	GROSS_BETA_SUB (EPA 900.0)	RADIUM_226_SUB (EPA 903.1)	RADIUM_228_SUB (EPA 904.0)	RADON (913.0)	STRONTIUM_90_SUB (EPA 905.0)	COMMENTS
						*	2	2	2	2	2	2	
1	1412A33-01A	1-MEADOWFILL LF		Liquid	12/8/2014 9:10:00 AM	1	√	√	√	√	√	√	001 *Use method 7110C for Gross Alpha
2	1412A33-02A	2-BRIDGEPORT WWTP EFFLUENT		Liquid	12/8/2014 10:20:00 AM	1	√	√	√	√	√	√	002 if needed KB 12/9/14

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCl
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS

Ship 12\9.
BC

Relinquished By: Brad Sr	Date: 12/9/14	Time: 16:00	Received By: UPS	Date: 12/9/14	Time: 16:00
Relinquished By:	Date:	Time:	Received By: Scott Quillio	Date: 12-10-14	Time: 0750
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples _____ °C Attempt to Cool ? _____
Comments _____

Am

Sample Condition Upon Receipt

Pace Analytical

Client Name: REEC

Project # 30136235

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1Z26X 713 13 6048 0481

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no **Biological Tissue is Frozen:** Yes No

Packing Material: Bubble Wrap X Bubble Bags ____ None ____ Other _____

Thermometer Used NA **Type of Ice:** Wet Blue (None) ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.:_____°C **Correction Factor:** _____°C **Final Temp:**_____°C

Date and Initials of person examining contents: SRA 12-10-14

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out:	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished:	☒ Yes	☐ No	☐ N/A	3.
Sampler Name & Signature on COC:	☐ Yes	☒ No	☐ N/A	4. waiver on file 12/10/14
Samples Arrived within Hold Time:	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72hr): SRA 12-10-14	☒ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested:	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume:	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used:	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used:	☐ Yes	☒ No	☐ N/A	
Containers Intact:	☒ Yes	☐ No	☐ N/A	10.
Filtered volume received for Dissolved tests	☐ Yes	☐ No	☒ N/A	11.
Sample Labels match COC:	☒ Yes	☐ No	☐ N/A	12.
-Includes date/time/ID/Analysis Matrix: WT				
All containers needing preservation have been checked.	☒ Yes	☐ No	☐ N/A	13. PHL2
All containers needing preservation are found to be in compliance with EPA recommendation.	☒ Yes	☐ No	☐ N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐ Yes	☒ No		Initial when completed SRA / Lot # of added preservative
Samples checked for dechlorination:	☐ Yes	☐ No	☒ N/A	14.
Headspace in VOA Vials (>6mm):	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Present:	☐ Yes	☒ No	☐ N/A	16.
Trip Blank Custody Seals Present	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carina Serico **Date:** 12/10/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30136235

Client Name: REIC

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other radon	Other
001	WA																		3				3	
002	1																		1				1	

CHAIN OF CUSTODY RECORD

v10-0114

REIC use ONLY — CLIENT ID MAR071 DATE ____ SHEET ____

REIC
Research Environmental & Industrial Consultants, Inc.
MAIN LABORATORY & CORPORATE HEADQUARTERS:
P.O. Box 286 • 225 Industrial Park Rd, Beaver, WV 25813
800-999-0105 • 304-255-2500 • www.reiclabs.com

MID-OHIO VALLEY Service Center
101 17th Street
Ashland, KY 41101
606-393-5027

SHENANDOAH Service Center
1557 Commerce Rd., Ste 201
Verona, VA 24482
540-248-0183

ROANOKE Service Center
3029-C Peters Creek Rd
Roanoke, VA 24019
540-777-1276

MORGANTOWN Service Center
16 Commerce Drive
Westover, WV 26501
304-241-5861

Client: Marshall University Center for Environmental, Geotechnical and Applied Sciences PO # ____

Contact Person: George Carico/Jamie Wolfe Phone: 304-696-5456

Address: One John Marshall Drive City: Huntington State: WV Zip: 25755

Billing Address (if different) ____

City ____ State ____ Zip ____

Site ID & State: Phase II Project ID: Drill Cutting/Leachate Analysis Sampler: J McGee

SAMPLE LOG & ANALYSIS REQUEST

TURNAROUND TIME	RUSH TURNAROUND*			
◉ NORMAL	○ 5 DAY	○ 3 DAY	○ 2 DAY	○ 1 DAY

*Rush work needs prior laboratory approval and will incur additional charges

ANALYSIS & METHOD REQUESTED: See Attachment

Field Readings: pH | Temp | Cond
6.05 | 10.2 | 572
6.84 | 19.2 | 11,890
6.56 | 20.1 | 25,100
6.20 | 10.9 | 913

MSC Sampling Fee--- 7 HRS

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	0	1	2	3	5	10			
1-Parkersburg POTW	20	3/16/15 @ 0855	Water	Grab	X				X				X
2-Northwestern LF	20	0945	Water	Grab	X					X			
3-Meadowfill LF	20	1150	Water	Grab	X						X		
4-Bridgeport POTW	23	1240	Water	Grab	X							X	
Trip Blank	1		Water	Grab	X								
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									

ENTER PRESERVATIVE CODE(S):
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Bisulfate/Methanol
9 Ammonium Chloride
10 AS/AH *
11 ____ *
* (Use blanks for preservatives not listed.)

COMMENTS:
Dissolved Metals are Field Filtered

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: ____ °C ICED? Y ____ N ____

Containers provided by: [✓] REIC [ ] Client

1		2		3	
Relinquished by (signature)	Date/Time 3-16-15 1400	Relinquished by (signature)	Date/Time	Relinquished by (signature)	Date/Time
Received by (signature)	Date/Time 3/16/15 1400	Received by (signature)	Date/Time	Received by (signature)	Date/Time

REI Consultants, Inc.

FIELD LOG: pH Calibration Records 6-2010.Rev.1

Client Name: Marshall Univ. Site Location: LF / Poty's

Date: 3/16/15 Analyst: [illegible]

Calibration Location: Field / Laboratory Instrument: Oakton pH Meter

4.0 Buffer Lot #: 0085-14

7.0 Buffer Lot #: 0119-04

10.0 Buffer Lot #: 0112-08

pH (SU) - SM4500-H+B, 18th Edition				
Standard	Initial Reading	Reading After Calibration	Temperature °C	Comments
4.0 Buffer	4.03	4.01	20.0	
7.0 Buffer	7.00	7.00		
10.0 Buffer	9.95	10.01		

Slope: 96.7%

Comments:

Calibration at the laboratory requires a pH 7.0 QC Check

All field pH analysis must be followed by a Post Analysis pH Check

Quality Control Samples	Reading	Acceptance Range:
QC Check, 7.0	7.01	True Value ± 0.1 (6.9 - 7.1)
Post Analysis QC Check, 7.0	6.94	

REI Consultants, Inc. P.O. Box 286 Beaver, WV 25813 Phone: 800-999-0105 Fax: 304-255-2572 www.reiclabs.com

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Improving the environment, one client at a time...

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TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Tuesday, March 31, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/ LEACHATE ANALYSIS

Work Order #: 1503I23

Dear GEORGE CARICO:

REI Consultants, Inc. received 5 sample(s) on 3/16/2015 for the analyses presented in the following report.

Sincerely,

Kathy Berry

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1503I23

Date Reported: 3/31/2015

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project: DRILL CUTTING/ LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 8:55:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-01A	**Matrix:**	Liquid
Client Sample ID:	1- PARKERSBURG POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Aluminum	0.221	0.006	0.100	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Antimony	ND	0.040	0.200	NA		mg/L	3/28/2015 12:34 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Barium	0.044	0.002	0.100	NA	J	mg/L	3/25/2015 10:20 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Boron	0.082	0.035	0.100	NA	J	mg/L	3/25/2015 10:20 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Copper	0.010	0.005	0.100	NA	J	mg/L	3/25/2015 10:20 PM	PA/VA
Iron	0.497	0.010	0.100	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Lithium	ND	0.020	0.100	NA		mg/L	3/25/2015 2:19 PM	
Manganese	0.156	0.002	0.100	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Nickel	ND	0.005	0.100	NA		mg/L	3/28/2015 12:34 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Strontium	0.182	0.001	0.010	NA		mg/L	3/25/2015 2:19 PM	PA
Vanadium	ND	0.005	0.100	NA		mg/L	3/25/2015 10:20 PM	PA/VA
Zinc	0.021	0.003	0.050	NA	J	mg/L	3/25/2015 10:20 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	3/18/2015 11:17 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0105	NA		mg/L	3/19/2015 6:39 PM	
1,4-Napthoquinone	ND	NA	0.0105	NA		mg/L	3/19/2015 6:39 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0524	NA		mg/L	3/19/2015 6:39 PM	
Pentachloronitrobenzene	ND	NA	0.0105	NA		mg/L	3/19/2015 6:39 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0052	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
Butyl benzyl phthalate	ND	0.0052	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
Di-n-butyl phthalate	ND	0.0052	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
Diethyl phthalate	ND	0.0021	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
Dimethyl phthalate	ND	0.0021	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0021	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0021	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 8:55:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-01A	**Matrix:**	Liquid
Client Sample ID:	1- PARKERSBURG POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0052	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
Fluoranthene	ND	0.0021	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
Nitrobenzene	ND	0.0021	0.0105	NA		mg/L	3/19/2015 6:39 PM	PA/VA
Surr: 2-Fluorophenol	41.7	NA	32.9-110	NA		%REC	3/19/2015 6:39 PM	
Surr: Phenol-d5	30.4	NA	25.8-110	NA		%REC	3/19/2015 6:39 PM	
Surr: 2,4,6-Tribromophenol	76.8	NA	63.8-110	NA		%REC	3/19/2015 6:39 PM	
Surr: Nitrobenzene-d5	80.9	NA	61.8-110	NA		%REC	3/19/2015 6:39 PM	
Surr: 2-Fluorobiphenyl	82.4	NA	58.6-110	NA		%REC	3/19/2015 6:39 PM	
Surr: 4-Terphenyl-d14	78.9	NA	55.1-110	NA		%REC	3/19/2015 6:39 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	3/27/2015 5:28 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	3/27/2015 5:28 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	3/27/2015 5:28 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/27/2015 5:28 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/27/2015 5:28 PM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/27/2015 5:28 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	108	NA	68.7-129	NA		%REC	3/27/2015 5:28 PM	
Surr: 4-Bromofluorobenzene	110	NA	71.8-127	NA		%REC	3/27/2015 5:28 PM	
Surr: Dibromofluoromethane	96.3	NA	74.3-124	NA		%REC	3/27/2015 5:28 PM	
Surr: Toluene-d8	89.9	NA	71.4-129	NA		%REC	3/27/2015 5:28 PM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: VR**	
Biochemical Oxygen Demand	7	2	5	NA		mg/L	3/17/2015 1:20 PM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	24	4	10	NA		mg/L	3/17/2015 8:09 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0003	0.0010	NA		mg/L	3/18/2015 11:44 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	75.0	0.50	5.00	NA		mg/L	3/17/2015 9:07 AM	PA/VA
Fluoride	0.14	0.05	0.20	NA	J	mg/L	3/17/2015 9:07 AM	PA/VA
Sulfate	39.8	5.00	25.0	NA		mg/L	3/17/2015 9:07 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 8:55:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-01A	**Matrix:**	Liquid
Client Sample ID:	1- PARKERSBURG POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	5.50	0.10	0.50	NA		mg/L	3/17/2015 9:07 AM	PA/VA
Nitrogen, Nitrite	ND	0.05	0.50	NA		mg/L	3/17/2015 9:07 AM	PA/VA
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	1.15	0.10	0.50	NA		mg/L	3/19/2015 8:32 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	2.0	2.0	5.0	NA	J	mg/L	3/25/2015 1:00 PM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	3/17/2015 2:04 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	ND	0.04	0.10	NA		mg/L	3/19/2015 4:55 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	605	NA	NA	NA		µmhos/cm	3/17/2015 1:00 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	307	5	10	NA		mg/L	3/18/2015 6:30 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	16.5	1.0	5.0	NA		mg/L	3/17/2015 5:53 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	19.0	1.0	10	NA		mg/L	3/17/2015 12:09 PM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	70.8	1.0	10	NA		mg/L	3/17/2015 12:09 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	6.46	NA	NA	NA		SU	3/17/2015 12:09 PM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 8:55:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-01B	**Matrix:**	Liquid
Client Sample ID:	1- PARKERSBURG POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Iron	0.061	0.010	0.100	NA	J	mg/L	3/25/2015 10:23 PM	PA/VA
Manganese	0.005	0.002	0.100	NA	J	mg/L	3/25/2015 10:23 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 9:45:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-02A	**Matrix:**	Liquid
Client Sample ID:	2- NORTHWESTERN LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Aluminum	0.018	0.006	0.100	NA	J	mg/L	3/25/2015 10:32 PM	PA/VA
Antimony	ND	0.040	0.200	NA		mg/L	3/28/2015 12:37 PM	PA/VA
Arsenic	0.423	0.020	0.200	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Barium	2.27	0.002	0.100	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Boron	23.9	0.035	0.100	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Chromium	0.011	0.005	0.100	NA	J	mg/L	3/25/2015 10:32 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Iron	15.4	0.010	0.100	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Lithium	0.060	0.020	0.100	NA	J	mg/L	3/25/2015 2:22 PM	
Manganese	1.77	0.002	0.100	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Nickel	0.088	0.005	0.100	NA	J	mg/L	3/28/2015 12:37 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	3/25/2015 10:32 PM	PA/VA
Strontium	4.37	0.001	0.010	NA		mg/L	3/25/2015 2:22 PM	PA
Vanadium	0.011	0.005	0.100	NA	J	mg/L	3/25/2015 10:32 PM	PA/VA
Zinc	0.004	0.003	0.050	NA	J	mg/L	3/25/2015 10:32 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	3/18/2015 11:24 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0102	NA		mg/L	3/19/2015 7:01 PM	
1,4-Napthoquinone	ND	NA	0.0102	NA		mg/L	3/19/2015 7:01 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0510	NA		mg/L	3/19/2015 7:01 PM	
Pentachloronitrobenzene	ND	NA	0.0102	NA		mg/L	3/19/2015 7:01 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
Butyl benzyl phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
Di-n-butyl phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
Diethyl phthalate	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
Dimethyl phthalate	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 9:45:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-02A	**Matrix:**	Liquid
Client Sample ID:	2- NORTHWESTERN LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
Fluoranthene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
Nitrobenzene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:01 PM	PA/VA
Surr: 2-Fluorophenol	43.0	NA	32.9-110	NA		%REC	3/19/2015 7:01 PM	
Surr: Phenol-d5	34.4	NA	25.8-110	NA		%REC	3/19/2015 7:01 PM	
Surr: 2,4,6-Tribromophenol	94.6	NA	63.8-110	NA		%REC	3/19/2015 7:01 PM	
Surr: Nitrobenzene-d5	94.1	NA	61.8-110	NA		%REC	3/19/2015 7:01 PM	
Surr: 2-Fluorobiphenyl	86.3	NA	58.6-110	NA		%REC	3/19/2015 7:01 PM	
Surr: 4-Terphenyl-d14	70.2	NA	55.1-110	NA		%REC	3/19/2015 7:01 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	3.05	0.500	1.00	NA		µg/L	3/30/2015 3:32 PM	PA/VA
Chlorobenzene	65.0	5.00	10.0	NA		µg/L	3/27/2015 6:02 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	3/30/2015 3:32 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/30/2015 3:32 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/30/2015 3:32 PM	PA/VA
1,4-Dichlorobenzene	6.52	0.500	1.00	NA		µg/L	3/30/2015 3:32 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	114	NA	68.7-129	NA		%REC	3/30/2015 3:32 PM	
Surr: 4-Bromofluorobenzene	115	NA	71.8-127	NA		%REC	3/30/2015 3:32 PM	
Surr: Dibromofluoromethane	112	NA	74.3-124	NA		%REC	3/30/2015 3:32 PM	
Surr: Toluene-d8	74.5	NA	71.4-129	NA		%REC	3/30/2015 3:32 PM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: VR**	
Biochemical Oxygen Demand	ND	120	300	NA		mg/L	3/17/2015 1:20 PM	PA/VA

Notes:

BOD PQL was elevated due to insufficient oxygen depletion in all dilutions.

Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	410	20	50	NA		mg/L	3/17/2015 8:09 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0003	0.0010	NA		mg/L	3/18/2015 11:57 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	2,570	10.0	100	NA		mg/L	3/17/2015 9:27 AM	PA/VA
Fluoride	0.83	0.05	0.20	NA		mg/L	3/17/2015 9:27 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 9:45:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-02A	**Matrix:**	Liquid
Client Sample ID:	2- NORTHWESTERN LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Sulfate	42.6	1.00	5.00	NA		mg/L	3/17/2015 9:27 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	ND	0.02	0.10	NA		mg/L	3/17/2015 9:27 AM	PA/VA
Nitrogen, Nitrite	ND	0.50	5.00	NA		mg/L	3/17/2015 9:27 AM	PA/VA

Notes:

Elevated PQLs are due to matrix interference.

TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	233	8.00	40.0	NA		mg/L	3/20/2015 10:08 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	ND	2.0	5.0	NA		mg/L	3/25/2015 1:00 PM	PA/VA

Notes:

Sample acidity or alkalinity exceeded the added preservative, so that the required preservation pH was not achieved.

CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	3/17/2015 2:07 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	233	6.40	16.0	NA		mg/L	3/19/2015 7:48 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	11,400	NA	NA	NA		µmhos/cm	3/17/2015 1:00 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	6,040	10	20	NA		mg/L	3/18/2015 6:30 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	30.0	4.0	20.0	NA		mg/L	3/17/2015 5:53 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	413	1.0	10	NA		mg/L	3/17/2015 12:09 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 9:45:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-02A	**Matrix:**	Liquid
Client Sample ID:	2- NORTHWESTERN LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	1,530	4.0	40.0	NA		mg/L	3/17/2015 12:09 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	6.96	NA	NA	NA		SU	3/17/2015 12:09 PM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 9:45:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-02B	**Matrix:**	Liquid
Client Sample ID:	2- NORTHWESTERN LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Iron	10.3	0.010	0.100	NA		mg/L	3/25/2015 10:35 PM	PA/VA
Manganese	1.50	0.002	0.100	NA		mg/L	3/25/2015 10:35 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 11:50:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-03A	**Matrix:**	Liquid
Client Sample ID:	3- MEADOWFILL LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Aluminum	0.376	0.006	0.100	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Antimony	ND	0.040	0.200	NA		mg/L	3/28/2015 12:40 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Barium	0.612	0.002	0.100	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Boron	3.92	0.035	0.100	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Iron	18.9	0.010	0.100	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Lithium	0.449	0.020	0.100	NA		mg/L	3/25/2015 2:25 PM	
Manganese	16.8	0.002	0.100	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Nickel	0.010	0.005	0.100	NA	J	mg/L	3/28/2015 12:40 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	3/25/2015 10:38 PM	PA/VA
Strontium	9.51	0.001	0.010	NA		mg/L	3/25/2015 2:25 PM	PA
Vanadium	0.044	0.005	0.100	NA	J	mg/L	3/25/2015 10:38 PM	PA/VA
Zinc	0.007	0.003	0.050	NA	J	mg/L	3/25/2015 10:38 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	3/19/2015 12:07 PM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0106	NA		mg/L	3/19/2015 7:22 PM	
1,4-Napthoquinone	ND	NA	0.0106	NA		mg/L	3/19/2015 7:22 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0532	NA		mg/L	3/19/2015 7:22 PM	
Pentachloronitrobenzene	ND	NA	0.0106	NA		mg/L	3/19/2015 7:22 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0053	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
Butyl benzyl phthalate	ND	0.0053	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
Di-n-butyl phthalate	ND	0.0053	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
Diethyl phthalate	ND	0.0021	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
Dimethyl phthalate	ND	0.0021	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0021	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0021	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 11:50:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-03A	**Matrix:**	Liquid
Client Sample ID:	3- MEADOWFILL LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0053	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
Fluoranthene	ND	0.0021	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
Nitrobenzene	ND	0.0021	0.0106	NA		mg/L	3/19/2015 7:22 PM	PA/VA
Surr: 2-Fluorophenol	42.9	NA	32.9-110	NA		%REC	3/19/2015 7:22 PM	
Surr: Phenol-d5	34.3	NA	25.8-110	NA		%REC	3/19/2015 7:22 PM	
Surr: 2,4,6-Tribromophenol	83.1	NA	63.8-110	NA		%REC	3/19/2015 7:22 PM	
Surr: Nitrobenzene-d5	83.3	NA	61.8-110	NA		%REC	3/19/2015 7:22 PM	
Surr: 2-Fluorobiphenyl	82.2	NA	58.6-110	NA		%REC	3/19/2015 7:22 PM	
Surr: 4-Terphenyl-d14	69.2	NA	55.1-110	NA		%REC	3/19/2015 7:22 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	3.26	0.500	1.00	NA		µg/L	3/30/2015 4:05 PM	PA/VA
Chlorobenzene	1.47	0.500	1.00	NA		µg/L	3/30/2015 4:05 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	3/30/2015 4:05 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/30/2015 4:05 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/30/2015 4:05 PM	PA/VA
1,4-Dichlorobenzene	9.40	0.500	1.00	NA		µg/L	3/30/2015 4:05 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	107	NA	68.7-129	NA		%REC	3/30/2015 4:05 PM	
Surr: 4-Bromofluorobenzene	108	NA	71.8-127	NA		%REC	3/30/2015 4:05 PM	
Surr: Dibromofluoromethane	97.6	NA	74.3-124	NA		%REC	3/30/2015 4:05 PM	
Surr: Toluene-d8	93.9	NA	71.4-129	NA		%REC	3/30/2015 4:05 PM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: VR**	
Biochemical Oxygen Demand	ND	120	300	NA		mg/L	3/17/2015 1:20 PM	PA/VA

Notes:

BOD PQL was elevated due to insufficient oxygen depletion in all dilutions.

Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	252	20	50	NA		mg/L	3/18/2015 8:12 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0003	0.0010	NA		mg/L	3/18/2015 12:10 PM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	5,750	25.0	250	NA		mg/L	3/17/2015 9:48 AM	PA/VA
Fluoride	ND	0.05	0.20	NA		mg/L	3/17/2015 9:48 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 11:50:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-03A	**Matrix:**	Liquid
Client Sample ID:	3- MEADOWFILL LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Sulfate	872	25.0	125	NA		mg/L	3/17/2015 9:48 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	ND	0.02	0.10	NA		mg/L	3/17/2015 9:48 AM	PA/VA
Nitrogen, Nitrite	ND	1.25	12.5	NA		mg/L	3/17/2015 9:48 AM	PA/VA

Notes:

Elevated PQLs are due to matrix interference.

TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	5.16	0.20	1.00	NA		mg/L	3/19/2015 8:34 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	15.1	2.0	5.0	NA		mg/L	3/25/2015 1:00 PM	PA/VA

Notes:

Sample acidity or alkalinity exceeded the added preservative, so that the required preservation pH was not achieved.

CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	3/17/2015 2:07 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	3.34	0.40	1.00	NA		mg/L	3/19/2015 4:56 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	22,900	NA	NA	NA		µmhos/cm	3/17/2015 1:00 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	15,100	10	20	NA		mg/L	3/18/2015 6:30 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	26.0	4.0	20.0	NA		mg/L	3/17/2015 5:53 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	264	1.0	10	NA		mg/L	3/17/2015 12:09 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 11:50:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-03A	**Matrix:**	Liquid
Client Sample ID:	3- MEADOWFILL LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	848	2.0	20.0	NA		mg/L	3/17/2015 12:09 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	6.92	NA	NA	NA		SU	3/17/2015 12:09 PM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 11:50:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-03B	**Matrix:**	Liquid
Client Sample ID:	3- MEADOWFILL LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Iron	0.215	0.010	0.100	NA		mg/L	3/25/2015 10:41 PM	PA/VA
Manganese	12.6	0.002	0.100	NA		mg/L	3/25/2015 10:41 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 12:40:00 PM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-04A	**Matrix:**	Liquid
Client Sample ID:	4- BRIDGEPORT POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Aluminum	0.027	0.006	0.100	NA	J	mg/L	3/25/2015 10:44 PM	PA/VA
Antimony	ND	0.040	0.200	NA		mg/L	3/28/2015 12:43 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Barium	0.051	0.002	0.100	NA	J	mg/L	3/25/2015 10:44 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Boron	0.373	0.035	0.100	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Iron	0.089	0.010	0.100	NA	J	mg/L	3/25/2015 10:44 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Lithium	ND	0.020	0.100	NA		mg/L	3/25/2015 2:28 PM	
Manganese	0.019	0.002	0.100	NA	J	mg/L	3/25/2015 10:44 PM	PA/VA
Nickel	ND	0.005	0.100	NA		mg/L	3/28/2015 12:43 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Strontium	0.202	0.001	0.010	NA		mg/L	3/25/2015 2:28 PM	PA
Vanadium	ND	0.005	0.100	NA		mg/L	3/25/2015 10:44 PM	PA/VA
Zinc	0.047	0.003	0.050	NA	J	mg/L	3/25/2015 10:44 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	3/19/2015 12:09 PM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0102	NA		mg/L	3/19/2015 7:44 PM	
1,4-Napthoquinone	ND	NA	0.0102	NA		mg/L	3/19/2015 7:44 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0512	NA		mg/L	3/19/2015 7:44 PM	
Pentachloronitrobenzene	ND	NA	0.0102	NA		mg/L	3/19/2015 7:44 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
Butyl benzyl phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
Di-n-butyl phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
Diethyl phthalate	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
Dimethyl phthalate	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 12:40:00 PM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-04A	**Matrix:**	Liquid
Client Sample ID:	4- BRIDGEPORT POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0051	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
Fluoranthene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
Nitrobenzene	ND	0.0020	0.0102	NA		mg/L	3/19/2015 7:44 PM	PA/VA
Surr: 2-Fluorophenol	40.7	NA	32.9-110	NA		%REC	3/19/2015 7:44 PM	
Surr: Phenol-d5	31.8	NA	25.8-110	NA		%REC	3/19/2015 7:44 PM	
Surr: 2,4,6-Tribromophenol	83.0	NA	63.8-110	NA		%REC	3/19/2015 7:44 PM	
Surr: Nitrobenzene-d5	81.9	NA	61.8-110	NA		%REC	3/19/2015 7:44 PM	
Surr: 2-Fluorobiphenyl	80.9	NA	58.6-110	NA		%REC	3/19/2015 7:44 PM	
Surr: 4-Terphenyl-d14	83.3	NA	55.1-110	NA		%REC	3/19/2015 7:44 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	3/27/2015 7:08 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	3/27/2015 7:08 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	3/27/2015 7:08 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/27/2015 7:08 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/27/2015 7:08 PM	PA/VA
1,4-Dichlorobenzene	1.03	0.500	1.00	NA		µg/L	3/27/2015 7:08 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	108	NA	68.7-129	NA		%REC	3/27/2015 7:08 PM	
Surr: 4-Bromofluorobenzene	119	NA	71.8-127	NA		%REC	3/27/2015 7:08 PM	
Surr: Dibromofluoromethane	94.1	NA	74.3-124	NA		%REC	3/27/2015 7:08 PM	
Surr: Toluene-d8	90.7	NA	71.4-129	NA		%REC	3/27/2015 7:08 PM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: VR**	
Biochemical Oxygen Demand	ND	2	5	NA		mg/L	3/17/2015 1:20 PM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	25	4	10	NA		mg/L	3/17/2015 8:09 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0003	0.0010	NA		mg/L	3/18/2015 12:23 PM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	124	1.00	10.0	NA		mg/L	3/17/2015 10:08 AM	PA/VA
Fluoride	0.30	0.05	0.20	NA		mg/L	3/17/2015 10:08 AM	PA/VA
Sulfate	74.6	1.00	5.00	NA		mg/L	3/17/2015 10:08 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 12:40:00 PM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-04A	**Matrix:**	Liquid
Client Sample ID:	4- BRIDGEPORT POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	9.30	0.20	1.00	NA		mg/L	3/17/2015 10:08 AM	PA/VA
Nitrogen, Nitrite	ND	0.05	0.50	NA		mg/L	3/17/2015 10:08 AM	PA/VA
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	1.51	0.10	0.50	NA		mg/L	3/19/2015 8:34 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	ND	2.0	5.0	NA		mg/L	3/25/2015 1:00 PM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	3/17/2015 2:08 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	0.08	0.04	0.10	NA	J	mg/L	3/19/2015 5:00 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	957	NA	NA	NA		µmhos/cm	3/17/2015 1:00 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	543	5	10	NA		mg/L	3/18/2015 6:30 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	3.5	1.0	5.0	NA	J	mg/L	3/17/2015 5:53 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	7.9	1.0	10	NA	J	mg/L	3/17/2015 12:09 PM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	72.7	1.0	10	NA		mg/L	3/17/2015 12:09 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	7.07	NA	NA	NA		SU	3/17/2015 12:09 PM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 12:40:00 PM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-04B	**Matrix:**	Liquid
Client Sample ID:	4- BRIDGEPORT POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: JD**	
Iron	0.068	0.010	0.100	NA	J	mg/L	3/25/2015 10:47 PM	PA/VA
Manganese	0.017	0.002	0.100	NA	J	mg/L	3/25/2015 10:47 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503I23

Date Reported: 3/31/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 12:00:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I23-05A	**Matrix:**	Trip Blank
Client Sample ID:	TRIP BLANK	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	3/28/2015 1:46 AM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	3/28/2015 1:46 AM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	3/28/2015 1:46 AM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/28/2015 1:46 AM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/28/2015 1:46 AM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/28/2015 1:46 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	98.4	NA	68.7-129	NA		%REC	3/28/2015 1:46 AM	
Surr: 4-Bromofluorobenzene	126	NA	71.8-127	NA		%REC	3/28/2015 1:46 AM	
Surr: Dibromofluoromethane	96.0	NA	74.3-124	NA		%REC	3/28/2015 1:46 AM	
Surr: Toluene-d8	89.7	NA	71.4-129	NA		%REC	3/28/2015 1:46 AM	

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Sunday, April 26, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: DRILL CUTTING/ LEACHATE ANALYSIS

Work Order #: 1503I30

Dear GEORGE CARICO:

Please find enclosed amended results. If you have any questions regarding these results, please do not hesitate to call.

Sincerely,

Kathy Berry

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1503I30

Date Reported: 4/26/2015

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project: DRILL CUTTING/ LEACHATE ANALYSIS

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1503I30

Date Reported: 4/26/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 8:55:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I30-01A	**Matrix:**	Liquid
Client Sample ID:	1- PARKERSBURG POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1503I30

Date Reported: 4/26/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 9:45:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I30-02A	**Matrix:**	Liquid
Client Sample ID:	2- NORTHWESTERN LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1503I30

Date Reported: 4/26/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 11:50:00 AM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I30-03A	**Matrix:**	Liquid
Client Sample ID:	3-MEADOWFILL LF	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1503I30

Date Reported: 4/26/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/16/2015 12:40:00 PM
Project:	DRILL CUTTING/ LEACHATE ANALYSIS	**Date Received:**	3/16/2015
Lab ID:	1503I30-04A	**Matrix:**	Liquid
Client Sample ID:	4- BRIDGEPORT POTW	**Site ID:**	PHASE 2

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

June 10, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1503I30
Pace Project No.: 30143094

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on March 18, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1503I30
Pace Project No.: 30143094

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

Pace Analytical Services, Inc.
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(724)850-5600

SAMPLE SUMMARY

Project: 1503I30
Pace Project No.: 30143094

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30143094001	**1503I30-01A**	Water	03/16/15 08:55	03/18/15 10:20
30143094002	**1503I30-02A**	Water	03/16/15 09:45	03/18/15 10:20
30143094003	**1503I30-03A**	Water	03/16/15 11:50	03/18/15 10:20
30143094004	**1503I30-04A**	Water	03/16/15 12:40	03/18/15 10:20

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1503I30
Pace Project No.: 30143094

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30143094001	**1503I30-01A**	SM 7500Rn-B	JAL	1
30143094002	**1503I30-02A**	SM 7500Rn-B	JAL	1
30143094003	**1503I30-03A**	SM 7500Rn-B	JAL	1
30143094004	**1503I30-04A**	SM 7500Rn-B	JAL	1

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503I30
Pace Project No.: 30143094

Method: **SM 7500Rn-B**
Description: 7500RnB Radon
Client: REI Consultants, Inc.
Date: June 10, 2015

General Information:
4 samples were analyzed for SM 7500Rn-B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143094

Sample: 1503I30-01A **Lab ID: 30143094001** Collected: 03/16/15 08:55 Received: 03/18/15 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**-0.7 ± 27.1 (47.6)** **C:NA T:NA**	pCi/L	03/18/15 21:04	10043-92-2	

Sample: 1503I30-02A **Lab ID: 30143094002** Collected: 03/16/15 09:45 Received: 03/18/15 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**34.0 ± 29.5 (47.5)** **C:NA T:NA**	pCi/L	03/18/15 21:37	10043-92-2	

Sample: 1503I30-03A **Lab ID: 30143094003** Collected: 03/16/15 11:50 Received: 03/18/15 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**41.3 ± 29.9 (47.0)** **C:NA T:NA**	pCi/L	03/18/15 22:11	10043-92-2	

Sample: 1503I30-04A **Lab ID: 30143094004** Collected: 03/16/15 12:40 Received: 03/18/15 10:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample collection dates and times were not present on the sample containers.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**19.7 ± 28.1 (47.1)** **C:NA T:NA**	pCi/L	03/18/15 23:17	10043-92-2	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143094

QC Batch: RADC/23736 Analysis Method: SM 7500Rn-B
QC Batch Method: SM 7500Rn-B Analysis Description: 7500Rn B Radon
Associated Lab Samples: 30143094001, 30143094002, 30143094003, 30143094004

METHOD BLANK: 865504 Matrix: Water
Associated Lab Samples: 30143094001, 30143094002, 30143094003, 30143094004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radon	7.1 ± 17.7 (30.2) C:NA T:NA	pCi/L	03/18/15 19:57	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: 1503I30
Pace Project No.: 30143094

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3436	PAGE: 1	OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA COMPANY: PACE ANALYTICAL SERVIC

ADDRESS: 1638 ROSEYTOWN ROAD

CITY, STATE, ZIP: GREENSBURG, PA 15601

PHONE: (724) 850-5600 FAX:

ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:

State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. Results to Kathy Berry at kberry@reiclabs.com

ANALYTICAL PARAMETERS

30143094

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	RADON (913.0)	
						*	0	
1	1503I30-01A	1- PARKERSBURG POTW	.	Liquid	3/16/2015 8:55:00 AM	3	√	001
2	1503I30-02A	2- NORTHWESTERN LF	.	Liquid	3/16/2015 9:45:00 AM	3	√	002
3	1503I30-03A	3-MEADOWFILL LF	.	Liquid	3/16/2015 11:50:00 AM	3	√	003
4	1503I30-04A	4- BRIDGEPORT POTW	.	Liquid	3/16/2015 12:40:00 PM	3	√	004

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[illegible]	3-16-15	1906	UPS	3-17-15	16:00
Relinquished By:	Date:	Time:	Received By: [illegible]	Date: 3/18/15	Time: 1020
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples NA °C Attempt to Cool ? _____

Comments: _____

Sample Condition Upon Receipt

Pace Analytical

Client Name: REIC

Project # 30143094

Courier: ☐ Fed Ex ☑ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1Z 26X 713 13 7796 5042

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no **Biological Tissue is Frozen:** Yes No

Packing Material: Bubble Wrap ✓ Bubble Bags ____ None ____ Other _____

Thermometer Used NA **Type of Ice:** (Wet) Blue None ☐ Samples on Ice, cooling process has begun

Cooler Temp.: Observed Temp.: NA °C **Correction Factor:** NA °C **Final Temp:** NA °C

Date and initials of person examining contents: Am 3/18/15

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☑Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☑Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☑No	☐N/A	4.
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☑Yes	☐No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☑No	☐N/A	7.
Sufficient Volume:	☑Yes	☐No	☐N/A	8.
Correct Containers Used:	☑Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☑No	☐N/A	
Containers Intact:	☑Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: WT	☐Yes	☑No	☐N/A	12. no date or time on samples
All containers needing preservation have been checked.	☐Yes	☐No	☑N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☑N/A	
exceptions: VOA, coliform, TOC, O&G, Phenols	☑Yes	☐No		Initial when completed Am / Lot # of added preservative
Samples checked for dechlorination:	☐Yes	☐No	☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☑N/A	15.
Trip Blank Present:	☐Yes	☐No	☑N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☑N/A	
Pace Trip Blank Lot # (if purchased): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carmen Serrano **Date:** 3/18/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

30143094

Pace Analytical

Project Number: _____

Client Name: REIC

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other RADON	Other
001	WT																						3	
004																								

SCURF Back (C016-4 15May2012).xls

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

April 03, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1503I30
Pace Project No.: 30143334

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on March 19, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1503I30
Pace Project No.: 30143334

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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SAMPLE SUMMARY

Project: 1503I30
Pace Project No.: 30143334

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30143334001	**1503I30-01A**	Water	03/16/15 08:55	03/19/15 15:20
30143334002	**1503I30-02A**	Water	03/16/15 09:45	03/19/15 15:20
30143334003	**1503I30-03A**	Water	03/16/15 11:50	03/19/15 15:20
30143334004	**1503I30-04A**	Water	03/16/15 12:40	03/19/15 15:20

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SAMPLE ANALYTE COUNT

Project: 1503I30
Pace Project No.: 30143334

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30143334001	**1503I30-01A**	EPA 900.0	FCC	2
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1
30143334002	**1503I30-02A**	SM 7110C	FCC	1
		EPA 900.0	FCC	1
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1
30143334003	**1503I30-03A**	SM 7110C	FCC	1
		EPA 900.0	FCC	1
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1
30143334004	**1503I30-04A**	EPA 900.0	FCC	2
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1

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PROJECT NARRATIVE

Project: 1503I30
Pace Project No.: 30143334

Method: **SM 7110C**
Description: 7110C Gross Alpha
Client: REI Consultants, Inc.
Date: April 03, 2015

General Information:
2 samples were analyzed for SM 7110C. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 1503I30
Pace Project No.: 30143334

Method: **EPA 900.0**
Description: 900.0 Gross Alpha/Beta
Client: REI Consultants, Inc.
Date: April 03, 2015

General Information:
4 samples were analyzed for EPA 900.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, Inc.
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(724)850-5600

PROJECT NARRATIVE

Project: 1503I30
Pace Project No.: 30143334

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: REI Consultants, Inc.
Date: April 03, 2015

General Information:
4 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 1503I30
Pace Project No.: 30143334

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: REI Consultants, Inc.
Date: April 03, 2015

General Information:
4 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 1503I30
Pace Project No.: 30143334

Method: **ASTM D5811-95**
Description: ASTM D5811 Sr 89/90 Eichrom
Client: REI Consultants, Inc.
Date: April 03, 2015

General Information:
4 samples were analyzed for ASTM D5811-95. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: RADC/23846

N2: The lab does not hold TNI accreditation for this parameter.

- 1503I30-01A (Lab ID: 30143334001)
  - Strontium-90
- 1503I30-02A (Lab ID: 30143334002)
  - Strontium-90
- 1503I30-03A (Lab ID: 30143334003)
  - Strontium-90
- 1503I30-04A (Lab ID: 30143334004)
  - Strontium-90
- BLANK (Lab ID: 870159)
  - Strontium-90

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143334

Sample: 1503I30-01A **Lab ID: 30143334001** Collected: 03/16/15 08:55 Received: 03/19/15 15:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**0.426 ± 0.648 (1.20) C:NA T:NA**	pCi/L	03/28/15 11:36	12587-46-1	
Gross Beta	EPA 900.0	**4.79 ± 1.42 (1.81) C:NA T:NA**	pCi/L	03/28/15 11:36	12587-47-2	
Radium-226	EPA 903.1	**0.310 ± 0.708 (0.420) C:NA T:91%**	pCi/L	04/01/15 11:37	13982-63-3	
Radium-228	EPA 904.0	**-0.291 ± 0.380 (0.969) C:73% T:75%**	pCi/L	04/01/15 15:48	15262-20-1	
Strontium-90	ASTM D5811-95	**-0.00400 ± 0.866 (1.58) C:99% T:NA**	pCi/L	03/27/15 21:40	10098-97-2	N2

Sample: 1503I30-02A **Lab ID: 30143334002** Collected: 03/16/15 09:45 Received: 03/19/15 15:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.
• Upon receipt at the laboratory, 3 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	SM 7110C	**12.8 ± 4.34 (4.52) C:NA T:NA**	pCi/L	04/01/15 18:57	12587-46-1	
Gross Beta	EPA 900.0	**776 ± 141 (16.0) C:NA T:NA**	pCi/L	03/28/15 11:36	12587-47-2	
Radium-226	EPA 903.1	**5.05 ± 2.10 (0.570) C:NA T:89%**	pCi/L	04/01/15 11:26	13982-63-3	
Radium-228	EPA 904.0	**3.27 ± 0.868 (0.921) C:70% T:79%**	pCi/L	04/01/15 15:48	15262-20-1	
Strontium-90	ASTM D5811-95	**0.0440 ± 0.747 (1.29) C:97% T:NA**	pCi/L	03/28/15 11:44	10098-97-2	N2

Sample: 1503I30-03A **Lab ID: 30143334003** Collected: 03/16/15 11:50 Received: 03/19/15 15:20 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	SM 7110C	**3.52 ± 1.77 (2.50) C:NA T:NA**	pCi/L	04/01/15 18:57	12587-46-1	
Gross Beta	EPA 900.0	**280 ± 55.7 (29.3) C:NA T:NA**	pCi/L	03/28/15 11:36	12587-47-2	
Radium-226	EPA 903.1	**1.26 ± 0.833 (0.378) C:NA T:92%**	pCi/L	04/01/15 11:25	13982-63-3	
Radium-228	EPA 904.0	**1.18 ± 0.553 (0.923) C:72% T:75%**	pCi/L	04/01/15 15:48	15262-20-1	
Strontium-90	ASTM D5811-95	**-0.131 ± 0.651 (1.14) C:107% T:NA**	pCi/L	03/28/15 11:45	10098-97-2	N2

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143334

Sample: 1503I30-04A **Lab ID: 30143334004** Collected: 03/16/15 12:40 Received: 03/19/15 15:20 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**-0.496 ± 1.31 (2.86)** **C:NA T:NA**	pCi/L	03/28/15 13:39	12587-46-1	
Gross Beta	EPA 900.0	**6.09 ± 1.73 (2.08)** **C:NA T:NA**	pCi/L	03/28/15 13:39	12587-47-2	
Radium-226	EPA 903.1	**0.742 ± 1.13 (0.670)** **C:NA T:75%**	pCi/L	04/01/15 11:36	13982-63-3	
Radium-228	EPA 904.0	**0.519 ± 0.440 (0.885)** **C:76% T:75%**	pCi/L	04/01/15 15:48	15262-20-1	
Strontium-90	ASTM D5811-95	**-0.0720 ± 0.579 (1.01)** **C:97% T:NA**	pCi/L	03/28/15 11:45	10098-97-2	N2

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143334

QC Batch: RADC/23795 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

METHOD BLANK: 868169 Matrix: Water
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0726 ± 0.367 (0.836) C:70% T:86%	pCi/L	04/01/15 11:10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143334

QC Batch: RADC/23855 Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

METHOD BLANK: 870170 Matrix: Water
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	-0.372 ± 0.365 (1.45) C:NA T:NA	pCi/L	03/28/15 09:09	
Gross Beta	-0.356 ± 0.645 (1.77) C:NA T:NA	pCi/L	03/28/15 09:09	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143334

QC Batch: RADC/23792 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

METHOD BLANK: 868166 Matrix: Water
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.299 ± 0.310 (0.462) C:NA T:101%	pCi/L	04/01/15 11:27	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143334

QC Batch: RADC/23846 Analysis Method: ASTM D5811-95
QC Batch Method: ASTM D5811-95 Analysis Description: ASTM D5811 Sr 89/90 Eichrom
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

METHOD BLANK: 870159 Matrix: Water
Associated Lab Samples: 30143334001, 30143334002, 30143334003, 30143334004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Strontium-90	-0.117 ± 0.329 (0.776) C:95% T:NA	pCi/L	03/28/15 11:44	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503I30
Pace Project No.: 30143334

QC Batch: RADC/23909 Analysis Method: SM 7110C
QC Batch Method: SM 7110C Analysis Description: 7110C Gross Alpha
Associated Lab Samples: 30143334002, 30143334003

METHOD BLANK: 873323 Matrix: Water
Associated Lab Samples: 30143334002, 30143334003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.503 ± 1.05 (2.45) C:NA T:NA	pCi/L	04/01/15 17:10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1503I30
Pace Project No.: 30143334

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

N2 The lab does not hold TNI accreditation for this parameter.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3437	PAGE: 1	OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA COMPANY: PACE ANALYTICAL SERVIC

ADDRESS: 1638 ROSEYTOWN ROAD

CITY, STATE, ZIP: GREENSBURG, PA 15601

PHONE: (724) 850-5600 FAX:

ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:

State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. Results to Kathy Berry at kberry@reiclabs.com

ANALYTICAL PARAMETERS

30143334

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	GROSS_ALPHA_SUB (EPA 900.0)	GROSS_BETA_SUB (EPA 900.0)	RADIUM_226_SUB (EPA 903.1)	RADIUM_228_SUB (EPA 904.0)	STRONTIUM_90_SUB (EPA 905.0)	
						*	2	2	2	2	2	
1	1503I30-01A	1- PARKERSBURG POTW	.	Liquid	3/16/2015 8:55:00 AM	1	√	√	√	√	√	001
2	1503I30-02A	2- NORTHWESTERN LF	.	Liquid	3/16/2015 9:45:00 AM	1	√	√	√	√	√	002
3	1503I30-03A	3-MEADOWFILL LF	.	Liquid	3/16/2015 11:50:00 AM	1	√	√	√	√	√	003
4	1503I30-04A	4- BRIDGEPORT POTW	.	Liquid	3/16/2015 12:40:00 PM	1	√	√	√	√	√	004

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[illegible]	3-16-15	1906	UPS	3-17-15	16:00
[illegible]	3/18/15	1021	[illegible]	3-18-15	11:41
[illegible]	3-19-15	15:20	Scott Cunnio Pace	3-19-15	1520

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples ____ °C Attempt to Cool ? ____

Comments: ____

Sample Condition Upon Receipt

Pace Analytical

Client Name: REIC

Project # 30143334

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no Biological Tissue is Frozen: Yes No

Packing Material: Bubble Wrap X Bubble Bags ____ None ____ Other _____

Thermometer Used NA Type of Ice: Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.:_____°C Correction Factor: _____°C Final Temp:_____°C

Date and initials of person examining contents: SMS-17-15

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☒No	☐N/A	4.
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes	☒No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☒No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: wt	☒Yes	☐No	☐N/A	12.
All containers needing preservation have been checked.	☒Yes	☐No	☐N/A	13. Sample #2 Added 3 ml HNO3 @ 1735 3-17-15 SRA
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☒No	☐N/A	Initial when completed SRA / Lot # of added preservative DL15-0162
exceptions: VOA, coliform, TOC, O&G, Phenols	☐Yes	☒No		
Samples checked for dechlorination:	☐Yes	☐No	☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☒N/A	15.
Trip Blank Present:	☐Yes	☒No	☐N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carmen Serrano **Date:** 3/20/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

page 2

Project Number: 30143334

Client Name: REFC

Item No.												
Matrix Code												
Glass Jar (120 / 250 / 500 / 1L)												
Soil kit (2 SB, 1M, soil jar)												
Chemistry (250 / 500 / 1L)												
Organics (1L)												
Nutrient (250 / 500)												
Phenolics (250 ml)												
TOC (40 ml / 250 ml)												
TOX (250 ml)												
Total Metals												
Dissolved Metals preserved Y N												
O & G (1L)												
TPH (1L)												
VOA (40 ml 30 ml)												
Cyanide (250 ml)												
Sulfide (500 ml)												
Bacteria (120 ml)												
Wipes / swipe/ smear/ filter												
Radchem Nalgene (125 / 250 / 500 / 1L)										4	5	
Radchem Nalgene (1/2 gal. / 1 gal.L)												
Cubitainer (500 ml / 4L)												
Ziploc												
Other												
Other												

SCURF Back (C016-4 15May2012).xls

CHAIN OF CUSTODY RECORD

v10-0114 REIC use ONLY — CLIENT ID MAR071 DATE ____ SHEET ____

REIC
Research Environmental & Industrial Consultants, Inc.
MAIN LABORATORY & CORPORATE HEADQUARTERS:
P.O. Box 286 • 225 Industrial Park Rd, Beaver, WV 25813
800-999-0105 • 304-255-2500 • www.reiclabs.com

MID-OHIO VALLEY Service Center, 101 17th Street, Ashland, KY 41101, 606-393-5027
SHENANDOAH Service Center, 1557 Commerce Rd., Ste 201, Verona, VA 24482, 540-248-0183
ROANOKE Service Center, 3029-C Peters Creek Rd, Roanoke, VA 24019, 540-777-1276
MORGANTOWN Service Center, 16 Commerce Drive, Westover, WV 26501, 304-241-5861

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL GECHEMICAL AND APPLIED SCIENCES PO # ____
Contact Person: George Carico/Jamie Wolfe Phone: 304-696-5456
Address: One Marshall Drive City: Huntington State: WV Zip: 25755
Billing Address (if different) ____ City ____ State ____ Zip ____
Site ID & State: CHARLESTON WV Project ID: KANAWHA COUNTY LANDFILL Sampler: CB

SAMPLE LOG & ANALYSIS REQUEST

TURNAROUND TIME: (•) NORMAL — RUSH TURNAROUND*: ( ) 5 DAY ( ) 3 DAY ( ) 2 DAY ( ) 1 DAY
*Rush work needs prior laboratory approval and will incur additional charges

ANALYSIS & METHOD REQUESTED: See Attachment

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	0	1	2	3	5	10			
MU-2 Charleston SAN Bd POTW	23	12-9-14 1055	Water	Grab	X								
MU-1 Charleston LF leachate	20	12-9-14 0950	Water	Grab	X								
Trip Blank	2		Water	Choose	X								
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									

ENTER PRESERVATIVE CODE(S):
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Bisulfate/Methanol
9 Ammonium Chloride
10 AS/AH *
11 ____ *
*(Use blanks for preservatives not listed.)

COMMENTS:
Field Sampling Time: 4 hours
Per Doug Arthur
MU-1 Ph=6.84 cond:4250 Temp=19.0
MU-2 Ph=6.60 cond 595 Temp=12.5c

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: 3.0 C ICED? Y ✓ N ____

Containers provided by: [X] REIC [ ] Client

	Relinquished by (signature)	Date/Time	Relinquished by (signature)	Date/Time	Relinquished by (signature)	Date/Time
1	[signature]	12/9/14 1200				
	Received by (signature)	Date/Time 12-9-14 12:00	Received by (signature)	Date/Time	Received by (signature)	Date/Time

WVDEP Drill Cutting / Leachate Analysis List

Aluminum

Antimony

Arsenic

Barium

Beryllium

Boron

Cadmium

Chromium

Hexavalent Chromium

Copper

Lead

Lithium

Mercury

Nickel

Selenium

Silver

Strontium

Vanadium

Zinc

Chloride

Fluoride

Nitrate as Nitrogen

Nitrite as Nitrogen

Sulfate

Total Suspended Solids

Free Cyanide

Benzene

Chlorobenzene

Chlorodibromomethane

DBPix Evaluation

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

1,4-Dinitrobenzene

1,4-Naphthoquinone

2,4-Dinitrotoluene

2,6-Dinitrotoluene

4-Nitroquinoline-1-oxide

bis(2-ethylhexyl) phthalate

Butyl benzylphthalate

Di-N-Butyl Phthalate

Di-N-Octylphthalate Diethyl Phthalate

Dimethyl Phthalate

Flouranthene

Nitrobenzene

Pentachloronitrobenzene

Gross Alpha

Gross Beta

Radium 226

Radium 228

Strontium 90

Radon

pH

Total Dissolved Solids

Total Suspended Solids

BOD 5-Day

Ammonia as Nitrogen

Total Kjeldahl Nitrogen

Oil & Grease

Acidity to pH 8.3

DBPix Evaluation

Specific Conductance

Alkalinity to pH 4.5

Chemical Oxygen Demand

Dissolved Iron and Iron

Manganese and Dissolved Manganese

Jop J

REI Consultants, Inc.

FIELD LOG: pH Calibration Records 6-2010.Rev.1

Client Name: Marshall University Site Location: Charleston City Landfill

Date: 12-9-14 Analyst: C. Belcher

Calibration Location: Field / Laboratory Instrument: Oakton pH Meter

4.0 Buffer Lot #: C 197-01
7.0 Buffer Lot #: C 323-04
10.0 Buffer Lot #: C-337-03

pH (SU) - SM4500-H+B, 18th Edition				
Standard	Initial Reading	Reading After Calibration	Temperature °C	Comments
4.0 Buffer	4.14	4.00	22.0	
7.0 Buffer	7.08	7.00	21.9	
10.0 Buffer	10.10	10.01	21.9	

Slope: 99.0 %

Comments:

Calibration at the laboratory requires a pH 7.0 QC Check

All field pH analysis must be followed by a Post Analysis pH Check

Quality Control Samples	Reading	Acceptance Range:
QC Check, 7.0	7.0	True Value ± 0.1 (6.9 - 7.1)
Post Analysis QC Check, 7.0	7.0	

REI Consultants, Inc. P.O. Box 286 Beaver, WV 25813 Phone: 800-999-0105 Fax: 304-255-2572 www.reiclabs.com

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

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3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Tuesday, December 16, 2014

GEORGE CARICO
MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: KANAWHA COUNTY LANDFILL

Work Order #: 1412B17

Dear GEORGE CARICO:

REI Consultants, Inc. received 3 sample(s) on 12/9/2014 for the analyses presented in the following report.

Kathy Berry

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1412B17

Date Reported: 12/16/2014

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,

Project: KANAWHA COUNTY LANDFILL

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1412B17

Date Reported: 12/16/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/9/2014 10:55:00 AM
Project:	KANAWHA COUNTY LANDFILL	**Date Received:**	12/9/2014
Lab ID:	1412B17-01A	**Matrix:**	Liquid
Client Sample ID:	MU-2 CHARLESTON SANITARY BOARD POTW	**Site ID:**	CHARLESTON, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.017	0.005	0.100	NA	J	mg/L	12/11/2014 9:30 PM	PA/VA
Antimony	ND	0.020	0.200	NA		mg/L	12/11/2014 9:30 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	12/11/2014 9:30 PM	PA/VA
Barium	0.044	0.002	0.100	NA	J	mg/L	12/11/2014 9:30 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	12/11/2014 9:30 PM	PA/VA
Boron	0.116	0.020	0.100	NA		mg/L	12/11/2014 9:30 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	12/11/2014 9:30 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	12/11/2014 9:30 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	12/11/2014 9:30 PM	PA/VA
Iron	0.110	0.010	0.100	NA		mg/L	12/11/2014 9:30 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	12/11/2014 9:30 PM	PA/VA
Lithium	ND	0.020	0.100	NA		mg/L	12/11/2014 11:56 AM	
Manganese	0.182	0.002	0.100	NA		mg/L	12/11/2014 9:30 PM	PA/VA
Nickel	ND	0.005	0.100	NA		mg/L	12/11/2014 9:30 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	12/11/2014 9:30 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	12/11/2014 9:30 PM	PA/VA
Strontium	0.146	0.001	0.010	NA		mg/L	12/11/2014 11:56 AM	PA
Vanadium	ND	0.005	0.100	NA		mg/L	12/11/2014 9:30 PM	PA/VA
Zinc	0.046	0.003	0.050	NA	J	mg/L	12/11/2014 9:30 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	12/11/2014 4:32 PM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0107	NA		mg/L	12/11/2014 11:15 PM	
1,4-Napthoquinone	ND	NA	0.0107	NA		mg/L	12/11/2014 11:15 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0535	NA		mg/L	12/12/2014 9:41 PM	
Pentachloronitrobenzene	ND	NA	0.0107	NA		mg/L	12/11/2014 11:15 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0053	0.0107	NA		mg/L	12/11/2014 11:15 PM	PA/VA
Butyl benzyl phthalate	ND	0.0053	0.0107	NA		mg/L	12/11/2014 11:15 PM	PA/VA
Di-n-butyl phthalate	ND	0.0053	0.0107	NA		mg/L	12/11/2014 11:15 PM	PA/VA
Diethyl phthalate	ND	0.0021	0.0107	NA		mg/L	12/11/2014 11:15 PM	PA/VA
Dimethyl phthalate	0.0024	0.0021	0.0107	NA	J	mg/L	12/11/2014 11:15 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0021	0.0107	NA		mg/L	12/11/2014 11:15 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0021	0.0107	NA		mg/L	12/11/2014 11:15 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412B17

Date Reported: 12/16/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/9/2014 10:55:00 AM
Project:	KANAWHA COUNTY LANDFILL	**Date Received:**	12/9/2014
Lab ID:	1412B17-01A	**Matrix:**	Liquid
Client Sample ID:	MU-2 CHARLESTON SANITARY BOARD POTW	**Site ID:**	CHARLESTON, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0053	0.0107	NA		mg/L	12/11/2014 11:15 PM	PA/VA
Fluoranthene	ND	0.0021	0.0107	NA		mg/L	12/11/2014 11:15 PM	PA/VA
Nitrobenzene	ND	0.0021	0.0107	NA		mg/L	12/11/2014 11:15 PM	PA/VA
Surr: 2-Fluorophenol	34.2	NA	32.9-110	NA		%REC	12/11/2014 11:15 PM	
Surr: Phenol-d5	24.4	NA	25.8-110	NA	S	%REC	12/11/2014 11:15 PM	
Surr: 2,4,6-Tribromophenol	70.2	NA	63.8-110	NA		%REC	12/11/2014 11:15 PM	
Surr: Nitrobenzene-d5	71.4	NA	61.8-110	NA		%REC	12/11/2014 11:15 PM	
Surr: 2-Fluorobiphenyl	69.5	NA	58.6-110	NA		%REC	12/11/2014 11:15 PM	
Surr: 4-Terphenyl-d14	77.6	NA	55.1-110	NA		%REC	12/11/2014 11:15 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	12/15/2014 11:41 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	12/15/2014 11:41 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	12/15/2014 11:41 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/15/2014 11:41 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/15/2014 11:41 PM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/15/2014 11:41 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	113	NA	68.7-129	NA		%REC	12/15/2014 11:41 PM	
Surr: 4-Bromofluorobenzene	107	NA	71.8-127	NA		%REC	12/15/2014 11:41 PM	
Surr: Dibromofluoromethane	105	NA	74.3-124	NA		%REC	12/15/2014 11:41 PM	
Surr: Toluene-d8	104	NA	71.4-129	NA		%REC	12/15/2014 11:41 PM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: CB**	
Biochemical Oxygen Demand	4	2	5	NA	J	mg/L	12/9/2014 4:02 PM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	22	4	10	NA		mg/L	12/10/2014 8:45 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	0.0008	0.0001	0.0010	NA	J	mg/L	12/10/2014 12:02 PM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	60.0	0.20	2.00	NA		mg/L	12/9/2014 4:34 PM	PA/VA
Fluoride	0.37	0.05	0.20	NA		mg/L	12/9/2014 4:34 PM	PA/VA
Sulfate	33.3	1.00	5.00	NA		mg/L	12/9/2014 4:34 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412B17

Date Reported: 12/16/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/9/2014 10:55:00 AM
Project:	KANAWHA COUNTY LANDFILL	**Date Received:**	12/9/2014
Lab ID:	1412B17-01A	**Matrix:**	Liquid
Client Sample ID:	MU-2 CHARLESTON SANITARY BOARD POTW	**Site ID:**	CHARLESTON, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	0.90	0.02	0.10	NA		mg/L	12/9/2014 4:34 PM	PA/VA
Nitrogen, Nitrite	1.39	0.05	0.50	NA		mg/L	12/9/2014 4:34 PM	PA/VA
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	7.68	0.40	2.00	NA		mg/L	12/11/2014 10:06 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: KS**	
Oil & Grease	ND	2.0	5.0	NA		mg/L	12/11/2014 8:35 AM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	0.007	0.005	0.020	NA	J	mg/L	12/10/2014 2:23 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	6.96	0.16	0.40	NA		mg/L	12/10/2014 7:33 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: CC**	
Specific Conductivity	534	NA	NA	NA		µmhos/cm	12/10/2014 4:45 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: CC**	
Total Dissolved Solids	255	5	10	NA		mg/L	12/10/2014 5:12 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: CC**	
Total Suspended Solids	5.5	1.0	5.0	NA		mg/L	12/10/2014 5:11 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	40.5	1.0	10	NA		mg/L	12/9/2014 5:02 PM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	86.1	1.0	10	NA		mg/L	12/9/2014 5:02 PM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	6.26	NA	NA	NA		SU	12/9/2014 5:02 PM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1412B17

Date Reported: 12/16/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/9/2014 10:55:00 AM
Project:	KANAWHA COUNTY LANDFILL	**Date Received:**	12/9/2014
Lab ID:	1412B17-01B	**Matrix:**	Liquid
Client Sample ID:	MU-2 CHARLESTON SANITARY BOARD POTW	**Site ID:**	CHARLESTON, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	0.068	0.010	0.100	NA	J	mg/L	12/11/2014 9:33 PM	PA/VA
Manganese	0.177	0.002	0.100	NA		mg/L	12/11/2014 9:33 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412B17

Date Reported: 12/16/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/9/2014 9:50:00 AM
Project:	KANAWHA COUNTY LANDFILL	**Date Received:**	12/9/2014
Lab ID:	1412B17-02A	**Matrix:**	Liquid
Client Sample ID:	MU-1 CHARLESTON LANDFILL LEACHATE	**Site ID:**	CHARLESTON, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.026	0.005	0.100	NA	J	mg/L	12/11/2014 9:36 PM	PA/VA
Antimony	ND	0.020	0.200	NA		mg/L	12/11/2014 9:36 PM	PA/VA
Arsenic	0.059	0.020	0.200	NA	J	mg/L	12/11/2014 9:36 PM	PA/VA
Barium	0.891	0.002	0.100	NA		mg/L	12/11/2014 9:36 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	12/11/2014 9:36 PM	PA/VA
Boron	2.45	0.020	0.100	NA		mg/L	12/11/2014 9:36 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	12/11/2014 9:36 PM	PA/VA
Chromium	0.026	0.005	0.100	NA	J	mg/L	12/11/2014 9:36 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	12/11/2014 9:36 PM	PA/VA
Iron	13.3	0.010	0.100	NA		mg/L	12/11/2014 9:36 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	12/11/2014 9:36 PM	PA/VA
Lithium	0.044	0.020	0.100	NA	J	mg/L	12/11/2014 12:02 PM	
Manganese	1.13	0.002	0.100	NA		mg/L	12/11/2014 9:36 PM	PA/VA
Nickel	0.069	0.005	0.100	NA	J	mg/L	12/11/2014 9:36 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	12/11/2014 9:36 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	12/11/2014 9:36 PM	PA/VA
Strontium	0.743	0.001	0.010	NA		mg/L	12/11/2014 12:02 PM	PA
Vanadium	0.017	0.005	0.100	NA	J	mg/L	12/11/2014 9:36 PM	PA/VA
Zinc	0.012	0.003	0.050	NA	J	mg/L	12/11/2014 9:36 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	12/15/2014 12:43 PM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0107	NA		mg/L	12/11/2014 11:41 PM	
1,4-Napthoquinone	ND	NA	0.0107	NA		mg/L	12/11/2014 11:41 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0533	NA		mg/L	12/12/2014 10:05 PM	
Pentachloronitrobenzene	ND	NA	0.0107	NA		mg/L	12/11/2014 11:41 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0053	0.0107	NA		mg/L	12/11/2014 11:41 PM	PA/VA
Butyl benzyl phthalate	ND	0.0053	0.0107	NA		mg/L	12/11/2014 11:41 PM	PA/VA
Di-n-butyl phthalate	ND	0.0053	0.0107	NA		mg/L	12/11/2014 11:41 PM	PA/VA
Diethyl phthalate	ND	0.0021	0.0107	NA		mg/L	12/11/2014 11:41 PM	PA/VA
Dimethyl phthalate	ND	0.0021	0.0107	NA		mg/L	12/11/2014 11:41 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0021	0.0107	NA		mg/L	12/11/2014 11:41 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0021	0.0107	NA		mg/L	12/11/2014 11:41 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412B17

Date Reported: 12/16/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/9/2014 9:50:00 AM
Project:	KANAWHA COUNTY LANDFILL	**Date Received:**	12/9/2014
Lab ID:	1412B17-02A	**Matrix:**	Liquid
Client Sample ID:	MU-1 CHARLESTON LANDFILL LEACHATE	**Site ID:**	CHARLESTON, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0053	0.0107	NA		mg/L	12/11/2014 11:41 PM	PA/VA
Fluoranthene	ND	0.0021	0.0107	NA		mg/L	12/11/2014 11:41 PM	PA/VA
Nitrobenzene	ND	0.0021	0.0107	NA		mg/L	12/11/2014 11:41 PM	PA/VA
Surr: 2-Fluorophenol	34.3	NA	32.9-110	NA		%REC	12/11/2014 11:41 PM	
Surr: Phenol-d5	26.5	NA	25.8-110	NA		%REC	12/11/2014 11:41 PM	
Surr: 2,4,6-Tribromophenol	70.5	NA	63.8-110	NA		%REC	12/11/2014 11:41 PM	
Surr: Nitrobenzene-d5	65.6	NA	61.8-110	NA		%REC	12/11/2014 11:41 PM	
Surr: 2-Fluorobiphenyl	62.2	NA	58.6-110	NA		%REC	12/11/2014 11:41 PM	
Surr: 4-Terphenyl-d14	55.7	NA	55.1-110	NA		%REC	12/11/2014 11:41 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	5.00	10.0	NA		µg/L	12/16/2014 12:15 AM	PA/VA
Chlorobenzene	ND	5.00	10.0	NA		µg/L	12/16/2014 12:15 AM	PA/VA
Dibromochloromethane	ND	5.00	10.0	NA		µg/L	12/16/2014 12:15 AM	PA/VA
1,2-Dichlorobenzene	ND	5.00	10.0	NA		µg/L	12/16/2014 12:15 AM	PA/VA
1,3-Dichlorobenzene	ND	5.00	10.0	NA		µg/L	12/16/2014 12:15 AM	PA/VA
1,4-Dichlorobenzene	11.9	5.00	10.0	NA		µg/L	12/16/2014 12:15 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	116	NA	68.7-129	NA		%REC	12/16/2014 12:15 AM	
Surr: 4-Bromofluorobenzene	103	NA	71.8-127	NA		%REC	12/16/2014 12:15 AM	
Surr: Dibromofluoromethane	101	NA	74.3-124	NA		%REC	12/16/2014 12:15 AM	
Surr: Toluene-d8	103	NA	71.4-129	NA		%REC	12/16/2014 12:15 AM	

Notes:

Elevated PQLs are due to matrix interference. Sample foamed during analysis.

BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: CB**	
Biochemical Oxygen Demand	ND	28	70	NA		mg/L	12/9/2014 4:02 PM	PA/VA

Notes:

BOD PQL was elevated due to insufficient oxygen depletion in all dilutions.

Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	362	20	50	NA		mg/L	12/10/2014 8:45 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0001	0.0010	NA		mg/L	12/10/2014 12:15 PM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	190	2.50	25.0	NA		mg/L	12/9/2014 4:52 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412B17

Date Reported: 12/16/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/9/2014 9:50:00 AM
Project:	KANAWHA COUNTY LANDFILL	**Date Received:**	12/9/2014
Lab ID:	1412B17-02A	**Matrix:**	Liquid
Client Sample ID:	MU-1 CHARLESTON LANDFILL LEACHATE	**Site ID:**	CHARLESTON, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Fluoride	0.43	0.05	0.20	NA		mg/L	12/9/2014 4:52 PM	PA/VA
Sulfate	80.5	1.00	5.00	NA		mg/L	12/9/2014 4:52 PM	PA/VA
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	0.62	0.02	0.10	NA		mg/L	12/9/2014 4:52 PM	PA/VA
Nitrogen, Nitrite	ND	0.05	0.50	NA		mg/L	12/9/2014 4:52 PM	PA/VA
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	302	10.0	50.0	NA		mg/L	12/11/2014 10:08 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: KS**	
Oil & Grease	ND	2.0	5.0	NA		mg/L	12/11/2014 8:35 AM	PA/VA

Notes:

Sample acidity or alkalinity exceeded the added preservative, so that the required preservation pH was not achieved.

CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	0.037	0.005	0.020	NA		mg/L	12/10/2014 2:24 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	317	6.40	16.0	NA		mg/L	12/10/2014 8:14 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: CC**	
Specific Conductivity	5,280	NA	NA	NA		µmhos/cm	12/10/2014 4:45 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: CC**	
Total Dissolved Solids	2,120	5	10	NA		mg/L	12/10/2014 5:12 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: CC**	
Total Suspended Solids	40.0	8.0	40.0	NA		mg/L	12/10/2014 5:11 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	378	1.0	10	NA		mg/L	12/9/2014 5:02 PM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	1,890	4.0	40.0	NA		mg/L	12/9/2014 5:02 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412B17

Date Reported: 12/16/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/9/2014 9:50:00 AM
Project:	KANAWHA COUNTY LANDFILL	**Date Received:**	12/9/2014
Lab ID:	1412B17-02A	**Matrix:**	Liquid
Client Sample ID:	MU-1 CHARLESTON LANDFILL LEACHATE	**Site ID:**	CHARLESTON, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	6.90	NA	NA	NA		SU	12/9/2014 5:02 PM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1412B17

Date Reported: 12/16/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/9/2014 9:50:00 AM
Project:	KANAWHA COUNTY LANDFILL	**Date Received:**	12/9/2014
Lab ID:	1412B17-02B	**Matrix:**	Liquid
Client Sample ID:	MU-1 CHARLESTON LANDFILL LEACHATE	**Site ID:**	CHARLESTON, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	10.5	0.010	0.100	NA		mg/L	12/11/2014 9:45 PM	PA/VA
Manganese	1.09	0.002	0.100	NA		mg/L	12/11/2014 9:45 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1412B17

Date Reported: 12/16/2014

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/9/2014 12:00:00 AM
Project:	KANAWHA COUNTY LANDFILL	**Date Received:**	12/9/2014
Lab ID:	1412B17-03A	**Matrix:**	Trip Blank
Client Sample ID:	TRIP BLANK	**Site ID:**	CHARLESTON, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	12/15/2014 11:08 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	12/15/2014 11:08 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	12/15/2014 11:08 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/15/2014 11:08 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/15/2014 11:08 PM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	12/15/2014 11:08 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	112	NA	68.7-129	NA		%REC	12/15/2014 11:08 PM	
Surr: 4-Bromofluorobenzene	106	NA	71.8-127	NA		%REC	12/15/2014 11:08 PM	
Surr: Dibromofluoromethane	102	NA	74.3-124	NA		%REC	12/15/2014 11:08 PM	
Surr: Toluene-d8	104	NA	71.4-129	NA		%REC	12/15/2014 11:08 PM	

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Thursday, January 08, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: KANAWHA COUNTY LANDFILL

Work Order #: 1412B31

Dear GEORGE CARICO:

REI Consultants, Inc. received 2 sample(s) on 12/9/2014 for the analyses presented in the following report.

Kathy Berry

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1412B31

Date Reported: 1/8/2015

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,

Project: KANAWHA COUNTY LANDFILL

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1412B31

Date Reported: 1/8/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/9/2014 10:55:00 AM
Project:	KANAWHA COUNTY LANDFILL	**Date Received:**	12/9/2014
Lab ID:	1412B31-01A	**Matrix:**	Liquid
Client Sample ID:	MU-2 CHARLESTON SANITARY BOARD POTW	**Site ID:**	CHARLESTON, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1412B31

Date Reported: 1/8/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	12/9/2014 9:50:00 AM
Project:	KANAWHA COUNTY LANDFILL	**Date Received:**	12/9/2014
Lab ID:	1412B31-02A	**Matrix:**	Liquid
Client Sample ID:	MU-1 CHARLESTON LANDFILL LEACHATE	**Site ID:**	CHARLESTON, WV

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

December 24, 2014

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1412B31
Pace Project No.: 30136234

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on December 10, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1412B31
Pace Project No.: 30136234

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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Greensburg, PA 15601
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SAMPLE SUMMARY

Project: 1412B31
Pace Project No.: 30136234

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30136234001	**1412B31-01A**	Water	12/09/14 10:55	12/10/14 09:50
30136234002	**1412B31-02A**	Water	12/09/14 09:50	12/10/14 09:50

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SAMPLE ANALYTE COUNT

Project: 1412B31
Pace Project No.: 30136234

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30136234001	**1412B31-01A**	SM 7500Rn-B	FCC	1
		EPA 900.0	FCC	2
		EPA 903.1	JC2	1
		EPA 904.0	JAL	1
		ASTM D5811-95	LAL	1
30136234002	**1412B31-02A**	SM 7110C	FCC	1
		SM 7500Rn-B	FCC	1
		EPA 900.0	FCC	1
		EPA 903.1	JC2	1
		EPA 904.0	JAL	1
		ASTM D5811-95	LAL	1

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PROJECT NARRATIVE

Project: 1412B31
Pace Project No.: 30136234

Method: **SM 7110C**
Description: 7110C Gross Alpha
Client: REI Consultants, Inc.
Date: December 24, 2014

General Information:
1 sample was analyzed for SM 7110C. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Upon receipt at the laboratory, six mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.
- 1412B31-02A (Lab ID: 30136234002)

Sample 30136234002 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412B31-02A (Lab ID: 30136234002)

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PROJECT NARRATIVE

Project: 1412B31
Pace Project No.: 30136234

Method: **SM 7500Rn-B**
Description: 7500RnB Radon
Client: REI Consultants, Inc.
Date: December 24, 2014

General Information:
2 samples were analyzed for SM 7500Rn-B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Sample 30136234001 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412B31-01A (Lab ID: 30136234001)

Upon receipt at the laboratory, six mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.
- 1412B31-02A (Lab ID: 30136234002)

Sample 30136234002 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412B31-02A (Lab ID: 30136234002)

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PROJECT NARRATIVE

Project: 1412B31
Pace Project No.: 30136234

Method: **EPA 900.0**
Description: 900.0 Gross Alpha/Beta
Client: REI Consultants, Inc.
Date: December 24, 2014

General Information:
2 samples were analyzed for EPA 900.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Sample 30136234001 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412B31-01A (Lab ID: 30136234001)

Upon receipt at the laboratory, six mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.
- 1412B31-02A (Lab ID: 30136234002)

Sample 30136234002 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412B31-02A (Lab ID: 30136234002)

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PROJECT NARRATIVE

Project: 1412B31
Pace Project No.: 30136234

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: REI Consultants, Inc.
Date: December 24, 2014

General Information:
2 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Sample 30136234001 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412B31-01A (Lab ID: 30136234001)

Upon receipt at the laboratory, six mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.
- 1412B31-02A (Lab ID: 30136234002)

Sample 30136234002 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412B31-02A (Lab ID: 30136234002)

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PROJECT NARRATIVE

Project: 1412B31
Pace Project No.: 30136234

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: REI Consultants, Inc.
Date: December 24, 2014

General Information:
2 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Sample 30136234001 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412B31-01A (Lab ID: 30136234001)

Upon receipt at the laboratory, six mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.
- 1412B31-02A (Lab ID: 30136234002)

Sample 30136234002 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412B31-02A (Lab ID: 30136234002)

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PROJECT NARRATIVE

Project: 1412B31
Pace Project No.: 30136234

Method: **ASTM D5811-95**
Description: 905.0 Strontium 89/90 Eichrom
Client: REI Consultants, Inc.
Date: December 24, 2014

General Information:
2 samples were analyzed for ASTM D5811-95. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Sample Comments:

Sample 30136234001 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412B31-01A (Lab ID: 30136234001)

Upon receipt at the laboratory, six mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.
- 1412B31-02A (Lab ID: 30136234002)

Sample 30136234002 from this analytical project was analyzed outside of the recommended Radon-222 hold time of four days. Results reported are decay corrected to the sample collection date and time supplied by the client.
- 1412B31-02A (Lab ID: 30136234002)

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1412B31
Pace Project No.: 30136234

Sample: 1412B31-01A **Lab ID: 30136234001** Collected: 12/09/14 10:55 Received: 12/10/14 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**35.3 ± 41.2 (68.3) C:NA T:NA**	pCi/L	12/16/14 23:30	10043-92-2	
Gross Alpha	EPA 900.0	**1.35 ± 1.46 (2.88) C:NA T:NA**	pCi/L	12/16/14 08:12	12587-46-1	
Gross Beta	EPA 900.0	**5.37 ± 1.50 (1.44) C:NA T:NA**	pCi/L	12/16/14 08:12	12587-47-2	
Radium-226	EPA 903.1	**0.102 ± 0.464 (0.943) C:NA T:80%**	pCi/L	12/19/14 11:52	13982-63-3	
Radium-228	EPA 904.0	**0.0796 ± 0.344 (0.759) C:78% T:73%**	pCi/L	12/23/14 15:03	15262-20-1	
Strontium-90	ASTM D5811-95	**0.881 ± 0.781 (1.60) C:102% T:NA**	pCi/L	12/15/14 06:52	10098-97-2	

Sample: 1412B31-02A **Lab ID: 30136234002** Collected: 12/09/14 09:50 Received: 12/10/14 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, six mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	SM 7110C	**7.55 ± 3.25 (2.94) C:NA T:NA**	pCi/L	12/24/14 07:05	12587-46-1	
Radon	SM 7500Rn-B	**-14.5 ± 40.1 (69.6) C:NA T:NA**	pCi/L	12/17/14 01:03	10043-92-2	
Gross Beta	EPA 900.0	**124 ± 23.0 (5.19) C:NA T:NA**	pCi/L	12/18/14 19:40	12587-47-2	
Radium-226	EPA 903.1	**2.83 ± 1.99 (0.958) C:NA T:88%**	pCi/L	12/19/14 11:24	13982-63-3	
Radium-228	EPA 904.0	**1.79 ± 0.881 (1.43) C:71% T:66%**	pCi/L	12/23/14 15:03	15262-20-1	
Strontium-90	ASTM D5811-95	**1.34 ± 0.748 (1.22) C:103% T:NA**	pCi/L	12/16/14 19:05	10098-97-2	

Pace Analytical Services, Inc.
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412B31
Pace Project No.: 30136234

QC Batch: RADC/22542
Analysis Method: ASTM D5811-95
QC Batch Method: ASTM D5811-95
Analysis Description: 905.0 Strontium 89/90 Eichrom
Associated Lab Samples: 30136234001, 30136234002

METHOD BLANK: 828711
Matrix: Water
Associated Lab Samples: 30136234001, 30136234002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Strontium-90	-0.375 ± 0.377 (1.08) C:98% T:NA	pCi/L	12/15/14 06:50	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412B31
Pace Project No.: 30136234

QC Batch: RADC/22525 | Analysis Method: SM 7500Rn-B
QC Batch Method: SM 7500Rn-B | Analysis Description: 7500Rn B Radon
Associated Lab Samples: 30136234001, 30136234002

METHOD BLANK: 828072 | Matrix: Water
Associated Lab Samples: 30136234001, 30136234002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radon	-17.7 ± 18.3 (33.1) C:NA T:NA	pCi/L	12/15/14 18:45	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412B31
Pace Project No.: 30136234

QC Batch: RADC/22538 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30136234001, 30136234002

METHOD BLANK: 828707 Matrix: Water
Associated Lab Samples: 30136234001, 30136234002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0489 ± 0.355 (0.789) C:72% T:80%	pCi/L	12/23/14 15:04	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412B31
Pace Project No.: 30136234

QC Batch: RADC/22540 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30136234001, 30136234002

METHOD BLANK: 828709 | Matrix: Water
Associated Lab Samples: 30136234001, 30136234002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.469 ± 0.609 (0.975) C:NA T:85%	pCi/L	12/19/14 10:28	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412B31
Pace Project No.: 30136234

QC Batch: RADC/22696 | Analysis Method: SM 7110C
QC Batch Method: SM 7110C | Analysis Description: 7110C Gross Alpha
Associated Lab Samples: 30136234002

METHOD BLANK: 834521 | Matrix: Water
Associated Lab Samples: 30136234002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.669 ± 0.692 (1.27) C:NA T:NA	pCi/L	12/24/14 07:05	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1412B31
Pace Project No.: 30136234

QC Batch: RADC/22563 | Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 | Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30136234001, 30136234002

METHOD BLANK: 828748 | Matrix: Water
Associated Lab Samples: 30136234001, 30136234002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.076 ± 0.620 (1.64) C:NA T:NA	pCi/L	12/16/14 08:14	
Gross Beta	-0.423 ± 0.674 (1.82) C:NA T:NA	pCi/L	12/16/14 08:14	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1412B31
Pace Project No.: 30136234

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3159	PAGE: 1	OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA COMPANY: PACE ANALYTICAL SERVIC
ADDRESS: 1638 ROSEYTOWN ROAD
CITY, STATE, ZIP: GREENSBURG, PA 15601
PHONE: (724) 850-5600 FAX:
ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:
State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. Results to Kathy Berry kberry@reiclabs.com. Thanks

ANALYTICAL PARAMETERS

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	GROSS_ALPHA_SUB (EPA 900.0) *	GROSS_BETA_SUB (EPA 900.0)	RADIUM_226_SUB (EPA 903.1)	RADIUM_228_SUB (EPA 904.0)	RADON (913.0)	STRONTIUM_90_SUB (EPA 905.0)	COMMENTS
						*	2	2	2	2	2	2	30136234
1	1412B31-01A	MU-2	.	Liquid	12/9/2014 10:55:00 AM	1	√	√	√	√	√	√	001
2	1412B31-02A	MU-1	.	Liquid	12/9/2014 9:50:00 AM	1	√	√	√	√	√	√	002

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

* MAY USE METHOD 7110 C IF NEEDED. DL

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[signature]	12-9-14	1600	UPS		
UPS			[signature]	12-10-14	0950

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐
Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples _____ °C Attempt to Cool ? _____
Comments: _____

Ann

Sample Condition Upon Receipt

Pace Analytical

Client Name: REEC

Project # 30136234

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1Z26X713136048048 1

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no Biological Tissue is Frozen: Yes No

Packing Material: Bubble Wrap X Bubble Bags ____ None ____ Other _____

Thermometer Used NA Type of Ice: Wet Blue (None) ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.:_____°C Correction Factor: _____°C Final Temp:_____°C

Date and Initials of person examining contents: SRA 12-10-14

Temp should be above freezing to 6°C

		Comments:
Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☒No ☐N/A	4. waiver on file CAF 12/10/14
Samples Arrived within Hold Time:	☒Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr): SRA 12-10-14	☒Yes ☒No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☒No ☐N/A	7.
Sufficient Volume:	☒Yes ☐No ☐N/A	8.
Correct Containers Used:	☒Yes ☐No ☐N/A	9.
-Pace Containers Used:	☐Yes ☒No ☐N/A	
Containers Intact:	☒Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: wt	☒Yes ☐No ☐N/A	12.
All containers needing preservation have been checked.	☒Yes ☐No ☐N/A	13. Added 6ml HNO3 to all bottles from Sample #2 @ 1045 12-10-14 SRA
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☒No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☒No	Initial when completed SRA / Lot # of added preservative DL14-1100
Samples checked for dechlorination:	☐Yes ☐No ☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☒N/A	15.
Trip Blank Present:	☐Yes ☒No ☐N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carrie Serio **Date:** 12/10/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30136234

Client Name: REIC

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other radon	Other
001	wt																		3				3	
002	I																		1				1	

CHAIN OF CUSTODY RECORD

v10-0114

REIC use ONLY — CLIENT ID MAR071 DATE _____ SHEET _____

REIC
Research Environmental & Industrial Consultants, Inc.
MAIN LABORATORY & CORPORATE HEADQUARTERS:
P.O. Box 286 • 225 Industrial Park Rd, Beaver, WV 25813
800-999-0105 • 304-255-2500 • www.reiclabs.com

MID-OHIO VALLEY Service Center
101 17th Street
Ashland, KY 41101
606-393-5027

SHENANDOAH Service Center
1557 Commerce Rd., Ste 201
Verona, VA 24482
540-248-0183

ROANOKE Service Center
3029-C Peters Creek Rd
Roanoke, VA 24019
540-777-1276

MORGANTOWN Service Center
16 Commerce Drive
Westover, WV 26501
304-241-5861

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL GEOCHEMICAL & APPLIED SCIENCE PO # _____

Contact Person Geroge Carico / Jamie Wolfe Phone 304.696.5456

Address One Marshall Drive City Huntington State WV Zip 25755

Billing Address (if different) _____

City _____ State _____ Zip _____

Site ID & State _____ Project ID _____ Sampler _____

SAMPLE LOG & ANALYSIS REQUEST

TURNAROUND TIME: ⊙ NORMAL — RUSH TURNAROUND*: ○ 5 DAY ○ 3 DAY ○ 2 DAY ○ 1 DAY

*Rush work needs prior laboratory approval and will incur additional charges

ANALYSIS & METHOD REQUESTED: See Attached List

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	0	1	2	3	5	10			
Charleston Landfill	20	3/26 0930	Water	Grab	X								
Charleston Sanitary	23	3/26 1020	Water	Grab	X								
TRIP BLANK	2		Water	Grab	X								
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									

ENTER PRESERVATIVE CODE(S):
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Bisulfate/Methanol
9 Ammonium Chloride
10 AS/AH *
11 _____ *
* (Use blanks for preservatives not listed.)

COMMENTS:
Field Sampling Time_____
Per Doug Arthur

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: 1.1 °C ICED? Y ✓ N___

Containers provided by: [✓] REIC [ ] Client

1 Relinquished by (signature)	Date/Time 3/26/15 0930	2 Relinquished by (signature)	Date/Time	3 Relinquished by (signature)	Date/Time
Received by (signature) M Atkelley	Date/Time 3/26/15 12:35	Received by (signature)	Date/Time	Received by (signature)	Date/Time

DBPix Evaluation

1 of 3

WVDEP Drill Cutting / Leachate Analysis List

Aluminum

Antimony

Arsenic

Barium

Beryllium

Boron

Cadmium

Chromium

Hexavalent Chromium

Copper

Lead

Lithium

Mercury

Nickel

Selenium

Silver

Strontium

Vanadium

Zinc

Chloride

Fluoride

Nitrate as Nitrogen

Nitrite as Nitrogen

Sulfate

Total Suspended Solids

Free Cyanide

Benzene

Chlorobenzene

Chlorodibromomethane

www.ammara.com

DBPix Evaluation

2 of 3

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

1,4-Dinitrobenzene

1,4-Naphthoquinone

2,4-Dinitrotoluene

2,6-Dinitrotoluene

4-Nitroquinoline-1-oxide

bis(2-ethylhexyl) phthalate

Butyl benzylphthalate

Di-N-Butyl Phthalate

Di-N-Octylphthalate Diethyl Phthalate

Dimethyl Phthalate

Flouranthene

Nitrobenzene

Pentachloronitrobenzene

Gross Alpha

Gross Beta

Radium 226

Radium 228

Strontium 90

Radon

pH

Total Dissolved Solids

Total Suspended Solids

BOD 5-Day

Ammonia as Nitrogen

Total Kjeldahl Nitrogen

Oil & Grease

Acidity to pH 8.3

www.ammara.com

DBPix Evaluation

Jor)

Specific Conductance

Alkalinity to pH 4.5

Chemical Oxygen Demand

Dissolved Iron and Iron

Manganese and Dissolved Manganese

www.ammara.com

REI Consultants, Inc.

Field Log: Calibration Records

Client:	Site Location:
Marshall University Environmental	Charleston Landfill

Specific Conductance (umhos/cm) -- SM2510B-1997				
Check Standard	Initial Reading	Reading After Calibration	Temp °C	Comments
1413	1439	1413	23.0	
			Instrument ID: Oakton 300 Series	

pH (SU) -- SM4500-H+B-2000				
Standard	Initial Reading	Reading After Calibration	Temp °C	Comments
4.0 Buffer	4.06	4.00	22.8	
7.0 Buffer	7.03	7.00	22.8	
10.0 Buffer	10.03	10.01	22.3	
QC Check, 7.0				SLOPE 99 %
Post Analysis 7.0				
Calibration Location: (Field) / Lab				
			Instrument ID: Oakton 300 Series	

Turbidity (NTU) -- EPA180.1		
Standard	Reading After Calibration	Comments
800		
100		
20.0		
0.02		
		Instrument ID: Oakton T 100

Comments:

Calibrations at the lab require a pH 7.0 QC Check

All field pH analyses must be followed by a post analysis pH check

Acceptance Criteria:

Conductivity = 1272 - 1554 (TV ± 10%)

pH: TV ± 0.1

Turbidity: TV ± 10%

pH slope: 85-100%

Methods References: pH: SM4500-H+B-2000; Conductivity: SM2510B-1997; Turbidity: EPA180.1

4 CA7-01 7 C323-04 10 C337-03

Date: 3/26/15

Performed By: C. Belcher

G:\Allen McBride\Copy of Sampling Field Calib Log 2007.xls

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Saturday, April 11, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE:

Work Order #: 1503V66

Dear GEORGE CARICO:

REI Consultants, Inc. received 3 sample(s) on 3/26/2015 for the analyses presented in the following report.

Sincerely,

Kathy Berry

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1503V66

Date Reported: 4/11/2015

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project:

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1503V66

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/26/2015 9:30:00 AM
Project:		**Date Received:**	3/26/2015
Lab ID:	1503V66-01A	**Matrix:**	Liquid
Client Sample ID:	CHARLESTON LANDFILL	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.034	0.006	0.100	NA	J	mg/L	3/30/2015 9:26 PM	PA/VA
Antimony	ND	0.040	0.200	NA		mg/L	3/30/2015 9:26 PM	PA/VA
Arsenic	0.056	0.020	0.200	NA	J	mg/L	3/30/2015 9:26 PM	PA/VA
Barium	0.790	0.002	0.100	NA		mg/L	3/30/2015 9:26 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	3/30/2015 9:26 PM	PA/VA
Boron	2.06	0.035	0.100	NA		mg/L	3/30/2015 9:26 PM	PA/VA
Cadmium	0.001	0.001	0.020	NA	J	mg/L	3/30/2015 9:26 PM	PA/VA
Chromium	0.022	0.005	0.100	NA	J	mg/L	3/30/2015 9:26 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	3/30/2015 9:26 PM	PA/VA
Iron	22.0	0.010	0.100	NA		mg/L	3/30/2015 9:26 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	3/30/2015 9:26 PM	PA/VA
Lithium	0.042	0.020	0.100	NA	J	mg/L	3/30/2015 2:36 PM	
Manganese	1.72	0.002	0.100	NA		mg/L	3/30/2015 9:26 PM	PA/VA
Nickel	0.048	0.005	0.100	NA	J	mg/L	3/30/2015 9:26 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	3/30/2015 9:26 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	3/30/2015 9:26 PM	PA/VA
Strontium	1.01	0.001	0.010	NA		mg/L	3/30/2015 2:36 PM	PA
Vanadium	0.013	0.005	0.100	NA	J	mg/L	3/30/2015 9:26 PM	PA/VA
Zinc	0.016	0.003	0.050	NA	J	mg/L	3/30/2015 9:26 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	3/31/2015 11:14 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0112	NA		mg/L	3/28/2015 12:52 AM	
1,4-Napthoquinone	ND	NA	0.0112	NA		mg/L	3/28/2015 12:52 AM	
4-Nitroquinoline-1-oxide	ND	NA	0.0561	NA		mg/L	3/28/2015 12:52 AM	
Pentachloronitrobenzene	ND	NA	0.0112	NA		mg/L	3/28/2015 12:52 AM	
Bis(2-ethylhexyl)phthalate	ND	0.0056	0.0112	NA		mg/L	3/28/2015 12:52 AM	PA/VA
Butyl benzyl phthalate	ND	0.0056	0.0112	NA		mg/L	3/28/2015 12:52 AM	PA/VA
Di-n-butyl phthalate	ND	0.0056	0.0112	NA		mg/L	3/28/2015 12:52 AM	PA/VA
Diethyl phthalate	ND	0.0022	0.0112	NA		mg/L	3/28/2015 12:52 AM	PA/VA
Dimethyl phthalate	ND	0.0022	0.0112	NA		mg/L	3/28/2015 12:52 AM	PA/VA
2,4-Dinitrotoluene	ND	0.0022	0.0112	NA		mg/L	3/28/2015 12:52 AM	PA/VA
2,6-Dinitrotoluene	ND	0.0022	0.0112	NA		mg/L	3/28/2015 12:52 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503V66

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/26/2015 9:30:00 AM
Project:		**Date Received:**	3/26/2015
Lab ID:	1503V66-01A	**Matrix:**	Liquid
Client Sample ID:	CHARLESTON LANDFILL	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0056	0.0112	NA		mg/L	3/28/2015 12:52 AM	PA/VA
Fluoranthene	ND	0.0022	0.0112	NA		mg/L	3/28/2015 12:52 AM	PA/VA
Nitrobenzene	ND	0.0022	0.0112	NA		mg/L	3/28/2015 12:52 AM	PA/VA
Surr: 2-Fluorophenol	41.3	NA	32.9-110	NA		%REC	3/28/2015 12:52 AM	
Surr: Phenol-d5	33.4	NA	25.8-110	NA		%REC	3/28/2015 12:52 AM	
Surr: 2,4,6-Tribromophenol	85.4	NA	63.8-110	NA		%REC	3/28/2015 12:52 AM	
Surr: Nitrobenzene-d5	92.0	NA	61.8-110	NA		%REC	3/28/2015 12:52 AM	
Surr: 2-Fluorobiphenyl	82.7	NA	58.6-110	NA		%REC	3/28/2015 12:52 AM	
Surr: 4-Terphenyl-d14	55.0	NA	55.1-110	NA	S	%REC	3/28/2015 12:52 AM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: TC**	
Benzene	3.48	0.500	1.00	NA		µg/L	4/7/2015 1:05 AM	PA/VA
Chlorobenzene	2.36	0.500	1.00	NA		µg/L	4/7/2015 1:05 AM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	4/7/2015 1:05 AM	PA/VA
1,2-Dichlorobenzene	12.5	0.500	1.00	NA		µg/L	4/7/2015 1:05 AM	PA/VA
1,3-Dichlorobenzene	7.78	0.500	1.00	NA		µg/L	4/7/2015 1:05 AM	PA/VA
1,4-Dichlorobenzene	8.02	0.500	1.00	NA		µg/L	4/7/2015 1:05 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	79.5	NA	68.7-129	NA		%REC	4/7/2015 1:05 AM	
Surr: 4-Bromofluorobenzene	105	NA	71.8-127	NA		%REC	4/7/2015 1:05 AM	
Surr: Dibromofluoromethane	81.4	NA	74.3-124	NA		%REC	4/7/2015 1:05 AM	
Surr: Toluene-d8	97.0	NA	71.4-129	NA		%REC	4/7/2015 1:05 AM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: CB**	
Biochemical Oxygen Demand	102	2	5	NA		mg/L	3/27/2015 10:20 AM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	356	20	50	NA		mg/L	3/27/2015 7:46 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0003	0.0010	NA		mg/L	3/31/2015 1:46 PM	
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	312	10.0	50.0	NA		mg/L	3/26/2015 9:11 PM	
Fluoride	0.11	0.05	0.20	NA	J	mg/L	3/26/2015 9:11 PM	
Sulfate	123	2.00	10.0	NA		mg/L	3/26/2015 9:11 PM	

REI Consultants, Inc. - Analytical Report

WO#: 1503V66

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/26/2015 9:30:00 AM
Project:		**Date Received:**	3/26/2015
Lab ID:	1503V66-01A	**Matrix:**	Liquid
Client Sample ID:	CHARLESTON LANDFILL	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	0.08	0.02	0.10	NA	J	mg/L	3/26/2015 7:01 PM	
Nitrogen, Nitrite	0.35	0.05	0.50	NA	J	mg/L	3/26/2015 7:01 PM	
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	194	16.0	80.0	NA		mg/L	4/1/2015 10:47 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	ND	2.0	5.0	NA		mg/L	3/31/2015 4:02 PM	PA/VA

Notes:

Sample acidity or alkalinity exceeded the added preservative, so that the required preservation pH was not achieved.

CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	3/30/2015 4:46 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	187	4.00	10.0	NA		mg/L	4/7/2015 8:24 AM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: SF**	
Specific Conductivity	4,040	NA	NA	NA		µmhos/cm	3/27/2015 12:15 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	2,140	5	10	NA		mg/L	3/30/2015 3:15 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	49.0	2.0	10	NA		mg/L	3/30/2015 3:15 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	315	1.0	10	NA		mg/L	3/27/2015 9:56 AM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	1,440	4.0	40.0	NA		mg/L	3/27/2015 9:56 AM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	7.10	NA	NA	NA		SU	3/27/2015 9:56 AM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1503V66

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/26/2015 9:30:00 AM
Project:		**Date Received:**	3/26/2015
Lab ID:	1503V66-01B	**Matrix:**	Liquid
Client Sample ID:	CHARLESTON LANDFILL	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	21.7	0.010	0.100	NA		mg/L	3/30/2015 9:29 PM	PA/VA
Manganese	1.73	0.002	0.100	NA		mg/L	3/30/2015 9:29 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503V66

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/26/2015 10:20:00 AM
Project:		**Date Received:**	3/26/2015
Lab ID:	1503V66-02A	**Matrix:**	Liquid
Client Sample ID:	CHARLESTON SANITARY	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.034	0.006	0.100	NA	J	mg/L	3/30/2015 9:32 PM	PA/VA
Antimony	ND	0.040	0.200	NA		mg/L	3/30/2015 9:32 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	3/30/2015 9:32 PM	PA/VA
Barium	0.048	0.002	0.100	NA	J	mg/L	3/30/2015 9:32 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	3/30/2015 9:32 PM	PA/VA
Boron	0.117	0.070	0.200	NA	J	mg/L	4/6/2015 7:25 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	3/30/2015 9:32 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	3/30/2015 9:32 PM	PA/VA
Copper	0.009	0.005	0.100	NA	J	mg/L	3/30/2015 9:32 PM	PA/VA
Iron	0.137	0.010	0.100	NA		mg/L	3/30/2015 9:32 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	3/30/2015 9:32 PM	PA/VA
Lithium	ND	0.020	0.100	NA		mg/L	3/30/2015 2:40 PM	
Manganese	0.010	0.002	0.100	NA	J	mg/L	3/30/2015 9:32 PM	PA/VA
Nickel	ND	0.005	0.100	NA		mg/L	3/30/2015 9:32 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	3/30/2015 9:32 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	3/30/2015 9:32 PM	PA/VA
Strontium	0.147	0.001	0.010	NA		mg/L	3/30/2015 2:40 PM	PA
Vanadium	ND	0.005	0.100	NA		mg/L	3/30/2015 9:32 PM	PA/VA
Zinc	0.066	0.003	0.050	NA		mg/L	3/30/2015 9:32 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	3/31/2015 11:16 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0114	NA		mg/L	3/28/2015 1:18 AM	
1,4-Napthoquinone	ND	NA	0.0114	NA		mg/L	3/28/2015 1:18 AM	
4-Nitroquinoline-1-oxide	ND	NA	0.0572	NA		mg/L	3/28/2015 1:18 AM	
Pentachloronitrobenzene	ND	NA	0.0114	NA		mg/L	3/28/2015 1:18 AM	
Bis(2-ethylhexyl)phthalate	ND	0.0057	0.0114	NA		mg/L	3/28/2015 1:18 AM	PA/VA
Butyl benzyl phthalate	ND	0.0057	0.0114	NA		mg/L	3/28/2015 1:18 AM	PA/VA
Di-n-butyl phthalate	ND	0.0057	0.0114	NA		mg/L	3/28/2015 1:18 AM	PA/VA
Diethyl phthalate	ND	0.0023	0.0114	NA		mg/L	3/28/2015 1:18 AM	PA/VA
Dimethyl phthalate	ND	0.0023	0.0114	NA		mg/L	3/28/2015 1:18 AM	PA/VA
2,4-Dinitrotoluene	ND	0.0023	0.0114	NA		mg/L	3/28/2015 1:18 AM	PA/VA
2,6-Dinitrotoluene	ND	0.0023	0.0114	NA		mg/L	3/28/2015 1:18 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503V66

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/26/2015 10:20:00 AM
Project:		**Date Received:**	3/26/2015
Lab ID:	1503V66-02A	**Matrix:**	Liquid
Client Sample ID:	CHARLESTON SANITARY	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0057	0.0114	NA		mg/L	3/28/2015 1:18 AM	PA/VA
Fluoranthene	ND	0.0023	0.0114	NA		mg/L	3/28/2015 1:18 AM	PA/VA
Nitrobenzene	ND	0.0023	0.0114	NA		mg/L	3/28/2015 1:18 AM	PA/VA
Surr: 2-Fluorophenol	44.4	NA	32.9-110	NA		%REC	3/28/2015 1:18 AM	
Surr: Phenol-d5	35.6	NA	25.8-110	NA		%REC	3/28/2015 1:18 AM	
Surr: 2,4,6-Tribromophenol	84.2	NA	63.8-110	NA		%REC	3/28/2015 1:18 AM	
Surr: Nitrobenzene-d5	94.3	NA	61.8-110	NA		%REC	3/28/2015 1:18 AM	
Surr: 2-Fluorobiphenyl	86.3	NA	58.6-110	NA		%REC	3/28/2015 1:18 AM	
Surr: 4-Terphenyl-d14	76.4	NA	55.1-110	NA		%REC	3/28/2015 1:18 AM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: TC**	
Benzene	ND	0.500	1.00	NA		µg/L	4/7/2015 1:39 AM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	4/7/2015 1:39 AM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	4/7/2015 1:39 AM	PA/VA
1,2-Dichlorobenzene	1.34	0.500	1.00	NA		µg/L	4/7/2015 1:39 AM	PA/VA
1,3-Dichlorobenzene	0.840	0.500	1.00	NA	J	µg/L	4/7/2015 1:39 AM	PA/VA
1,4-Dichlorobenzene	0.860	0.500	1.00	NA	J	µg/L	4/7/2015 1:39 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	79.9	NA	68.7-129	NA		%REC	4/7/2015 1:39 AM	
Surr: 4-Bromofluorobenzene	111	NA	71.8-127	NA		%REC	4/7/2015 1:39 AM	
Surr: Dibromofluoromethane	81.4	NA	74.3-124	NA		%REC	4/7/2015 1:39 AM	
Surr: Toluene-d8	99.2	NA	71.4-129	NA		%REC	4/7/2015 1:39 AM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: CB**	
Biochemical Oxygen Demand	3	2	5	NA	J	mg/L	3/27/2015 10:20 AM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	31	4	10	NA		mg/L	3/27/2015 7:46 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0003	0.0010	NA		mg/L	3/31/2015 1:46 PM	
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	81.0	1.00	5.00	NA		mg/L	3/26/2015 9:11 PM	
Fluoride	0.55	0.05	0.20	NA		mg/L	3/26/2015 9:11 PM	
Sulfate	41.8	1.00	5.00	NA		mg/L	3/26/2015 9:11 PM	

REI Consultants, Inc. - Analytical Report

WO#: 1503V66

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/26/2015 10:20:00 AM
Project:		**Date Received:**	3/26/2015
Lab ID:	1503V66-02A	**Matrix:**	Liquid
Client Sample ID:	CHARLESTON SANITARY	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	0.13	0.02	0.10	NA		mg/L	3/26/2015 7:20 PM	
Nitrogen, Nitrite	0.13	0.05	0.50	NA	J	mg/L	3/26/2015 7:20 PM	
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	13.9	0.40	2.00	NA		mg/L	3/31/2015 11:09 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	ND	2.0	5.0	NA		mg/L	3/31/2015 4:02 PM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	3/30/2015 4:47 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	12.7	0.64	1.60	NA		mg/L	4/3/2015 1:41 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: SF**	
Specific Conductivity	654	NA	NA	NA		µmhos/cm	3/27/2015 12:15 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	359	5	10	NA		mg/L	3/30/2015 3:15 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	4.0	1.0	5.0	NA	J	mg/L	3/30/2015 3:15 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	50.9	1.0	10	NA		mg/L	3/27/2015 9:56 AM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	110	1.0	10	NA		mg/L	3/27/2015 9:56 AM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	6.43	NA	NA	NA		SU	3/27/2015 9:56 AM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1503V66

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/26/2015 10:20:00 AM
Project:		**Date Received:**	3/26/2015
Lab ID:	1503V66-02B	**Matrix:**	Liquid
Client Sample ID:	CHARLESTON SANITARY	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	0.080	0.010	0.100	NA	J	mg/L	3/30/2015 9:35 PM	PA/VA
Manganese	0.005	0.002	0.100	NA	J	mg/L	3/30/2015 9:35 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503V66

Date Reported: 4/11/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/26/2015 12:00:00 AM
Project:		**Date Received:**	3/26/2015
Lab ID:	1503V66-03A	**Matrix:**	Trip Blank
Client Sample ID:	TRIP BLANK	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: TC**	
Benzene	ND	0.500	1.00	NA		µg/L	4/7/2015 12:31 AM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	4/7/2015 12:31 AM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	4/7/2015 12:31 AM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	4/7/2015 12:31 AM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	4/7/2015 12:31 AM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	4/7/2015 12:31 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	82.2	NA	68.7-129	NA		%REC	4/7/2015 12:31 AM	
Surr: 4-Bromofluorobenzene	113	NA	71.8-127	NA		%REC	4/7/2015 12:31 AM	
Surr: Dibromofluoromethane	82.6	NA	74.3-124	NA		%REC	4/7/2015 12:31 AM	
Surr: Toluene-d8	97.3	NA	71.4-129	NA		%REC	4/7/2015 12:31 AM	

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Wednesday, May 06, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE:

Work Order #: 1503V71

Dear GEORGE CARICO:

REI Consultants, Inc. received 2 sample(s) on 3/26/2015 for the analyses presented in the following report.

Sincerely,

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1503V71

Date Reported: 5/6/2015

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project:

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1503V71

Date Reported: 5/6/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/26/2015 9:30:00 AM
Project:		**Date Received:**	3/26/2015
Lab ID:	1503V71-01A	**Matrix:**	Liquid
Client Sample ID:	CHARLESTON LANDFILL	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1503V71

Date Reported: 5/6/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/26/2015 10:20:00 AM
Project:		**Date Received:**	3/26/2015
Lab ID:	1503V71-02A	**Matrix:**	Liquid
Client Sample ID:	CHARLESTON SANITARY	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

April 14, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1503V71
Pace Project No.: 30144312

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on March 30, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1503V71
Pace Project No.: 30144312

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1503V71
Pace Project No.: 30144312

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30144312001	**1503V71-01A**	Water	03/26/15 09:30	03/30/15 14:40
30144312002	**1503V71-02A**	Water	03/26/15 10:20	03/30/15 14:40

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1503V71
Pace Project No.: 30144312

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30144312001	**1503V71-01A**	SM 7110C	FCC	1
		EPA 900.0	LAL	1
		EPA 903.1	JC2	1
		EPA 904.0	JAL	1
		ASTM D5811-95	MBT	1
30144312002	**1503V71-02A**	EPA 900.0	LAL	2
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	MBT	1

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503V71
Pace Project No.: 30144312

Method: **SM 7110C**
Description: 7110C Gross Alpha
Client: REI Consultants, Inc.
Date: April 14, 2015

General Information:
1 sample was analyzed for SM 7110C. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503V71
Pace Project No.: 30144312

Method: **EPA 900.0**
Description: 900.0 Gross Alpha/Beta
Client: REI Consultants, Inc.
Date: April 14, 2015

General Information:
2 samples were analyzed for EPA 900.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503V71
Pace Project No.: 30144312

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: REI Consultants, Inc.
Date: April 14, 2015

General Information:
2 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503V71
Pace Project No.: 30144312

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: REI Consultants, Inc.
Date: April 14, 2015

General Information:
2 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503V71
Pace Project No.: 30144312

Method: **ASTM D5811-95**
Description: ASTM D5811 Sr 89/90 Eichrom
Client: REI Consultants, Inc.
Date: April 14, 2015

General Information:
2 samples were analyzed for ASTM D5811-95. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: RADC/23935

N2: The lab does not hold TNI accreditation for this parameter.

- 1503V71-01A (Lab ID: 30144312001)
  - Strontium-90
- 1503V71-02A (Lab ID: 30144312002)
  - Strontium-90
- BLANK (Lab ID: 874037)
  - Strontium-90

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1503V71
Pace Project No.: 30144312

Sample: 1503V71-01A **Lab ID: 30144312001** Collected: 03/26/15 09:30 Received: 03/30/15 14:40 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	SM 7110C	**7.14 ± 3.00 (4.11)** **C:NA T:NA**	pCi/L	04/10/15 21:27	12587-46-1	
Gross Beta	EPA 900.0	**77.5 ± 14.4 (2.86)** **C:NA T:NA**	pCi/L	04/07/15 18:06	12587-47-2	
Radium-226	EPA 903.1	**1.24 ± 0.999 (0.558)** **C:NA T:86%**	pCi/L	04/06/15 12:16	13982-63-3	
Radium-228	EPA 904.0	**1.94 ± 0.933 (1.49)** **C:71% T:40%**	pCi/L	04/13/15 16:01	15262-20-1	
Strontium-90	ASTM D5811-95	**0.760 ± 1.20 (2.13)** **C:110% T:NA**	pCi/L	04/06/15 16:57	10098-97-2	N2

Sample: 1503V71-02A **Lab ID: 30144312002** Collected: 03/26/15 10:20 Received: 03/30/15 14:40 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**0.928 ± 1.39 (2.97)** **C:NA T:NA**	pCi/L	04/08/15 07:09	12587-46-1	
Gross Beta	EPA 900.0	**4.64 ± 1.51 (1.87)** **C:NA T:NA**	pCi/L	04/08/15 07:09	12587-47-2	
Radium-226	EPA 903.1	**1.83 ± 1.28 (0.618)** **C:NA T:79%**	pCi/L	04/06/15 12:16	13982-63-3	
Radium-228	EPA 904.0	**0.704 ± 0.440 (0.806)** **C:75% T:76%**	pCi/L	04/09/15 14:43	15262-20-1	
Strontium-90	ASTM D5811-95	**-0.0380 ± 0.450 (0.826)** **C:104% T:NA**	pCi/L	04/06/15 19:17	10098-97-2	N2

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503V71
Pace Project No.: 30144312

QC Batch: RADC/23922 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30144312001, 30144312002

METHOD BLANK: 874024 | Matrix: Water
Associated Lab Samples: 30144312001, 30144312002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.322 ± 0.558 (0.972) C:NA T:83%	pCi/L	04/06/15 11:19	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503V71
Pace Project No.: 30144312

QC Batch: RADC/23935
Analysis Method: ASTM D5811-95
QC Batch Method: ASTM D5811-95
Analysis Description: ASTM D5811 Sr 89/90 Eichrom
Associated Lab Samples: 30144312001, 30144312002

METHOD BLANK: 874037
Matrix: Water
Associated Lab Samples: 30144312001, 30144312002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Strontium-90	-0.0230 ± 0.439 (1.10) C:109% T:NA	pCi/L	04/07/15 13:03	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503V71
Pace Project No.: 30144312

QC Batch: RADC/23971 | Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 | Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30144312001, 30144312002

METHOD BLANK: 875768 | Matrix: Water
Associated Lab Samples: 30144312001, 30144312002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.957 ± 0.828 (1.48) C:NA T:NA	pCi/L	04/08/15 07:09	
Gross Beta	0.267 ± 0.758 (1.73) C:NA T:NA	pCi/L	04/08/15 07:09	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503V71
Pace Project No.: 30144312

QC Batch: RADC/23926 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30144312001, 30144312002

METHOD BLANK: 874028 | Matrix: Water
Associated Lab Samples: 30144312001, 30144312002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0335 ± 0.262 (0.620) C:81% T:95%	pCi/L	04/09/15 15:02	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503V71
Pace Project No.: 30144312

QC Batch: RADC/24011 | Analysis Method: SM 7110C
QC Batch Method: SM 7110C | Analysis Description: 7110C Gross Alpha
Associated Lab Samples: 30144312001

METHOD BLANK: 877133 | Matrix: Water
Associated Lab Samples: 30144312001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.154 ± 0.387 (0.904) C:NA T:NA	pCi/L	04/11/15 14:45	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1503V71
Pace Project No.: 30144312

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

N2 The lab does not hold TNI accreditation for this parameter.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3500	PAGE: 1	OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

30144312

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA
COMPANY: PACE ANALYTICAL SERVIC
ADDRESS: 1638 ROSEYTOWN ROAD
CITY, STATE, ZIP: GREENSBURG, PA 15601
PHONE: (724) 850-5600
FAX:
ACCOUNT #: 050719EVF1
EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:
State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. All results to Kathy Berry at kberry@reiclabs.com.

ANALYTICAL PARAMETERS

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	GROSS_ALPHA_SUB (EPA 900.0)	GROSS_BETA_SUB (EPA 900.0)	RADIUM_226_SUB (EPA 903.1)	RADIUM_228_SUB (EPA 904.0)	STRONTIUM_90_SUB (EPA 905.0)										
						*	2	2	2	2	2										
1	1503V71-01A	CHARLESTON LANDFILL	.	Liquid	3/26/2015 9:30:00 AM	1	√	√	√	√	√										
2	1503V71-02A	CHARLESTON SANITARY	.	Liquid	3/26/2015 10:20:00 AM	1	√	√	√	√	√										

001
002

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS:

MSC

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Brad S	3/30/15	16:00	~~UPS~~		
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Chett Nutt Joy Pace			Chett Nutt Joy Pace	3/30/15	12:45P
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Chett Nutt Joy Pace	3/30/15	2:40P	Scott Conklin	3/30/15	1440

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples _____ °C Attempt to Cool ? _____
Comments: _____

Sample Condition Upon Receipt

Pace Analytical

Client Name: REFC

Project # 30144312

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no **Biological Tissue Is Frozen:** Yes No

Packing Material: Bubble Wrap X Bubble Bags ____ None ____ Other _____

Thermometer Used NA **Type of Ice:** (Wet) Blue None ☐ Samples on Ice, cooling process has begun

Cooler Temp.: Observed Temp.: _____ °C **Correction Factor:** _____ °C **Final Temp:** _____ °C

Date and Initials of person examining contents: SM 3-30-15

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☒No	☐N/A	4.
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes	☒No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☒No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11.
Sample Labels match COC:	☒Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT				
All containers needing preservation have been checked.	☒Yes	☐No	☐N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☒Yes	☐No	☐N/A	PH<2
exceptions: VOA, coliform, TOC, O&G, Phenols	☐Yes	☒No		Initial when completed SM / Lot # of added preservative
Samples checked for dechlorination:	☐Yes	☐No	☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☒N/A	15.
Trip Blank Present:	☐Yes	☒No	☐N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carrie Ferris **Date:** 3/31/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

J:\QAQC\Master\Document Management\Sample Mgt\SCURF\FALLC003-09 SCUR Front 3March2015

Pace Analytical

page 2

Project Number: 301443 12

Client Name: RETC

Item No.												
Matrix Code	SY	T										
Glass Jar (120 / 250 / 500 / 1L)												
Soil kit (2 SB, 1M, soil jar)												
Chemistry (250 / 500 / 1L)												
Organics (1L)												
Nutrient (250 / 500)												
Phenolics (250 ml)												
TOC (40 ml / 250 ml)												
TOX (250 ml)												
Total Metals												
Dissolved Metals preserved Y N												
O & G (1L)												
TPH (1L)												
VOA (40 ml 30 ml)												
Cyanide (250 ml)												
Sulfide (500 ml)												
Bacteria (120 ml)												
Wipes / swipe/ smear/ filter												
Radchem Nalgene (125 / 250 / 500 / 1L)	W	T										
Radchem Nalgene (1/2 gal. / 1 gal.L)												
Cubitainer (500 ml / 4L)												
Ziploc												
Other												
Other												

SCURF Back (C016-4 15May2012).xls

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

March 30, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1503V71
Pace Project No.: 30144059

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on March 27, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1503V71
Pace Project No.: 30144059

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
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Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1503V71
Pace Project No.: 30144059

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30144059001	**1503V71-01A**	Water	03/26/15 09:30	03/27/15 10:10
30144059002	**1503V71-02A**	Water	03/26/15 10:20	03/27/15 10:10

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SAMPLE ANALYTE COUNT

Project: 1503V71
Pace Project No.: 30144059

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30144059001	**1503V71-01A**	SM 7500Rn-B	FCC	1
30144059002	**1503V71-02A**	SM 7500Rn-B	FCC	1

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1503V71
Pace Project No.: 30144059

Method: **SM 7500Rn-B**
Description: 7500RnB Radon
Client: REI Consultants, Inc.
Date: March 30, 2015

General Information:
2 samples were analyzed for SM 7500Rn-B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1503V71
Pace Project No.: 30144059

Sample: 1503V71-01A **Lab ID: 30144059001** Collected: 03/26/15 09:30 Received: 03/27/15 10:10 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**28.4 ± 25.2 (40.8)** **C:NA T:NA**	pCi/L	03/28/15 00:31	10043-92-2	

Sample: 1503V71-02A **Lab ID: 30144059002** Collected: 03/26/15 10:20 Received: 03/27/15 10:10 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**11.9 ± 24.0 (40.8)** **C:NA T:NA**	pCi/L	03/28/15 01:38	10043-92-2	

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503V71
Pace Project No.: 30144059

QC Batch: RADC/23872 | Analysis Method: SM 7500Rn-B
QC Batch Method: SM 7500Rn-B | Analysis Description: 7500Rn B Radon
Associated Lab Samples: 30144059001, 30144059002

METHOD BLANK: 870946 | Matrix: Water
Associated Lab Samples: 30144059001, 30144059002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radon	2.9 ± 17.5 (30.4) C:NA T:NA	pCi/L	03/27/15 22:53	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1503V71
Pace Project No.: 30144059

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3501	PAGE: 1	OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA COMPANY: PACE ANALYTICAL SERVIC

ADDRESS: 1638 ROSEYTOWN ROAD

CITY, STATE, ZIP: GREENSBURG, PA 15601

PHONE: (724) 850-5600 FAX:

ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:

State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. All results to Kathy Berry at kberry@reiclabs.com.

ANALYTICAL PARAMETERS

30144059

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	RADON (913.0)	
						*	0	
1	1503V71-01A	CHARLESTON LANDFILL	.	Liquid	3/26/2015 9:30:00 AM	1	√	001
2	1503V71-02A	CHARLESTON SANITARY	.	Liquid	3/26/2015 10:20:00 AM	1	√	002

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[illegible]	3/26/15	16:00	UPS	3/26/15	16:00
Relinquished By:	Date:	Time:	Received By: [illegible]	Date: 3-27-15	Time: 1010
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ 30 RUSH Next BD ☑ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool ? _____

Comments: _____

SRA

Sample Condition Upon Receipt

Pace Analytical

Client Name: REIC

Project # 30144059

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1Z26A713137527429

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no **Biological Tissue is Frozen:** Yes No

Packing Material: Bubble Wrap X Bubble Bags ____ None ____ Other _____

Thermometer Used NA **Type of Ice:** (Wet) Blue None ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.:_____°C **Correction Factor:** _____°C **Final Temp:**_____°C

Date and initials of person examining contents: SRA 3/27/15

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☒Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☒Yes	☐No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	☒Yes	☐No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11.
Sample Labels match COC:	☒Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: wt				
All containers needing preservation have been checked.	☐Yes	☐No	☒N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☒N/A	
exceptions: VOA, coliform, TOC, O&G, Phenols	☐Yes	☒No		Initial when completed SRA / Lot # of added preservative
Samples checked for dechlorination:	☐Yes	☐No	☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☒No	☐N/A	15.
Trip Blank Present:	☐Yes	☒No	☐N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased):				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Anna Berrio **Date:** 3/27/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30144059

Client Name: RCIC

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other Radon	Other
001	WT																						3	
002	T																						1	

SCURF Back (C016-4 15May2012).xls

CHAIN OF CUSTODY RECORD

v10-0114

REIC use ONLY — CLIENT ID MAR071 DATE _____ SHEET _____

REIC

Research Environmental & Industrial Consultants, Inc.

MAIN LABORATORY & CORPORATE HEADQUARTERS:
P.O. Box 286 • 225 Industrial Park Rd, Beaver, WV 25813
800-999-0105 • 304-255-2500 • www.reiclabs.com

MID-OHIO VALLEY Service Center	SHENANDOAH Service Center	ROANOKE Service Center	MORGANTOWN Service Center
101 17th Street	1557 Commerce Rd., Ste 201	3029-C Peters Creek Rd	16 Commerce Drive
Ashland, KY 41101	Verona, VA 24482	Roanoke, VA 24019	Westover, WV 26501
606-393-5027	540-248-0183	540-777-1276	304-241-5861

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL, GEOCHEMICAL & APPLIED SCIENCE — PO # _____

Contact Person: Geroge Carico / Jamie Wolfe — Phone: 304.696.5456

Address: One Marshall Drive — City: Huntington — State: WV — Zip: 25755

Billing Address (if different) _____ City _____ State _____ Zip _____

Site ID & State _____ Project ID: Raleigh County SWA — Sampler _____

SAMPLE LOG & ANALYSIS REQUEST

TURNAROUND TIME	RUSH TURNAROUND*			
⊙ NORMAL	○ 5 DAY	○ 3 DAY	○ 2 DAY	○ 1 DAY

*Rush work needs prior laboratory approval and will incur additional charges

ANALYSIS & METHOD REQUESTED: See Attached List

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	0	1	2	3	5	10			
RALEIGH CO LF LEACHATE	21	2/4/15 0950	Water	Grab	X								
Trip Blank	2		Water	Grab	X								
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									

ENTER PRESERVATIVE CODE(S):

0 None	6 Sodium Hydroxide
1 Hydrochloric Acid	7 Ascorbic Acid
2 Nitric Acid	8 Sodium Bisulfate/Methanol
3 Sulfuric Acid	9 Ammonium Chloride
4 Sodium Thiosulfate	10 AS/AH *
5 Sodium Hydroxide/ Sodium Arsenite	11 _____ *

* (Use blanks for preservatives not listed.)

COMMENTS:
Field Sampling Time ~~0950~~ 1 HR
Per Doug Arthur
pH = 7.62
TEMP = 8.1 °C
COND = 4000 uS/cm

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: 4 °C — ICED? Y ✓ N ___

Containers provided by: [✓] REIC [ ] Client

	Relinquished by (signature)	Date/Time	Relinquished by (signature)	Date/Time	Relinquished by (signature)	Date/Time
1	[signature]	2/4/15 1130				
	Received by (signature)	Date/Time	Received by (signature)	Date/Time	Received by (signature)	Date/Time
	[signature]	02/4/15 1130				

CHAIN OF CUSTODY RECORD

v10-0114

REIC use ONLY — CLIENT ID MAR071 DATE ____ SHEET ____

REIC
Research Environmental & Industrial Consultants, Inc.
MAIN LABORATORY & CORPORATE HEADQUARTERS:
P.O. Box 286 • 225 Industrial Park Rd, Beaver, WV 25813
800-999-0105 • 304-255-2500 • www.reiclabs.com

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SHENANDOAH Service Center
1557 Commerce Rd., Ste 201
Verona, VA 24482
540-248-0183

ROANOKE Service Center
3029-C Peters Creek Rd
Roanoke, VA 24019
540-777-1276

MORGANTOWN Service Center
16 Commerce Drive
Westover, WV 26501
304-241-5861

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL GEOCHEMICAL & APPLIED SCIENCE PO # ____

Contact Person Geroge Carico / Jamie Wolfe Phone 304.696.5456

Address One Marshall Drive City Huntington State WV Zip 25755

Billing Address (if different) ____

City ____ State ____ Zip ____

Site ID & State ____ Project ID North Beckley Effluent Sampler ____

SAMPLE LOG & ANALYSIS REQUEST

TURNAROUND TIME: (•) NORMAL — RUSH TURNAROUND*: ( ) 5 DAY ( ) 3 DAY ( ) 2 DAY ( ) 1 DAY

*Rush work needs prior laboratory approval and will incur additional charges

ANALYSIS & METHOD REQUESTED: See Attached List

SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	0	1	2	3	5	10			
N. BECKLEY WWTP EFF.	21	2/4/15 1040	Water	Grab	X								
Trip Blank	2		Water	Grab	X								
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									
			Choose	Choose									

ENTER PRESERVATIVE CODE(S):
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Bisulfate/Methanol
9 Ammonium Chloride
10 AS/AH *
11 ____ *
* (Use blanks for preservatives not listed.)

COMMENTS:
Field Sampling Time 1 HR
Per Doug Arthur
pH = 6.48
TEMP = 8.4 °C
COND = 821 uS/cm

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: 4 °C ICED? Y ✓ N ____

Containers provided by: [✓] REIC [ ] Client

	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
1	[signature]	2/4/15 1130		
	[signature]	2/4/15 11:30		
2	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time
3	Relinquished by (signature)	Date/Time	Received by (signature)	Date/Time

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Wednesday, February 25, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: RALEIGH COUNTY SWA

Work Order #: 1502331

Dear GEORGE CARICO:

REI Consultants, Inc. received 2 sample(s) on 2/4/2015 for the analyses presented in the following report.

Sincerely,

Kathy Berry

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1502331

Date Reported: 2/25/2015

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project: RALEIGH COUNTY SWA

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1502331

Date Reported: 2/25/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	2/4/2015 9:50:00 AM
Project:	RALEIGH COUNTY SWA	**Date Received:**	2/4/2015
Lab ID:	1502331-01A	**Matrix:**	Liquid
Client Sample ID:	RALEIGH CO LF LEACHATE	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.227	0.005	0.100	NA		mg/L	2/6/2015 5:39 PM	PA/VA
Antimony	ND	0.020	0.200	NA		mg/L	2/6/2015 5:39 PM	PA/VA
Arsenic	0.035	0.020	0.200	NA	J	mg/L	2/6/2015 5:39 PM	PA/VA
Barium	0.630	0.002	0.100	NA		mg/L	2/6/2015 5:39 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	2/6/2015 5:39 PM	PA/VA
Boron	3.44	0.020	0.100	NA		mg/L	2/6/2015 5:39 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	2/6/2015 5:39 PM	PA/VA
Chromium	0.047	0.005	0.100	NA	J	mg/L	2/6/2015 5:39 PM	PA/VA
Copper	0.007	0.005	0.100	NA	J	mg/L	2/6/2015 5:39 PM	PA/VA
Iron	11.5	0.010	0.100	NA		mg/L	2/6/2015 5:39 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	2/6/2015 5:39 PM	PA/VA
Lithium	0.032	0.020	0.100	NA	J	mg/L	2/9/2015 1:11 PM	
Manganese	1.72	0.002	0.100	NA		mg/L	2/6/2015 5:39 PM	PA/VA
Nickel	0.074	0.005	0.100	NA	J	mg/L	2/6/2015 5:39 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	2/6/2015 5:39 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	2/6/2015 5:39 PM	PA/VA
Strontium	0.997	0.001	0.010	NA		mg/L	2/9/2015 1:11 PM	PA
Vanadium	ND	0.005	0.100	NA		mg/L	2/6/2015 5:39 PM	PA/VA
Zinc	0.066	0.003	0.050	NA		mg/L	2/6/2015 5:39 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	2/9/2015 10:26 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0113	NA		mg/L	2/10/2015 11:47 PM	
1,4-Napthoquinone	ND	NA	0.0113	NA		mg/L	2/10/2015 11:47 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0564	NA		mg/L	2/10/2015 11:47 PM	
Pentachloronitrobenzene	ND	NA	0.0113	NA		mg/L	2/10/2015 11:47 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0056	0.0113	NA		mg/L	2/6/2015 10:33 PM	PA/VA
Butyl benzyl phthalate	ND	0.0056	0.0113	NA		mg/L	2/6/2015 10:33 PM	PA/VA
Di-n-butyl phthalate	ND	0.0056	0.0113	NA		mg/L	2/6/2015 10:33 PM	PA/VA
Diethyl phthalate	0.0027	0.0023	0.0113	NA	J	mg/L	2/6/2015 10:33 PM	PA/VA
Dimethyl phthalate	ND	0.0023	0.0113	NA		mg/L	2/6/2015 10:33 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0023	0.0113	NA		mg/L	2/6/2015 10:33 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0023	0.0113	NA		mg/L	2/6/2015 10:33 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1502331

Date Reported: 2/25/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	2/4/2015 9:50:00 AM
Project:	RALEIGH COUNTY SWA	**Date Received:**	2/4/2015
Lab ID:	1502331-01A	**Matrix:**	Liquid
Client Sample ID:	RALEIGH CO LF LEACHATE	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0056	0.0113	NA		mg/L	2/6/2015 10:33 PM	PA/VA
Fluoranthene	ND	0.0023	0.0113	NA		mg/L	2/6/2015 10:33 PM	PA/VA
Nitrobenzene	ND	0.0023	0.0113	NA		mg/L	2/6/2015 10:33 PM	PA/VA
Surr: 2-Fluorophenol	53.4	NA	32.9-110	NA		%REC	2/6/2015 10:33 PM	
Surr: Phenol-d5	45.0	NA	25.8-110	NA		%REC	2/6/2015 10:33 PM	
Surr: 2,4,6-Tribromophenol	82.6	NA	63.8-110	NA		%REC	2/6/2015 10:33 PM	
Surr: Nitrobenzene-d5	102	NA	61.8-110	NA		%REC	2/6/2015 10:33 PM	
Surr: 2-Fluorobiphenyl	83.1	NA	58.6-110	NA		%REC	2/6/2015 10:33 PM	
Surr: 4-Terphenyl-d14	71.2	NA	55.1-110	NA		%REC	2/6/2015 10:33 PM	

VOLATILE ORGANIC COMPOUNDS-8260 **Method: SW8260B (1996)** **Analyst: JM**

Benzene	ND	50.0	100	NA		µg/L	2/11/2015 3:07 PM	PA/VA
Chlorobenzene	ND	50.0	100	NA		µg/L	2/11/2015 3:07 PM	PA/VA
Dibromochloromethane	ND	50.0	100	NA		µg/L	2/11/2015 3:07 PM	PA/VA
1,2-Dichlorobenzene	ND	50.0	100	NA		µg/L	2/11/2015 3:07 PM	PA/VA
1,3-Dichlorobenzene	ND	50.0	100	NA		µg/L	2/11/2015 3:07 PM	PA/VA
1,4-Dichlorobenzene	ND	50.0	100	NA		µg/L	2/11/2015 3:07 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	93.3	NA	68.7-129	NA		%REC	2/11/2015 3:07 PM	
Surr: 4-Bromofluorobenzene	110	NA	71.8-127	NA		%REC	2/11/2015 3:07 PM	
Surr: Dibromofluoromethane	97.7	NA	74.3-124	NA		%REC	2/11/2015 3:07 PM	
Surr: Toluene-d8	100	NA	71.4-129	NA		%REC	2/11/2015 3:07 PM	

Notes:

Elevated PQLs are due to matrix interference. Sample foamed during analysis.

BOD, 5 Day, 20°C **Method: SM5210 B-2001** **Analyst: VR**

Biochemical Oxygen Demand	136	2	5	NA		mg/L	2/4/2015 4:37 PM	PA/VA

Chemical Oxygen Demand **Method: EPA 410.4, Rev. 2 (1993)** **Analyst: SF**

Chemical Oxygen Demand	102	4	10	NA		mg/L	2/4/2015 1:59 PM	PA/VA

HEXAVALENT CHROMIUM BY IC **Method: EPA 218.6, Rev. 3.3 (1994)** **Analyst: CF**

Chromium (VI)	ND	0.0001	0.0010	NA		mg/L	2/5/2015 9:44 AM	PA/VA

ANIONS by ION CHROMATOGRAPHY **Method: EPA 300.0, Rev.2.1 (1993)** **Analyst: CF**

Chloride	401	1.00	10.0	NA		mg/L	2/4/2015 1:32 PM	PA/VA
Fluoride	2.84	0.05	0.20	NA		mg/L	2/4/2015 1:32 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1502331

Date Reported: 2/25/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	2/4/2015 9:50:00 AM
Project:	RALEIGH COUNTY SWA	**Date Received:**	2/4/2015
Lab ID:	1502331-01A	**Matrix:**	Liquid
Client Sample ID:	RALEIGH CO LF LEACHATE	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Sulfate	87.9	10.0	50.0	NA		mg/L	2/4/2015 1:32 PM	PA/VA
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	ND	0.02	0.10	NA		mg/L	2/4/2015 1:32 PM	PA/VA
Nitrogen, Nitrite	0.22	0.05	0.50	NA	J	mg/L	2/4/2015 1:32 PM	PA/VA
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	196	4.00	20.0	NA		mg/L	2/10/2015 10:24 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	ND	2.0	5.0	NA		mg/L	2/6/2015 1:30 PM	PA/VA

Notes:

Sample acidity or alkalinity exceeded the added preservative, so that the required preservation pH was not achieved.

CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	0.019	0.005	0.020	NA	J	mg/L	2/6/2015 1:09 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	187	6.40	16.0	NA		mg/L	2/5/2015 6:27 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	4,230	NA	NA	NA		µmhos/cm	2/9/2015 11:19 AM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	2,080	20	40	NA		mg/L	2/5/2015 5:44 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	19.5	1.0	5.0	NA		mg/L	2/5/2015 5:44 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	88.3	1.0	10	NA		mg/L	2/5/2015 10:19 AM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	1,350	4.0	40.0	NA		mg/L	2/5/2015 10:19 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1502331

Date Reported: 2/25/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	2/4/2015 9:50:00 AM
Project:	RALEIGH COUNTY SWA	**Date Received:**	2/4/2015
Lab ID:	1502331-01A	**Matrix:**	Liquid
Client Sample ID:	RALEIGH CO LF LEACHATE	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	7.71	NA	NA	NA		SU	2/5/2015 10:19 AM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1502331

Date Reported: 2/25/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	2/4/2015 9:50:00 AM
Project:	RALEIGH COUNTY SWA	**Date Received:**	2/4/2015
Lab ID:	1502331-01B	**Matrix:**	Liquid
Client Sample ID:	RALEIGH CO LF LEACHATE	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	3.86	0.010	0.100	NA		mg/L	2/6/2015 5:42 PM	PA/VA
Manganese	1.55	0.002	0.100	NA		mg/L	2/6/2015 5:42 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1502331

Date Reported: 2/25/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	2/4/2015 12:00:00 AM
Project:	RALEIGH COUNTY SWA	**Date Received:**	2/4/2015
Lab ID:	1502331-02A	**Matrix:**	Trip Blank
Client Sample ID:	TRIP BLANK	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	2/11/2015 3:41 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	2/11/2015 3:41 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	2/11/2015 3:41 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	2/11/2015 3:41 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	2/11/2015 3:41 PM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	2/11/2015 3:41 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	99.0	NA	68.7-129	NA		%REC	2/11/2015 3:41 PM	
Surr: 4-Bromofluorobenzene	110	NA	71.8-127	NA		%REC	2/11/2015 3:41 PM	
Surr: Dibromofluoromethane	95.7	NA	74.3-124	NA		%REC	2/11/2015 3:41 PM	
Surr: Toluene-d8	101	NA	71.4-129	NA		%REC	2/11/2015 3:41 PM	

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
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101 17th Street
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1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Thursday, February 12, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: NORTH BECKLEY EFFLUENT

Work Order #: 1502329

Dear GEORGE CARICO:

REI Consultants, Inc. received 2 sample(s) on 2/4/2015 for the analyses presented in the following report.

Sincerely,

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1502329

Date Reported: 2/12/2015

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,

Project: NORTH BECKLEY EFFLUENT

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1502329

Date Reported: 2/12/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	2/4/2015 10:40:00 AM
Project:	NORTH BECKLEY EFFLUENT	**Date Received:**	2/4/2015
Lab ID:	1502329-01A	**Matrix:**	Liquid
Client Sample ID:	N. BECKLEY WWTP EFF.	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.013	0.005	0.100	NA	J	mg/L	2/6/2015 5:33 PM	PA/VA
Antimony	ND	0.020	0.200	NA		mg/L	2/6/2015 5:33 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	2/6/2015 5:33 PM	PA/VA
Barium	0.038	0.002	0.100	NA	J	mg/L	2/6/2015 5:33 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	2/6/2015 5:33 PM	PA/VA
Boron	0.107	0.020	0.100	NA		mg/L	2/6/2015 5:33 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	2/6/2015 5:33 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	2/6/2015 5:33 PM	PA/VA
Copper	0.011	0.005	0.100	NA	J	mg/L	2/6/2015 5:33 PM	PA/VA
Iron	0.107	0.010	0.100	NA		mg/L	2/6/2015 5:33 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	2/6/2015 5:33 PM	PA/VA
Lithium	ND	0.020	0.100	NA		mg/L	2/9/2015 1:08 PM	
Manganese	0.004	0.002	0.100	NA	J	mg/L	2/6/2015 5:33 PM	PA/VA
Nickel	ND	0.005	0.100	NA		mg/L	2/6/2015 5:33 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	2/6/2015 5:33 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	2/6/2015 5:33 PM	PA/VA
Strontium	0.351	0.001	0.010	NA		mg/L	2/9/2015 1:08 PM	PA
Vanadium	ND	0.005	0.100	NA		mg/L	2/6/2015 5:33 PM	PA/VA
Zinc	0.071	0.003	0.050	NA		mg/L	2/6/2015 5:33 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	2/6/2015 10:11 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0100	NA		mg/L	2/10/2015 11:21 PM	
1,4-Napthoquinone	ND	NA	0.0100	NA		mg/L	2/10/2015 11:21 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0501	NA		mg/L	2/10/2015 11:21 PM	
Pentachloronitrobenzene	ND	NA	0.0100	NA		mg/L	2/10/2015 11:21 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0050	0.0100	NA		mg/L	2/6/2015 10:07 PM	PA/VA
Butyl benzyl phthalate	ND	0.0050	0.0100	NA		mg/L	2/6/2015 10:07 PM	PA/VA
Di-n-butyl phthalate	ND	0.0050	0.0100	NA		mg/L	2/6/2015 10:07 PM	PA/VA
Diethyl phthalate	ND	0.0020	0.0100	NA		mg/L	2/6/2015 10:07 PM	PA/VA
Dimethyl phthalate	ND	0.0020	0.0100	NA		mg/L	2/6/2015 10:07 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0020	0.0100	NA		mg/L	2/6/2015 10:07 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0020	0.0100	NA		mg/L	2/6/2015 10:07 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1502329

Date Reported: 2/12/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	2/4/2015 10:40:00 AM
Project:	NORTH BECKLEY EFFLUENT	**Date Received:**	2/4/2015
Lab ID:	1502329-01A	**Matrix:**	Liquid
Client Sample ID:	N. BECKLEY WWTP EFF.	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0050	0.0100	NA		mg/L	2/6/2015 10:07 PM	PA/VA
Fluoranthene	ND	0.0020	0.0100	NA		mg/L	2/6/2015 10:07 PM	PA/VA
Nitrobenzene	ND	0.0020	0.0100	NA		mg/L	2/6/2015 10:07 PM	PA/VA
Surr: 2-Fluorophenol	40.9	NA	32.9-110	NA		%REC	2/6/2015 10:07 PM	
Surr: Phenol-d5	32.5	NA	25.8-110	NA		%REC	2/6/2015 10:07 PM	
Surr: 2,4,6-Tribromophenol	70.7	NA	63.8-110	NA		%REC	2/6/2015 10:07 PM	
Surr: Nitrobenzene-d5	97.1	NA	61.8-110	NA		%REC	2/6/2015 10:07 PM	
Surr: 2-Fluorobiphenyl	75.7	NA	58.6-110	NA		%REC	2/6/2015 10:07 PM	
Surr: 4-Terphenyl-d14	68.0	NA	55.1-110	NA		%REC	2/6/2015 10:07 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	2/10/2015 7:05 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	2/10/2015 7:05 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	2/10/2015 7:05 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	2/10/2015 7:05 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	2/10/2015 7:05 PM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	2/10/2015 7:05 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	96.7	NA	68.7-129	NA		%REC	2/10/2015 7:05 PM	
Surr: 4-Bromofluorobenzene	111	NA	71.8-127	NA		%REC	2/10/2015 7:05 PM	
Surr: Dibromofluoromethane	94.8	NA	74.3-124	NA		%REC	2/10/2015 7:05 PM	
Surr: Toluene-d8	101	NA	71.4-129	NA		%REC	2/10/2015 7:05 PM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: VR**	
Biochemical Oxygen Demand	4	2	5	NA	J	mg/L	2/4/2015 4:37 PM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	29	4	10	NA		mg/L	2/4/2015 1:59 PM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	0.0003	0.0001	0.0010	NA	J	mg/L	2/5/2015 9:31 AM	PA/VA
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	154	0.50	5.00	NA		mg/L	2/4/2015 1:13 PM	PA/VA
Fluoride	0.29	0.05	0.20	NA		mg/L	2/4/2015 1:13 PM	PA/VA
Sulfate	31.1	1.00	5.00	NA		mg/L	2/4/2015 1:13 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1502329

Date Reported: 2/12/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	2/4/2015 10:40:00 AM
Project:	NORTH BECKLEY EFFLUENT	**Date Received:**	2/4/2015
Lab ID:	1502329-01A	**Matrix:**	Liquid
Client Sample ID:	N. BECKLEY WWTP EFF.	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	3.00	0.10	0.50	NA		mg/L	2/4/2015 1:13 PM	PA/VA
Nitrogen, Nitrite	ND	0.05	0.50	NA		mg/L	2/4/2015 1:13 PM	PA/VA
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	1.34	0.10	0.50	NA		mg/L	2/6/2015 9:07 AM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	2.3	2.0	5.0	NA	J	mg/L	2/5/2015 4:30 PM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	2/6/2015 1:09 PM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	ND	0.04	0.10	NA		mg/L	2/5/2015 4:04 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	841	NA	NA	NA		µmhos/cm	2/9/2015 11:19 AM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	423	5	10	NA		mg/L	2/5/2015 5:44 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	4.0	1.6	8.0	NA	J	mg/L	2/5/2015 5:44 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	10.9	1.0	10	NA		mg/L	2/5/2015 10:19 AM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	77.3	1.0	10	NA		mg/L	2/5/2015 10:19 AM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	6.67	NA	NA	NA		SU	2/5/2015 10:19 AM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1502329

Date Reported: 2/12/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	2/4/2015 10:40:00 AM
Project:	NORTH BECKLEY EFFLUENT	**Date Received:**	2/4/2015
Lab ID:	1502329-01B	**Matrix:**	Liquid
Client Sample ID:	N. BECKLEY WWTP EFF.	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	0.059	0.010	0.100	NA	J	mg/L	2/6/2015 5:36 PM	PA/VA
Manganese	ND	0.002	0.100	NA		mg/L	2/6/2015 5:36 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1502329

Date Reported: 2/12/2015

Client:	MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL,	**Collection Date:**	2/4/2015 12:00:00 AM
Project:	NORTH BECKLEY EFFLUENT	**Date Received:**	2/4/2015
Lab ID:	1502329-02A	**Matrix:**	Trip Blank
Client Sample ID:	TRIP BLANK	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	2/10/2015 7:38 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	2/10/2015 7:38 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	2/10/2015 7:38 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	2/10/2015 7:38 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	2/10/2015 7:38 PM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	2/10/2015 7:38 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	93.5	NA	68.7-129	NA		%REC	2/10/2015 7:38 PM	
Surr: 4-Bromofluorobenzene	109	NA	71.8-127	NA		%REC	2/10/2015 7:38 PM	
Surr: Dibromofluoromethane	98.0	NA	74.3-124	NA		%REC	2/10/2015 7:38 PM	
Surr: Toluene-d8	99.7	NA	71.4-129	NA		%REC	2/10/2015 7:38 PM	

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Monday, March 09, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: RALEIGH COUNTY SWA

Work Order #: 1502332

Dear GEORGE CARICO:

REI Consultants, Inc. received 1 sample(s) on 2/4/2015 for the analyses presented in the following report.

Sincerely,

Kathy Berry

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1502332

Date Reported: 3/9/2015

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project: RALEIGH COUNTY SWA

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1502332

Date Reported: 3/9/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	2/4/2015 9:50:00 AM
Project:	RALEIGH COUNTY SWA	**Date Received:**	2/4/2015
Lab ID:	1502332-01A	**Matrix:**	Liquid
Client Sample ID:	RALEIGH CO LF LEACHATE	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

February 09, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1502332
Pace Project No.: 30140068

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on February 05, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1502332
Pace Project No.: 30140068

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1502332
Pace Project No.: 30140068

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30140068001	**1502332-01A**	Water	02/04/15 09:50	02/05/15 09:45

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1502332
Pace Project No.: 30140068

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30140068001	**1502332-01A**	SM 7500Rn-B	FCC	1

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1502332
Pace Project No.: 30140068

Method: **SM 7500Rn-B**
Description: 7500RnB Radon
Client: REI Consultants, Inc.
Date: February 09, 2015

General Information:
1 sample was analyzed for SM 7500Rn-B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Batch Comments:

13007LCS3 fails low at 89.13% for Rn-222 batch 23296. Samples were collected on 2/3/15, 2/4/15, AND 2/5/15, and the initial count was on 2/6/15. Any recount would impact the recommended hold time of four days from collection.

- QC Batch: RADC / 23296

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1502332
Pace Project No.: 30140068

Sample: 1502332-01A **Lab ID: 30140068001** Collected: 02/04/15 09:50 Received: 02/05/15 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**-18.8 ± 25.4 (45.9)** **C:NA T:NA**	pCi/L	02/06/15 12:49	10043-92-2	

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1502332
Pace Project No.: 30140068

QC Batch: RADC/23296 | Analysis Method: SM 7500Rn-B
QC Batch Method: SM 7500Rn-B | Analysis Description: 7500Rn B Radon
Associated Lab Samples: 30140068001

METHOD BLANK: 851087 | Matrix: Water
Associated Lab Samples: 30140068001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radon	-6.2 ± 17.5 (31.2) C:NA T:NA	pCi/L	02/06/15 10:37	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1502332
Pace Project No.: 30140068

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3289	PAGE: 1	OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA COMPANY: PACE ANALYTICAL SERVIC

ADDRESS: 1638 ROSEYTOWN ROAD

CITY, STATE, ZIP: GREENSBURG, PA 15601

PHONE: (724) 850-5600 FAX:

ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:

State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. Results to kberry@reiclabs.com Thank you

ANALYTICAL PARAMETERS

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	RADON (913.0)	COMMENTS
						*	0	30140068
1	1502332-01A	RALEIGH CO LF LEACHATE		Liquid	2/4/2015 9:50:00 AM	3	√	001

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[illegible]	2/4/15	16:00	UPS	2/4/15	16:00
Relinquished By:	Date:	Time:	Received By: [illegible]	Date: 2/5/15	Time: 0445
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples NA °C Attempt to Cool ? _____

Comments: _____

Ann

Sample Condition Upon Receipt

Pace Analytical

Client Name: REIC

Project # 30140068

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1Z 26X 713 13 6299 4842

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no Biological Tissue is Frozen: Yes No

Packing Material: Bubble Wrap ✓ Bubble Bags ____ None ____ Other _____

Thermometer Used NA Type of Ice: Wet Blue (None) ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.: NA °C Correction Factor: NA °C Final Temp: NA °C

Date and Initials of person examining contents: Ann 2/9/15

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out:	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished:	☒ Yes	☐ No	☐ N/A	3.
Sampler Name & Signature on COC:	☐ Yes	☒ No	☐ N/A	4. Waiver on file ONE 4/5/15
Samples Arrived within Hold Time:	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72hr):	☒ Yes	☐ No	☐ N/A	6.
Rush Turn Around Time Requested:	☐ Yes	☒ No	☐ N/A	7.
Sufficient Volume:	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used:	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used:	☐ Yes	☒ No	☐ N/A	
Containers Intact:	☒ Yes	☐ No	☐ N/A	10.
Filtered volume received for Dissolved tests	☐ Yes	☐ No	☒ N/A	11.
Sample Labels match COC:	☒ Yes	☐ No	☐ N/A	12.
-Includes date/time/ID/Analysis Matrix: WT				
All containers needing preservation have been checked.	☐ Yes	☐ No	☒ N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐ Yes	☐ No	☒ N/A	
exceptions: (VOA), coliform, TOC, O&G, WI-DRO (water)	☒ Yes	☐ No		Initial when completed Ann / Lot # of added preservative
Samples checked for dechlorination:	☐ Yes	☐ No	☒ N/A	14.
Headspace in VOA Vials (>6mm):	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Present:	☐ Yes	☐ No	☒ N/A	16.
Trip Blank Custody Seals Present	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carrie Ferris **Date:** 2/5/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30140068

Client Name: REIC

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other Radon	Other
001	SX																						3	

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

February 27, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1502332
Pace Project No.: 30140371

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on February 09, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1502332
Pace Project No.: 30140371

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1502332
Pace Project No.: 30140371

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30140371001	**1502332-01A**	Water	02/04/15 09:50	02/09/15 14:15

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1502332
Pace Project No.: 30140371

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30140371001	**1502332-01A**	EPA 900.0	LAL	2
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1

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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1502332
Pace Project No.: 30140371

Method: **EPA 900.0**
Description: 900.0 Gross Alpha/Beta
Client: REI Consultants, Inc.
Date: February 27, 2015

General Information:
1 sample was analyzed for EPA 900.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1502332
Pace Project No.: 30140371

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: REI Consultants, Inc.
Date: February 27, 2015

General Information:
1 sample was analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1502332
Pace Project No.: 30140371

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: REI Consultants, Inc.
Date: February 27, 2015

General Information:
1 sample was analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Batch Comments:

The Ra-228 Method Blank, sample 852908, associated with analytical batch 23336 had a lower than expected Ba-133 yield at 22.32%. The Ba-133 yield was confirmed by recounting. The routine Ra-228 RL of 1.0 pCi/L could not be achieved for the method blank due to the low Ba-133 yield even with an extended count time. The cause of the low Ba-133 yield is unknown, however, the Ba-133 yields for the remaining QC and all samples in the batch were not similarly affected. The low Ba-133 yield may have caused a high bias to the Method Blank result for Ra-228. The Method Blank activity is above the MDC. Samples with activity below the RL of 1.0 pCi/L, or below their associated MDC are reportable without qualification. Samples with results greater than ten times the Method Blank result are also reportable without qualification. All others require re-preparation and re-analysis due to the MB result greater than MDC.

- QC Batch: RADC / 23336

Analyte Comments:

QC Batch: RADC/23336

1c: The Ra-228 Method Blank, sample 852908, associated with analytical batch 23336 had a lower than expected Ba-133 yield at 22.32%. The Ba-133 yield was confirmed by recounting. The routine Ra-228 RL of 1.0 pCi/L could not be achieved for the method blank due to the low Ba-133 yield even with an extended count time. The cause of the low Ba-133 yield is unknown, however, the Ba-133 yields for the remaining QC and all samples in the batch were not similarly affected. The low Ba-133 yield may have caused a high bias to the Method Blank result for Ra-228. The Method Blank activity is above the MDC. Samples with activity below the RL of 1.0 pCi/L, or below their associated MDC are reportable without qualification. Samples with results greater than ten times the Method Blank result are also reportable without qualification. All others require re-preparation and re-analysis due to the MB result greater than MDC.

- 1502332-01A (Lab ID: 30140371001)
  - Radium-228
- BLANK (Lab ID: 852908)
  - Radium-228

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PROJECT NARRATIVE

Project: 1502332
Pace Project No.: 30140371

Method: **ASTM D5811-95**
Description: ASTM D5811 Sr 89/90 Eichrom
Client: REI Consultants, Inc.
Date: February 27, 2015

General Information:
1 sample was analyzed for ASTM D5811-95. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: RADC/23348

N2: The lab does not hold TNI accreditation for this parameter.

- 1502332-01A (Lab ID: 30140371001)
  - Strontium-90
- BLANK (Lab ID: 853404)
  - Strontium-90

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1502332
Pace Project No.: 30140371

Sample: 1502332-01A **Lab ID: 30140371001** Collected: 02/04/15 09:50 Received: 02/09/15 14:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**6.06 ± 4.65 (7.86)** **C:NA T:NA**	pCi/L	02/18/15 19:18	12587-46-1	
Gross Beta	EPA 900.0	**81.4 ± 15.2 (3.43)** **C:NA T:NA**	pCi/L	02/18/15 19:18	12587-47-2	
Radium-226	EPA 903.1	**2.25 ± 1.30 (0.507)** **C:NA T:79%**	pCi/L	02/19/15 10:11	13982-63-3	
Radium-228	EPA 904.0	**0.906 ± 0.797 (1.59)** **C:88% T:55%**	pCi/L	02/26/15 16:29	15262-20-1	1c
Strontium-90	ASTM D5811-95	**3.64 ± 0.917 (1.05)** **C:103% T:NA**	pCi/L	02/16/15 13:19	10098-97-2	N2

Pace Analytical Services, Inc.
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1502332
Pace Project No.: 30140371

QC Batch: RADC/23334 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30140371001

METHOD BLANK: 852906 | Matrix: Water
Associated Lab Samples: 30140371001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.379 ± 0.498 (0.829) C:NA T:97%	pCi/L	02/19/15 09:51	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1502332
Pace Project No.: 30140371

QC Batch: RADC/23336 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30140371001

METHOD BLANK: 852908 | Matrix: Water
Associated Lab Samples: 30140371001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	1.77 ± 0.945 (1.53) C:88% T:22%	pCi/L	02/26/15 16:33	1c

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1502332
Pace Project No.: 30140371

QC Batch: RADC/23348
QC Batch Method: ASTM D5811-95
Analysis Method: ASTM D5811-95
Analysis Description: ASTM D5811 Sr 89/90 Eichrom
Associated Lab Samples: 30140371001

METHOD BLANK: 853404
Matrix: Water
Associated Lab Samples: 30140371001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Strontium-90	1.40 ± 0.636 (1.03) C:101% T:NA	pCi/L	02/16/15 08:13	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1502332
Pace Project No.: 30140371

QC Batch: RADC/23415
QC Batch Method: EPA 900.0
Analysis Method: EPA 900.0
Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30140371001

METHOD BLANK: 855097
Matrix: Water
Associated Lab Samples: 30140371001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.184 ± 0.622 (1.56) C:NA T:NA	pCi/L	02/18/15 19:50	
Gross Beta	0.391 ± 0.785 (1.79) C:NA T:NA	pCi/L	02/18/15 19:50	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: 1502332
Pace Project No.: 30140371

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

BATCH QUALIFIERS

Batch: RADC/23336

[1] The Ra-228 Method Blank, sample 852908, associated with analytical batch 23336 had a lower than expected Ba-133 yield at 22.32%. The Ba-133 yield was confirmed by recounting. The routine Ra-228 RL of 1.0 pCi/L could not be achieved for the method blank due to the low Ba-133 yield even with an extended count time. The cause of the low Ba-133 yield is unknown, however, the Ba-133 yields for the remaining QC and all samples in the batch were not similarly affected. The low Ba-133 yield may have caused a high bias to the Method Blank result for Ra-228. The Method Blank activity is above the MDC. Samples with activity below the RL of 1.0 pCi/L, or below their associated MDC are reportable without qualification. Samples with results greater than ten times the Method Blank result are also reportable without qualification. All others require re-preparation and re-analysis due to the MB result greater than MDC.

ANALYTE QUALIFIERS

1c The Ra-228 Method Blank, sample 852908, associated with analytical batch 23336 had a lower than expected Ba-133 yield at 22.32%. The Ba-133 yield was confirmed by recounting. The routine Ra-228 RL of 1.0 pCi/L could not be achieved for the method blank due to the low Ba-133 yield even with an extended count time. The cause of the low Ba-133 yield is unknown, however, the Ba-133 yields for the remaining QC and all samples in the batch were not similarly affected. The low Ba-133 yield may have caused a high bias to the Method Blank result for Ra-228. The Method Blank activity is above the MDC. Samples with activity below the RL of 1.0 pCi/L, or below their associated MDC are reportable without qualification. Samples with results greater than ten times the Method Blank result are also reportable without qualification. All others require re-preparation and re-analysis due to the MB result greater than MDC.

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Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1502332
Pace Project No.: 30140371

ANALYTE QUALIFIERS

N2 The lab does not hold TNI accreditation for this parameter.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3288	PAGE: 1	OF: 1

30140371

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: **PACE_PA** COMPANY: **PACE ANALYTICAL SERVIC**

ADDRESS: **1638 ROSEYTOWN ROAD**

CITY, STATE, ZIP: **GREENSBURG, PA 15601**

PHONE: **(724) 850-5600** FAX:

ACCOUNT #: **050719EVF1** EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:

State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. Reults to kberry@reiclabs.com Thank you

ANALYTICAL PARAMETERS

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	GROSS_ALPHA_SUB (EPA 900.0)	GROSS_BETA_SUB (EPA 900.0)	RADIUM_226_SUB (EPA 903.1)	RADIUM_228_SUB (EPA 904.0)	STRONTIUM_90_SUB (EPA 905.0)
						*	2	2	2	2	2
1	1502332-01A	RALEIGH CO LF LEACHATE	.	Liquid	2/4/2015 9:50:00 AM	3	√	√	√	√	√

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS:

001

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[illegible]	2/4/15	16:00	MSC	2/4/16	16:00
[illegible]	2/5/15	1200	Cliff Mt Joy Pace	2/9/15	12:30
Cliff Mt Joy	2/9/15	2:30	Scott [illegible] Pace	2-9-15	1430

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool ? _____

Comments: _____

Sample Condition Upon Receipt

Pace Analytical

Client Name: REFC Project # 30140371

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no Biological Tissue is Frozen: Yes No

Packing Material: Bubble Wrap X Bubble Bags ___ None ___ Other _____

Thermometer Used NA Type of Ice: Wet Blue (None) ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.:_____°C Correction Factor: _____°C Final Temp:_____°C

Date and Initials of person examining contents: SA 02-15

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☒No	☐N/A	4. waiver on file AF 2/10/15
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes	☒No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☒No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: wt	☒Yes	☐No	☐N/A	12.
All containers needing preservation have been checked.	☒Yes	☐No	☐N/A	13. pH<2
All containers needing preservation are found to be in compliance with EPA recommendation.	☒Yes	☐No	☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes	☒No		Initial when completed SPA Lot # of added preservative
Samples checked for dechlorination:	☐Yes	☐No	☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☒N/A	15.
Trip Blank Present:	☐Yes	☒No	☐N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased):_____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Corina Serrano **Date:** 2/10/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30140371

Client Name: REF

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other	Other
001	wt																		N					

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Friday, February 20, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: NORTH BECKLEY EFFLUENT

Work Order #: 1502330

Dear GEORGE CARICO:

REI Consultants, Inc. received 1 sample(s) on 2/4/2015 for the analyses presented in the following report.

Sincerely,

Kathy Berry

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1502330

Date Reported: 2/20/2015

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project: NORTH BECKLEY EFFLUENT

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1502330

Date Reported: 2/20/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	2/4/2015 10:40:00 AM
Project:	NORTH BECKLEY EFFLUENT	**Date Received:**	2/4/2015
Lab ID:	1502330-01A	**Matrix:**	Liquid
Client Sample ID:	N. BECKLEY WWTP EFF	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

February 27, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1502330
Pace Project No.: 30140369

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on February 09, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1502330
Pace Project No.: 30140369

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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(724)850-5600

SAMPLE SUMMARY

Project: 1502330
Pace Project No.: 30140369

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30140369001	**1502330-01A**	Water	02/04/15 10:40	02/09/15 14:15

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Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1502330
Pace Project No.: 30140369

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30140369001	**1502330-01A**	EPA 900.0	LAL	2
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1

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PROJECT NARRATIVE

Project: 1502330
Pace Project No.: 30140369

Method: **EPA 900.0**
Description: 900.0 Gross Alpha/Beta
Client: REI Consultants, Inc.
Date: February 27, 2015

General Information:
1 sample was analyzed for EPA 900.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1502330
Pace Project No.: 30140369

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: REI Consultants, Inc.
Date: February 27, 2015

General Information:
1 sample was analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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(724)850-5600

PROJECT NARRATIVE

Project: 1502330
Pace Project No.: 30140369

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: REI Consultants, Inc.
Date: February 27, 2015

General Information:
1 sample was analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Batch Comments:

The Ra-228 Method Blank, sample 852908, associated with analytical batch 23336 had a lower than expected Ba-133 yield at 22.32%. The Ba-133 yield was confirmed by recounting. The routine Ra-228 RL of 1.0 pCi/L could not be achieved for the method blank due to the low Ba-133 yield even with an extended count time. The cause of the low Ba-133 yield is unknown, however, the Ba-133 yields for the remaining QC and all samples in the batch were not similarly affected. The low Ba-133 yield may have caused a high bias to the Method Blank result for Ra-228. The Method Blank activity is above the MDC. Samples with activity below the RL of 1.0 pCi/L, or below their associated MDC are reportable without qualification. Samples with results greater than ten times the Method Blank result are also reportable without qualification. All others require re-preparation and re-analysis due to the MB result greater than MDC.

- QC Batch: RADC / 23336

Analyte Comments:

QC Batch: RADC/23336

1c: The Ra-228 Method Blank, sample 852908, associated with analytical batch 23336 had a lower than expected Ba-133 yield at 22.32%. The Ba-133 yield was confirmed by recounting. The routine Ra-228 RL of 1.0 pCi/L could not be achieved for the method blank due to the low Ba-133 yield even with an extended count time. The cause of the low Ba-133 yield is unknown, however, the Ba-133 yields for the remaining QC and all samples in the batch were not similarly affected. The low Ba-133 yield may have caused a high bias to the Method Blank result for Ra-228. The Method Blank activity is above the MDC. Samples with activity below the RL of 1.0 pCi/L, or below their associated MDC are reportable without qualification. Samples with results greater than ten times the Method Blank result are also reportable without qualification. All others require re-preparation and re-analysis due to the MB result greater than MDC.

- 1502330-01A (Lab ID: 30140369001)
  - Radium-228
- BLANK (Lab ID: 852908)
  - Radium-228

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PROJECT NARRATIVE

Project: 1502330
Pace Project No.: 30140369

Method: **ASTM D5811-95**
Description: ASTM D5811 Sr 89/90 Eichrom
Client: REI Consultants, Inc.
Date: February 27, 2015

General Information:
1 sample was analyzed for ASTM D5811-95. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: RADC/23348

N2: The lab does not hold TNI accreditation for this parameter.

- 1502330-01A (Lab ID: 30140369001)
  - Strontium-90
- BLANK (Lab ID: 853404)
  - Strontium-90

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, Inc.
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Greensburg, PA 15601
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1502330
Pace Project No.: 30140369

Sample: 1502330-01A **Lab ID: 30140369001** Collected: 02/04/15 10:40 Received: 02/09/15 14:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**-0.900 ± 1.34 (2.97)** **C:NA T:NA**	pCi/L	02/18/15 19:16	12587-46-1	
Gross Beta	EPA 900.0	**4.67 ± 1.03 (0.811)** **C:NA T:NA**	pCi/L	02/18/15 19:16	12587-47-2	
Radium-226	EPA 903.1	**0.483 ± 0.738 (0.437)** **C:NA T:85%**	pCi/L	02/19/15 10:18	13982-63-3	
Radium-228	EPA 904.0	**0.139 ± 0.490 (1.08)** **C:88% T:74%**	pCi/L	02/26/15 16:28	15262-20-1	1c
Strontium-90	ASTM D5811-95	**41.7 ± 6.78 (1.15)** **C:98% T:NA**	pCi/L	02/16/15 13:19	10098-97-2	N2

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1502330
Pace Project No.: 30140369

QC Batch: RADC/23334 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30140369001

METHOD BLANK: 852906 | Matrix: Water
Associated Lab Samples: 30140369001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.379 ± 0.498 (0.829) C:NA T:97%	pCi/L	02/19/15 09:51	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1502330
Pace Project No.: 30140369

QC Batch: RADC/23336 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30140369001

METHOD BLANK: 852908 | Matrix: Water
Associated Lab Samples: 30140369001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	1.77 ± 0.945 (1.53) C:88% T:22%	pCi/L	02/26/15 16:33	1c

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1502330
Pace Project No.: 30140369

QC Batch: RADC/23348
QC Batch Method: ASTM D5811-95
Analysis Method: ASTM D5811-95
Analysis Description: ASTM D5811 Sr 89/90 Eichrom
Associated Lab Samples: 30140369001

METHOD BLANK: 853404
Matrix: Water
Associated Lab Samples: 30140369001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Strontium-90	1.40 ± 0.636 (1.03) C:101% T:NA	pCi/L	02/16/15 08:13	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1502330
Pace Project No.: 30140369

QC Batch: RADC/23414
QC Batch Method: EPA 900.0
Analysis Method: EPA 900.0
Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30140369001

METHOD BLANK: 855091
Matrix: Water
Associated Lab Samples: 30140369001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	-0.175 ± 0.489 (1.55) C:NA T:NA	pCi/L	02/18/15 19:49	
Gross Beta	0.046 ± 0.951 (2.31) C:NA T:NA	pCi/L	02/18/15 19:49	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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(724)850-5600

QUALIFIERS

Project: 1502330
Pace Project No.: 30140369

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

BATCH QUALIFIERS

Batch: RADC/23336

[1] The Ra-228 Method Blank, sample 852908, associated with analytical batch 23336 had a lower than expected Ba-133 yield at 22.32%. The Ba-133 yield was confirmed by recounting. The routine Ra-228 RL of 1.0 pCi/L could not be achieved for the method blank due to the low Ba-133 yield even with an extended count time. The cause of the low Ba-133 yield is unknown, however, the Ba-133 yields for the remaining QC and all samples in the batch were not similarly affected. The low Ba-133 yield may have caused a high bias to the Method Blank result for Ra-228. The Method Blank activity is above the MDC. Samples with activity below the RL of 1.0 pCi/L, or below their associated MDC are reportable without qualification. Samples with results greater than ten times the Method Blank result are also reportable without qualification. All others require re-preparation and re-analysis due to the MB result greater than MDC.

ANALYTE QUALIFIERS

1c The Ra-228 Method Blank, sample 852908, associated with analytical batch 23336 had a lower than expected Ba-133 yield at 22.32%. The Ba-133 yield was confirmed by recounting. The routine Ra-228 RL of 1.0 pCi/L could not be achieved for the method blank due to the low Ba-133 yield even with an extended count time. The cause of the low Ba-133 yield is unknown, however, the Ba-133 yields for the remaining QC and all samples in the batch were not similarly affected. The low Ba-133 yield may have caused a high bias to the Method Blank result for Ra-228. The Method Blank activity is above the MDC. Samples with activity below the RL of 1.0 pCi/L, or below their associated MDC are reportable without qualification. Samples with results greater than ten times the Method Blank result are also reportable without qualification. All others require re-preparation and re-analysis due to the MB result greater than MDC.

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QUALIFIERS

Project: 1502330
Pace Project No.: 30140369

ANALYTE QUALIFIERS

N2 The lab does not hold TNI accreditation for this parameter.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3285	PAGE: 1	OF: 1

30140369

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA COMPANY: PACE ANALYTICAL SERVIC

ADDRESS: 1638 ROSEYTOWN ROAD

CITY, STATE, ZIP: GREENSBURG, PA 15601

PHONE: (724) 850-5600 FAX:

ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:
State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. Results to kberry@reiclabs.com Thank you

ANALYTICAL PARAMETERS

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	GROSS_ALPHA_SUB (EPA 900.0)	GROSS_BETA_SUB (EPA 900.0)	RADIUM_226_SUB (EPA 903.1)	RADIUM_228_SUB (EPA 904.0)	STRONTIUM_90_SUB (EPA 905.0)	COMMENTS
						*	2	2	2	2	2	
1	1502330-01A	N. BECKLEY EFF	.	Liquid	2/4/2015 10:40:00 AM	3	√	√	√	√	√	001

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[illegible]	2/4/15	16:00	MSC	2/4/15	16:00
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
	2/6/15	1100	Cliff Mt Joy PACE	2/9/15	12:30
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Cliff Mt Joy P.	2/9/15	2:15	[illegible] Pace	2-9-15	1415

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples _____ °C Attempt to Cool ? _____
Comments: _____

Sample Condition Upon Receipt

Pace Analytical

Client Name: REFC

Project # 30140369

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no Biological Tissue is Frozen: Yes No

Packing Material: Bubble Wrap X Bubble Bags ___ None ___ Other _____

Thermometer Used NA Type of Ice: Wet Blue (None) ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.:_____°C Correction Factor: _____°C Final Temp:_____°C

Date and Initials of person examining contents: SA 02-15

Temp should be above freezing to 6°C

		Comments:
Chain of Custody Present:	☒ Yes ☐ No ☐ N/A	1.
Chain of Custody Filled Out:	☒ Yes ☐ No ☐ N/A	2.
Chain of Custody Relinquished:	☒ Yes ☐ No ☐ N/A	3.
Sampler Name & Signature on COC:	☐ Yes ☒ No ☐ N/A	4. waiver on file 2/10/15
Samples Arrived within Hold Time:	☒ Yes ☐ No ☐ N/A	5.
Short Hold Time Analysis (<72hr):	☐ Yes ☒ No ☐ N/A	6.
Rush Turn Around Time Requested:	☐ Yes ☒ No ☐ N/A	7.
Sufficient Volume:	☒ Yes ☐ No ☐ N/A	8.
Correct Containers Used:	☒ Yes ☐ No ☐ N/A	9.
-Pace Containers Used:	☐ Yes ☒ No ☐ N/A	
Containers Intact:	☒ Yes ☐ No ☐ N/A	10.
Filtered volume received for Dissolved tests	☐ Yes ☐ No ☒ N/A	11.
Sample Labels match COC:	☒ Yes ☐ No ☐ N/A	12.
-Includes date/time/ID/Analysis Matrix: wt		
All containers needing preservation have been checked.	☒ Yes ☐ No ☐ N/A	13. pH<2
All containers needing preservation are found to be in compliance with EPA recommendation.	☒ Yes ☐ No ☐ N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐ Yes ☒ No	Initial when completed SPA / Lot # of added preservative
Samples checked for dechlorination:	☐ Yes ☐ No ☒ N/A	14.
Headspace in VOA Vials (>6mm):	☐ Yes ☐ No ☒ N/A	15.
Trip Blank Present:	☐ Yes ☒ No ☐ N/A	16.
Trip Blank Custody Seals Present	☐ Yes ☐ No ☒ N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carina Serrano **Date:** 2/10/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30140369

Client Name: REFC

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other	Other
001	WT																		W					

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

February 09, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1502330
Pace Project No.: 30140067

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on February 05, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

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Pace Project No.: 30140067

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Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
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New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 1502330
Pace Project No.: 30140067

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30140067001	**1502330-01A**	Water	02/04/15 10:40	02/05/15 09:45

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 1502330
Pace Project No.: 30140067

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30140067001	**1502330-01A**	SM 7500Rn-B	FCC	1

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 1502330
Pace Project No.: 30140067

Method: **SM 7500Rn-B**
Description: 7500RnB Radon
Client: REI Consultants, Inc.
Date: February 09, 2015

General Information:
1 sample was analyzed for SM 7500Rn-B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Batch Comments:

13007LCS3 fails low at 89.13% for Rn-222 batch 23296. Samples were collected on 2/3/15, 2/4/15, AND 2/5/15, and the initial count was on 2/6/15. Any recount would impact the recommended hold time of four days from collection.

- QC Batch: RADC / 23296

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1502330
Pace Project No.: 30140067

Sample: 1502330-01A **Lab ID: 30140067001** Collected: 02/04/15 10:40 Received: 02/05/15 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**4.0 ± 26.2 (45.4)** **C:NA T:NA**	pCi/L	02/06/15 12:16	10043-92-2	

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1502330
Pace Project No.: 30140067

QC Batch: RADC/23296 | Analysis Method: SM 7500Rn-B
QC Batch Method: SM 7500Rn-B | Analysis Description: 7500Rn B Radon
Associated Lab Samples: 30140067001

METHOD BLANK: 851087 | Matrix: Water
Associated Lab Samples: 30140067001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radon	-6.2 ± 17.5 (31.2) C:NA T:NA	pCi/L	02/06/15 10:37	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1502330
Pace Project No.: 30140067

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3287	PAGE: 1	OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR:	PACE_PA	COMPANY:	PACE ANALYTICAL SERVIC
ADDRESS:	1638 ROSEYTOWN ROAD		
CITY, STATE, ZIP:	GREENSBURG, PA 15601		
PHONE:	(724) 850-5600	FAX:	
ACCOUNT #:	050719EVF1	EMAIL:	

SPECIAL INSTRUCTIONS / COMMENTS:

State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. Results to kberry@reiclabs.com Thank you

ANALYTICAL PARAMETERS

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	RADON (913.0)
						*	0
1	1502330-01A	N. BECKLEY EFF	.	Liquid	2/4/2015 10:40:00 AM	3	√

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS:

30140067

001

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Whitney Walker	2/4/15	16:00	UPS	2/4/15	16:00
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
			[illegible]	2/5/15	0445
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ **RUSH** Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool ? _____

Comments: _____

Ann

Sample Condition Upon Receipt

Pace Analytical

Client Name: REIC

Project # 30140067

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1Z 26X 713 13 6299 4842

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no Biological Tissue is Frozen: Yes No

Packing Material: Bubble Wrap ✓ Bubble Bags ____ None ____ Other _____

Thermometer Used NA Type of Ice: Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.: NA °C Correction Factor: NA °C Final Temp: NA °C

Date and Initials of person examining contents: Ann 2/5/15

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☒No	☐N/A	4. waiver on file CAS 2/5/15
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☒Yes	☐No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☒No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11.
Sample Labels match COC:	☒Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT				
All containers needing preservation have been checked.	☐Yes	☐No	☒N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☒N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☒Yes	☐No		Initial when completed Ann / Lot # of added preservative
Samples checked for dechlorination:	☐Yes	☐No	☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☒N/A	15.
Trip Blank Present:	☐Yes	☐No	☒N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carrie Sorrio **Date:** 2/5/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30140067

Client Name: REIC

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other RADON	Other
001	SX																						3	

CHAIN OF CUSTODY RECORD

v10-0114 REIC use ONLY CLIENT ID MAR071 DATE 3-19-15 SHEET ____

REIC
Research Environmental & Industrial Consultants, Inc.
MAIN LABORATORY & CORPORATE HEADQUARTERS:
P.O. Box 286 • 225 Industrial Park Rd, Beaver, WV 25813
800-999-0105 • 304-255-2500 • www.reiclabs.com

MID-OHIO VALLEY Service Center
101 17th Street
Ashland, KY 41101
606-393-5027

SHENANDOAH Service Center
1557 Commerce Rd., Ste 201
Verona, VA 24482
540-248-0183

ROANOKE Service Center
3029-C Peters Creek Rd
Roanoke, VA 24019
540-777-1276

MORGANTOWN Service Center
16 Commerce Drive
Westover, WV 26501
304-241-5861

Client: MARSHALL UNIVERSITY CENTER FOR ENVIRONMENTAL GEOCHEMICAL & APPLIED SCIENCE PO # ____

Contact Person Geroge Carico / Jamie Wolfe Phone 304.696.5456

Address One Marshall Drive City Huntington State WV Zip 25755

Billing Address (if different) ____

City ____ State ____ Zip ____

Site ID & State ____ Project ID ____ Sampler MH/RF

SAMPLE LOG & ANALYSIS REQUEST

TURNAROUND TIME: ⊙ NORMAL

RUSH TURNAROUND*: ○ 5 DAY ○ 3 DAY ○ 2 DAY ○ 1 DAY

*Rush work needs prior laboratory approval and will incur additional charges

ANALYSIS & METHOD REQUESTED: See Attached List

	SAMPLE ID	No. & Type of Containers	Sampling Date/Time	Matrix	Sample Comp/Grab	0	1	2	3	5	10			
(3)	RALEIGH CO. LF LEACHATE	20	3-19-15 1040	Water	Grab	X								
(4)	N. BECKLEY WWTP EFF	23	3-19-15 1135	Water	Grab	X								
	TRIP BLANK	2		Water	Grab	X								
				Choose	Choose									
				Choose	Choose									
				Choose	Choose									
				Choose	Choose									
				Choose	Choose									
				Choose	Choose									

ENTER PRESERVATIVE CODE(S):
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Bisulfate/Methanol
9 Ammonium Chloride
10 AS/AH
11 ____
* (Use blanks for preservatives not listed.)

COMMENTS:
Field Sampling Time 2 HRS
Per Doug Arthur

	(3)	(4)
pH	7.37	6.82
TEMP	15.5	11.6
COND	5500	966

All analytical requests are subject to REIC's Standard Terms and Conditions.

Temperature at arrival: 2 °C ICED? Y ✓ N ____

Containers provided by: [✓] REIC [ ] Client

1 Relinquished by (signature)	3-19-15 Date/Time 1225	2 Relinquished by (signature)	Date/Time	3 Relinquished by (signature)	Date/Time
Received by (signature)	3-19-15 Date/Time 1225	Received by (signature)	Date/Time	Received by (signature)	Date/Time

DBPix Evaluation

/103

WVDEP Drill Cutting / Leachate Analysis List

Aluminum

Antimony

Arsenic

Barium

Beryllium

Boron

Cadmium

Chromium

Hexavalent Chromium

Copper

Lead

Lithium

Mercury

Nickel

Selenium

Silver

Strontium

Vanadium

Zinc

Chloride

Fluoride

Nitrate as Nitrogen

Nitrite as Nitrogen

Sulfate

Total Suspended Solids

Free Cyanide

Benzene

Chlorobenzene

Chlorodibromomethane

www.ammara.com

DBPix Evaluation

2 of 3

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

1,4-Dinitrobenzene

1,4-Naphthoquinone

2,4-Dinitrotoluene

2,6-Dinitrotoluene

4-Nitroquinoline-1-oxide

bis(2-ethylhexyl) phthalate

Butyl benzylphthalate

Di-N-Butyl Phthalate

Di-N-Octylphthalate Diethyl Phthalate

Dimethyl Phthalate

Flouranthene

Nitrobenzene

Pentachloronitrobenzene

Gross Alpha

Gross Beta

Radium 226

Radium 228

Strontium 90

Radon

pH

Total Dissolved Solids

Total Suspended Solids

BOD 5-Day

Ammonia as Nitrogen

Total Kjeldahl Nitrogen

Oil & Grease

Acidity to pH 8.3

www.ammara.com

DBPix Evaluation

Jor)

Specific Conductance

Alkalinity to pH 4.5

Chemical Oxygen Demand

Dissolved Iron and Iron

Manganese and Dissolved Manganese

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Thursday, April 02, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: RALEIGH CO LF / N. BECKLEY WWTP

Work Order #: 1503N56

Dear GEORGE CARICO:

REI Consultants, Inc. received 3 sample(s) on 3/19/2015 for the analyses presented in the following report.

Sincerely,

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1503N56

Date Reported: 4/2/2015

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project: RALEIGH CO LF / N. BECKLEY WWTP

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1503N56

Date Reported: 4/2/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/19/2015 10:40:00 AM
Project:	RALEIGH CO LF / N. BECKLEY WWTP	**Date Received:**	3/19/2015
Lab ID:	1503N56-01A	**Matrix:**	Leachate
Client Sample ID:	RALEIGH CO LF. LF LEACHATE	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.244	0.005	0.100	NA		mg/L	3/25/2015 3:13 PM	PA/VA
Antimony	0.027	0.020	0.200	NA	J	mg/L	3/25/2015 3:13 PM	PA/VA
Arsenic	0.087	0.020	0.200	NA	J	mg/L	3/25/2015 3:13 PM	PA/VA
Barium	0.804	0.002	0.100	NA		mg/L	3/25/2015 3:13 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	3/25/2015 3:13 PM	PA/VA
Boron	5.10	0.020	0.100	NA		mg/L	3/25/2015 3:13 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	3/25/2015 3:13 PM	PA/VA
Chromium	0.042	0.005	0.100	NA	J	mg/L	3/25/2015 3:13 PM	PA/VA
Copper	0.011	0.005	0.100	NA	J	mg/L	3/25/2015 3:13 PM	PA/VA
Iron	29.2	0.010	0.100	NA		mg/L	3/25/2015 3:13 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	3/25/2015 3:13 PM	PA/VA
Lithium	0.054	0.020	0.100	NA	J	mg/L	3/25/2015 1:52 PM	
Manganese	3.32	0.002	0.100	NA		mg/L	3/25/2015 3:13 PM	PA/VA
Nickel	0.106	0.005	0.100	NA		mg/L	3/25/2015 3:13 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	3/25/2015 3:13 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	3/25/2015 3:13 PM	PA/VA
Strontium	1.32	0.001	0.010	NA		mg/L	3/25/2015 1:52 PM	PA
Vanadium	0.007	0.005	0.100	NA	J	mg/L	3/25/2015 3:13 PM	PA/VA
Zinc	0.580	0.003	0.050	NA		mg/L	3/25/2015 3:13 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	3/24/2015 10:09 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0412	NA		mg/L	3/27/2015 5:47 PM	
1,4-Napthoquinone	ND	NA	0.0412	NA		mg/L	3/27/2015 5:47 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.206	NA		mg/L	3/27/2015 5:47 PM	
Pentachloronitrobenzene	ND	NA	0.0412	NA		mg/L	3/27/2015 5:47 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0206	0.0412	NA		mg/L	3/27/2015 5:47 PM	PA/VA
Butyl benzyl phthalate	ND	0.0206	0.0412	NA		mg/L	3/27/2015 5:47 PM	PA/VA
Di-n-butyl phthalate	ND	0.0206	0.0412	NA		mg/L	3/27/2015 5:47 PM	PA/VA
Diethyl phthalate	0.0203	0.0082	0.0412	NA	J	mg/L	3/27/2015 5:47 PM	PA/VA
Dimethyl phthalate	ND	0.0082	0.0412	NA		mg/L	3/27/2015 5:47 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0082	0.0412	NA		mg/L	3/27/2015 5:47 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0082	0.0412	NA		mg/L	3/27/2015 5:47 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503N56

Date Reported: 4/2/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/19/2015 10:40:00 AM
Project:	RALEIGH CO LF / N. BECKLEY WWTP	**Date Received:**	3/19/2015
Lab ID:	1503N56-01A	**Matrix:**	Leachate
Client Sample ID:	RALEIGH CO LF. LF LEACHATE	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0206	0.0412	NA		mg/L	3/27/2015 5:47 PM	PA/VA
Fluoranthene	ND	0.0082	0.0412	NA		mg/L	3/27/2015 5:47 PM	PA/VA
Nitrobenzene	ND	0.0082	0.0412	NA		mg/L	3/27/2015 5:47 PM	PA/VA
Surr: 2-Fluorophenol	45.5	NA	32.9-110	NA		%REC	3/27/2015 5:47 PM	
Surr: Phenol-d5	38.5	NA	25.8-110	NA		%REC	3/27/2015 5:47 PM	
Surr: 2,4,6-Tribromophenol	88.3	NA	63.8-110	NA		%REC	3/27/2015 5:47 PM	
Surr: Nitrobenzene-d5	99.7	NA	61.8-110	NA		%REC	3/27/2015 5:47 PM	
Surr: 2-Fluorobiphenyl	86.6	NA	58.6-110	NA		%REC	3/27/2015 5:47 PM	
Surr: 4-Terphenyl-d14	75.9	NA	55.1-110	NA		%REC	3/27/2015 5:47 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	1.28	0.500	1.00	NA		µg/L	3/30/2015 10:14 PM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	3/30/2015 10:14 PM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	3/30/2015 10:14 PM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/30/2015 10:14 PM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/30/2015 10:14 PM	PA/VA
1,4-Dichlorobenzene	3.07	0.500	1.00	NA		µg/L	3/30/2015 10:14 PM	PA/VA
Surr: 1,2-Dichloroethane-d4	134	NA	68.7-129	NA	S	%REC	3/30/2015 10:14 PM	
Surr: 4-Bromofluorobenzene	106	NA	71.8-127	NA		%REC	3/30/2015 10:14 PM	
Surr: Dibromofluoromethane	111	NA	74.3-124	NA		%REC	3/30/2015 10:14 PM	
Surr: Toluene-d8	90.2	NA	71.4-129	NA		%REC	3/30/2015 10:14 PM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: CB**	
Biochemical Oxygen Demand	1,230	2	5	NA		mg/L	3/19/2015 4:24 PM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	2,100	100	250	NA		mg/L	3/20/2015 9:00 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	0.0019	0.0003	0.0010	NA		mg/L	3/23/2015 4:21 PM	
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	420	2.50	25.0	NA		mg/L	3/19/2015 8:39 PM	
Fluoride	34.5	1.25	5.00	NA		mg/L	3/19/2015 8:39 PM	
Sulfate	64.5	5.00	25.0	NA		mg/L	3/19/2015 8:39 PM	

REI Consultants, Inc. - Analytical Report

WO#: 1503N56

Date Reported: 4/2/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/19/2015 10:40:00 AM
Project:	RALEIGH CO LF / N. BECKLEY WWTP	**Date Received:**	3/19/2015
Lab ID:	1503N56-01A	**Matrix:**	Leachate
Client Sample ID:	RALEIGH CO LF. LF LEACHATE	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	ND	0.02	0.10	NA		mg/L	3/19/2015 8:39 PM	
Nitrogen, Nitrite	3.00	0.25	2.50	NA		mg/L	3/19/2015 8:39 PM	
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	210	5.00	25.0	NA		mg/L	3/27/2015 12:43 PM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	2.3	2.0	5.0	NA	J	mg/L	3/23/2015 4:00 PM	PA/VA

Notes:

Sample acidity or alkalinity exceeded the added preservative, so that the required preservation pH was not achieved.

CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	0.005	0.005	0.020	NA	J	mg/L	3/20/2015 11:41 AM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	224	16.0	40.0	NA		mg/L	3/25/2015 4:41 PM	PA/VA

Notes:

Sample acidity or alkalinity exceeded the added preservative, so that the required preservation pH was not achieved.

CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	5,400	NA	NA	NA		µmhos/cm	3/23/2015 2:00 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	2,860	10	20	NA		mg/L	3/20/2015 5:00 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	138	4.0	20.0	NA		mg/L	3/20/2015 4:45 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	211	1.0	10	NA		mg/L	3/20/2015 8:45 AM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	1,950	4.0	40.0	NA		mg/L	3/20/2015 8:45 AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503N56

Date Reported: 4/2/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/19/2015 10:40:00 AM
Project:	RALEIGH CO LF / N. BECKLEY WWTP	**Date Received:**	3/19/2015
Lab ID:	1503N56-01A	**Matrix:**	Leachate
Client Sample ID:	RALEIGH CO LF. LF LEACHATE	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	7.55	NA	NA	NA		SU	3/20/2015 8:45 AM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1503N56

Date Reported: 4/2/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/19/2015 10:40:00 AM
Project:	RALEIGH CO LF / N. BECKLEY WWTP	**Date Received:**	3/19/2015
Lab ID:	1503N56-01B	**Matrix:**	Leachate
Client Sample ID:	RALEIGH CO LF. LF LEACHATE	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	0.770	0.010	0.100	NA		mg/L	3/25/2015 3:16 PM	PA/VA
Manganese	2.97	0.002	0.100	NA		mg/L	3/25/2015 3:16 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503N56

Date Reported: 4/2/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/19/2015 11:35:00 AM
Project:	RALEIGH CO LF / N. BECKLEY WWTP	**Date Received:**	3/19/2015
Lab ID:	1503N56-02A	**Matrix:**	Liquid
Client Sample ID:	N. BECKLEY WWTP EFF	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Aluminum	0.031	0.005	0.100	NA	J	mg/L	3/25/2015 3:19 PM	PA/VA
Antimony	ND	0.020	0.200	NA		mg/L	3/25/2015 3:19 PM	PA/VA
Arsenic	ND	0.020	0.200	NA		mg/L	3/25/2015 3:19 PM	PA/VA
Barium	0.085	0.002	0.100	NA	J	mg/L	3/25/2015 3:19 PM	PA/VA
Beryllium	ND	0.001	0.010	NA		mg/L	3/25/2015 3:19 PM	PA/VA
Boron	0.279	0.020	0.100	NA		mg/L	3/25/2015 3:19 PM	PA/VA
Cadmium	ND	0.001	0.020	NA		mg/L	3/25/2015 3:19 PM	PA/VA
Chromium	ND	0.005	0.100	NA		mg/L	3/25/2015 3:19 PM	PA/VA
Copper	ND	0.005	0.100	NA		mg/L	3/25/2015 3:19 PM	PA/VA
Iron	0.205	0.010	0.100	NA		mg/L	3/25/2015 3:19 PM	PA/VA
Lead	ND	0.010	0.200	NA		mg/L	3/25/2015 3:19 PM	PA/VA
Lithium	ND	0.020	0.100	NA		mg/L	3/25/2015 1:55 PM	
Manganese	0.016	0.002	0.100	NA	J	mg/L	3/25/2015 3:19 PM	PA/VA
Nickel	0.008	0.005	0.100	NA	J	mg/L	3/25/2015 3:19 PM	PA/VA
Selenium	ND	0.020	0.200	NA		mg/L	3/25/2015 3:19 PM	PA/VA
Silver	ND	0.004	0.050	NA		mg/L	3/25/2015 3:19 PM	PA/VA
Strontium	0.437	0.001	0.010	NA		mg/L	3/25/2015 1:55 PM	PA
Vanadium	ND	0.005	0.100	NA		mg/L	3/25/2015 3:19 PM	PA/VA
Zinc	0.032	0.003	0.050	NA	J	mg/L	3/25/2015 3:19 PM	PA/VA
MERCURY, Total E245.1			**Method: EPA 245.1, Rev. 3.0 (1994)**				**Analyst: CR**	
Mercury	ND	0.0001	0.0010	NA		mg/L	3/23/2015 11:46 AM	PA/VA
SEMIVOLATILE ORGANIC COMPOUNDS			**Method: SW8270D (2007)**				**Analyst: JD**	
1,4-Dinitrobenzene	ND	NA	0.0105	NA		mg/L	3/24/2015 10:57 PM	
1,4-Napthoquinone	ND	NA	0.0105	NA		mg/L	3/27/2015 6:13 PM	
4-Nitroquinoline-1-oxide	ND	NA	0.0525	NA		mg/L	3/27/2015 6:13 PM	
Pentachloronitrobenzene	ND	NA	0.0105	NA		mg/L	3/27/2015 6:13 PM	
Bis(2-ethylhexyl)phthalate	ND	0.0052	0.0105	NA		mg/L	3/24/2015 10:57 PM	PA/VA
Butyl benzyl phthalate	ND	0.0052	0.0105	NA		mg/L	3/24/2015 10:57 PM	PA/VA
Di-n-butyl phthalate	ND	0.0052	0.0105	NA		mg/L	3/24/2015 10:57 PM	PA/VA
Diethyl phthalate	ND	0.0021	0.0105	NA		mg/L	3/24/2015 10:57 PM	PA/VA
Dimethyl phthalate	ND	0.0021	0.0105	NA		mg/L	3/24/2015 10:57 PM	PA/VA
2,4-Dinitrotoluene	ND	0.0021	0.0105	NA		mg/L	3/24/2015 10:57 PM	PA/VA
2,6-Dinitrotoluene	ND	0.0021	0.0105	NA		mg/L	3/24/2015 10:57 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503N56

Date Reported: 4/2/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/19/2015 11:35:00 AM
Project:	RALEIGH CO LF / N. BECKLEY WWTP	**Date Received:**	3/19/2015
Lab ID:	1503N56-02A	**Matrix:**	Liquid
Client Sample ID:	N. BECKLEY WWTP EFF	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
Di-n-octyl phthalate	ND	0.0052	0.0105	NA		mg/L	3/24/2015 10:57 PM	PA/VA
Fluoranthene	ND	0.0021	0.0105	NA		mg/L	3/24/2015 10:57 PM	PA/VA
Nitrobenzene	ND	0.0021	0.0105	NA		mg/L	3/24/2015 10:57 PM	PA/VA
Surr: 2-Fluorophenol	40.9	NA	32.9-110	NA		%REC	3/24/2015 10:57 PM	
Surr: Phenol-d5	31.6	NA	25.8-110	NA		%REC	3/24/2015 10:57 PM	
Surr: 2,4,6-Tribromophenol	91.0	NA	63.8-110	NA		%REC	3/24/2015 10:57 PM	
Surr: Nitrobenzene-d5	101	NA	61.8-110	NA		%REC	3/24/2015 10:57 PM	
Surr: 2-Fluorobiphenyl	87.2	NA	58.6-110	NA		%REC	3/24/2015 10:57 PM	
Surr: 4-Terphenyl-d14	77.5	NA	55.1-110	NA		%REC	3/24/2015 10:57 PM	
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	3/26/2015 1:30 AM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	3/26/2015 1:30 AM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	3/26/2015 1:30 AM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/26/2015 1:30 AM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/26/2015 1:30 AM	PA/VA
1,4-Dichlorobenzene	0.800	0.500	1.00	NA	J	µg/L	3/26/2015 1:30 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	107	NA	68.7-129	NA		%REC	3/26/2015 1:30 AM	
Surr: 4-Bromofluorobenzene	104	NA	71.8-127	NA		%REC	3/26/2015 1:30 AM	
Surr: Dibromofluoromethane	95.8	NA	74.3-124	NA		%REC	3/26/2015 1:30 AM	
Surr: Toluene-d8	91.4	NA	71.4-129	NA		%REC	3/26/2015 1:30 AM	
BOD, 5 Day, 20°C			**Method: SM5210 B-2001**				**Analyst: CB**	
Biochemical Oxygen Demand	10	2	5	NA		mg/L	3/19/2015 4:24 PM	PA/VA
Chemical Oxygen Demand			**Method: EPA 410.4, Rev. 2 (1993)**				**Analyst: SF**	
Chemical Oxygen Demand	49	4	10	NA		mg/L	3/20/2015 9:00 AM	PA/VA
HEXAVALENT CHROMIUM BY IC			**Method: EPA 218.6, Rev. 3.3 (1994)**				**Analyst: CF**	
Chromium (VI)	ND	0.0003	0.0010	NA		mg/L	3/23/2015 4:36 PM	
ANIONS by ION CHROMATOGRAPHY			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Chloride	128	1.00	10.0	NA		mg/L	3/19/2015 9:00 PM	
Fluoride	0.37	0.05	0.20	NA		mg/L	3/19/2015 9:00 PM	
Sulfate	52.2	1.00	5.00	NA		mg/L	3/19/2015 9:00 PM	

REI Consultants, Inc. - Analytical Report

WO#: 1503N56

Date Reported: 4/2/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/19/2015 11:35:00 AM
Project:	RALEIGH CO LF / N. BECKLEY WWTP	**Date Received:**	3/19/2015
Lab ID:	1503N56-02A	**Matrix:**	Liquid
Client Sample ID:	N. BECKLEY WWTP EFF	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
ANIONS by ION CHROMATOGRAPHY-48 HOUR			**Method: EPA 300.0, Rev.2.1 (1993)**				**Analyst: CF**	
Nitrogen, Nitrate	1.62	0.02	0.10	NA		mg/L	3/19/2015 9:00 PM	
Nitrogen, Nitrite	ND	0.05	0.50	NA		mg/L	3/19/2015 9:00 PM	
TOTAL KJELDAHL NITROGEN (TKN)			**Method: EPA 351.2, Rev. 2.0 (1993)**				**Analyst: JH**	
Nitrogen, Kjeldahl, Total	24.4	0.80	4.00	NA		mg/L	3/27/2015 1:39 PM	PA/VA
OIL and GREASE			**Method: EPA 1664 Rev. A**				**Analyst: CC**	
Oil & Grease	3.2	2.0	5.0	NA	J	mg/L	3/23/2015 4:00 PM	PA/VA
CYANIDE, Free			**Method: SM4500-CN I-1997**				**Analyst: JH**	
Cyanide, Free	ND	0.005	0.020	NA		mg/L	3/20/2015 11:42 AM	
AMMONIA NITROGEN			**Method: EPA 350.1, Rev.2. (1993)**				**Analyst: JH**	
Nitrogen, Ammonia (As N)	4.21	0.16	0.40	NA		mg/L	3/25/2015 4:44 PM	PA/VA
CONDUCTIVITY			**Method: SM2510 B - 1997**				**Analyst: KY**	
Specific Conductivity	965	NA	NA	NA		µmhos/cm	3/23/2015 2:00 PM	PA/VA
TOTAL DISSOLVED SOLIDS			**Method: SM2540 C-1997**				**Analyst: KY**	
Total Dissolved Solids	524	5	10	NA		mg/L	3/20/2015 5:00 PM	PA/VA
TOTAL SUSPENDED SOLIDS			**Method: SM2540 D-1997**				**Analyst: KY**	
Total Suspended Solids	5.5	1.0	5.0	NA		mg/L	3/20/2015 4:45 PM	PA/VA
ACIDITY			**Method: SM2310 B-1997**				**Analyst: DSD**	
Acidity, Total	22.6	1.0	10	NA		mg/L	3/20/2015 8:45 AM	PA/VA
ALKALINITY			**Method: SM2320 B-1997**				**Analyst: DSD**	
Alkalinity, Total (As CaCO3)	138	1.0	10	NA		mg/L	3/20/2015 8:45 AM	PA/VA
pH - LAB TEST, HOLD TIME EXPIRED			**Method: SM4500-H+-B-2000**				**Analyst: DSD**	
pH	6.99	NA	NA	NA		SU	3/20/2015 8:45 AM	PA

REI Consultants, Inc. - Analytical Report

WO#: 1503N56

Date Reported: 4/2/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/19/2015 11:35:00 AM
Project:	RALEIGH CO LF / N. BECKLEY WWTP	**Date Received:**	3/19/2015
Lab ID:	1503N56-02B	**Matrix:**	Liquid
Client Sample ID:	N. BECKLEY WWTP EFF	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
DISSOLVED METALS BY ICP			**Method: EPA 200.7 Rev. 4.4 (1994)**				**Analyst: CGW**	
Iron	0.064	0.010	0.100	NA	J	mg/L	3/25/2015 3:23 PM	PA/VA
Manganese	0.008	0.002	0.100	NA	J	mg/L	3/25/2015 3:23 PM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1503N56

Date Reported: 4/2/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/19/2015 12:00:00 AM
Project:	RALEIGH CO LF / N. BECKLEY WWTP	**Date Received:**	3/19/2015
Lab ID:	1503N56-03A	**Matrix:**	Trip Blank
Client Sample ID:	TRIPBLANK	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
VOLATILE ORGANIC COMPOUNDS-8260			**Method: SW8260B (1996)**				**Analyst: JM**	
Benzene	ND	0.500	1.00	NA		µg/L	3/26/2015 2:03 AM	PA/VA
Chlorobenzene	ND	0.500	1.00	NA		µg/L	3/26/2015 2:03 AM	PA/VA
Dibromochloromethane	ND	0.500	1.00	NA		µg/L	3/26/2015 2:03 AM	PA/VA
1,2-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/26/2015 2:03 AM	PA/VA
1,3-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/26/2015 2:03 AM	PA/VA
1,4-Dichlorobenzene	ND	0.500	1.00	NA		µg/L	3/26/2015 2:03 AM	PA/VA
Surr: 1,2-Dichloroethane-d4	98.1	NA	68.7-129	NA		%REC	3/26/2015 2:03 AM	
Surr: 4-Bromofluorobenzene	115	NA	71.8-127	NA		%REC	3/26/2015 2:03 AM	
Surr: Dibromofluoromethane	101	NA	74.3-124	NA		%REC	3/26/2015 2:03 AM	
Surr: Toluene-d8	99.9	NA	71.4-129	NA		%REC	3/26/2015 2:03 AM	

REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Monday, April 27, 2015

GEORGE CARICO
MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE
1 JOHN MARSHALL DRIVE
HUNTINGTON, WV 25755-2585

TEL: (304) 696-6042
FAX:

RE: RALEIGH CO. LF LEACHATE / N. BECKLEY WWTP EFF

Work Order #: 1503N68

Dear GEORGE CARICO:

REI Consultants, Inc. received 2 sample(s) on 3/19/2015 for the analyses presented in the following report.

Sincerely,

Kathy Berry

Kathy Berry

REI Consultants, Inc. - Case Narrative

WO#: 1503N68

Date Reported: 4/27/2015

Client: MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE

Project: RALEIGH CO. LF LEACHATE / N. BECKLEY WWTP EFF

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

DEFINITIONS:
MCL: Maximum Contaminant Level
MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.
Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).
NA: Not Applicable
ND: Not Detected at the PQL or MDL
PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.
Qual: Qualifier that applies to the analyte reported.
TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.
Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:
X: Reported value exceeds required MCL
B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL
E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.
H: Holding time for preparation or analysis has been exceeded.
J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.
S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:
Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148
Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839
Roanoke, VA: VADCLS(VELAP) 460150
Verona, VA: VADCLS(VELAP) 460151
Ashland, KY: KYDEP 00094, WVDEP 389
Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1503N68

Date Reported: 4/27/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/19/2015 10:40:00 AM
Project:	RALEIGH CO. LF LEACHATE / N. BECKLEY WWTP EFF	**Date Received:**	3/19/2015
Lab ID:	1503N68-01A	**Matrix:**	Leachate
Client Sample ID:	RALEIGH CO. LF LEACHATE	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

REI Consultants, Inc. - Analytical Report

WO#: 1503N68

Date Reported: 4/27/2015

Client:	MARSHALL UNIVERSITY CENTER. FOR ENV. SCIENCE	**Collection Date:**	3/19/2015 11:35:00 AM
Project:	RALEIGH CO. LF LEACHATE / N. BECKLEY WWTP EFF	**Date Received:**	3/19/2015
Lab ID:	1503N68-02A	**Matrix:**	Liquid
Client Sample ID:	N. BECKLEY WWTP EFF	**Site ID:**	

Analysis	Result	MDL	PQL	MCL	Qual	Units	Date Analyzed	NELAP
GROSS ALPHA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Alpha	see attached	NA	NA	NA				
GROSS BETA			**Method: EPA 900.0**				**Analyst: Sub**	
Gross Beta	see attached	NA	NA	NA				
RADIUM-226			**Method: EPA 903.1**				**Analyst: Sub**	
Radium-226	see attached	NA	NA	NA				
RADIUM-228			**Method: EPA 904.0**				**Analyst: Sub**	
Radium-228	see attached	NA	NA	NA				
STRONTIUM-90			**Method: EPA 905.0**				**Analyst: Sub**	
Strontium-90	see attached	NA	NA	NA				

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

April 09, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1503N68
Pace Project No.: 30143866

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on March 25, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1503N68
Pace Project No.: 30143866

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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Greensburg, PA 15601
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SAMPLE SUMMARY

Project: 1503N68
Pace Project No.: 30143866

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30143866001	**1503N68-01A**	Water	03/19/15 10:40	03/25/15 14:45
30143866002	**1503N68-02A**	Water	03/19/15 11:35	03/25/15 14:45

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SAMPLE ANALYTE COUNT

Project: 1503N68
Pace Project No.: 30143866

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30143866001	**1503N68-01A**	SM 7110C	LAL	1
		EPA 900.0	FCC	1
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1
30143866002	**1503N68-02A**	SM 7110C	LAL	1
		EPA 900.0	FCC	1
		EPA 903.1	JC2	1
		EPA 904.0	JLW	1
		ASTM D5811-95	LAL	1

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PROJECT NARRATIVE

Project: 1503N68
Pace Project No.: 30143866

Method: **SM 7110C**
Description: 7110C Gross Alpha
Client: REI Consultants, Inc.
Date: April 09, 2015

General Information:
2 samples were analyzed for SM 7110C. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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(724)850-5600

PROJECT NARRATIVE

Project: 1503N68
Pace Project No.: 30143866

Method: **EPA 900.0**
Description: 900.0 Gross Alpha/Beta
Client: REI Consultants, Inc.
Date: April 09, 2015

General Information:
2 samples were analyzed for EPA 900.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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(724)850-5600

PROJECT NARRATIVE

Project: 1503N68
Pace Project No.: 30143866

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: REI Consultants, Inc.
Date: April 09, 2015

General Information:
2 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 1503N68
Pace Project No.: 30143866

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: REI Consultants, Inc.
Date: April 09, 2015

General Information:
2 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 1503N68
Pace Project No.: 30143866

Method: **ASTM D5811-95**
Description: ASTM D5811 Sr 89/90 Eichrom
Client: REI Consultants, Inc.
Date: April 09, 2015

General Information:
2 samples were analyzed for ASTM D5811-95. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: RADC/23846

N2: The lab does not hold TNI accreditation for this parameter.

- 1503N68-01A (Lab ID: 30143866001)
  - Strontium-90
- 1503N68-02A (Lab ID: 30143866002)
  - Strontium-90
- BLANK (Lab ID: 870159)
  - Strontium-90

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1503N68
Pace Project No.: 30143866

Sample: 1503N68-01A **Lab ID: 30143866001** Collected: 03/19/15 10:40 Received: 03/25/15 14:45 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	SM 7110C	**2.61 ± 1.37 (1.96) C:NA T:NA**	pCi/L	04/07/15 16:43	12587-46-1	
Gross Beta	EPA 900.0	**121 ± 22.6 (5.34) C:NA T:NA**	pCi/L	04/03/15 21:24	12587-47-2	
Radium-226	EPA 903.1	**10.6 ± 10.7 (14.0) C:NA T:82%**	pCi/L	04/07/15 14:45	13982-63-3	
Radium-228	EPA 904.0	**10.2 ± 10.6 (20.9) C:64% T:63%**	pCi/L	04/08/15 10:48	15262-20-1	
Strontium-90	ASTM D5811-95	**-0.275 ± 0.764 (1.33) C:99% T:NA**	pCi/L	03/28/15 11:45	10098-97-2	N2

Sample: 1503N68-02A **Lab ID: 30143866002** Collected: 03/19/15 11:35 Received: 03/25/15 14:45 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	SM 7110C	**-0.722 ± 1.04 (2.18) C:NA T:NA**	pCi/L	04/07/15 16:43	12587-46-1	
Gross Beta	EPA 900.0	**8.47 ± 2.23 (2.60) C:NA T:NA**	pCi/L	04/03/15 21:25	12587-47-2	
Radium-226	EPA 903.1	**1.09 ± 0.831 (0.967) C:NA T:81%**	pCi/L	04/07/15 14:57	13982-63-3	
Radium-228	EPA 904.0	**1.12 ± 0.603 (1.06) C:61% T:68%**	pCi/L	04/08/15 13:55	15262-20-1	
Strontium-90	ASTM D5811-95	**-0.322 ± 0.796 (1.39) C:94% T:NA**	pCi/L	03/28/15 11:45	10098-97-2	N2

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503N68
Pace Project No.: 30143866

QC Batch: RADC/23972 | Analysis Method: SM 7110C
QC Batch Method: SM 7110C | Analysis Description: 7110C Gross Alpha
Associated Lab Samples: 30143866001, 30143866002

METHOD BLANK: 875769 | Matrix: Water
Associated Lab Samples: 30143866001, 30143866002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	-0.125 ± 0.495 (1.64) C:NA T:NA	pCi/L	04/07/15 15:01	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503N68
Pace Project No.: 30143866

QC Batch: RADC/23846 | Analysis Method: ASTM D5811-95
QC Batch Method: ASTM D5811-95 | Analysis Description: ASTM D5811 Sr 89/90 Eichrom
Associated Lab Samples: 30143866001, 30143866002

METHOD BLANK: 870159 | Matrix: Water
Associated Lab Samples: 30143866001, 30143866002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Strontium-90	-0.117 ± 0.329 (0.776) C:95% T:NA	pCi/L	03/28/15 11:44	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503N68
Pace Project No.: 30143866

QC Batch: RADC/23867 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 30143866001, 30143866002

METHOD BLANK: 870393 | Matrix: Water
Associated Lab Samples: 30143866001, 30143866002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.303 ± 0.545 (0.960) C:NA T:88%	pCi/L	04/07/15 13:20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503N68
Pace Project No.: 30143866

QC Batch: RADC/23931 | Analysis Method: EPA 900.0
QC Batch Method: EPA 900.0 | Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30143866001, 30143866002

METHOD BLANK: 874033 | Matrix: Water
Associated Lab Samples: 30143866001, 30143866002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Beta	0.732 ± 1.06 (2.32) C:NA T:NA	pCi/L	04/03/15 07:51	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503N68
Pace Project No.: 30143866

QC Batch: RADC/23868 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 30143866001, 30143866002

METHOD BLANK: 870398 | Matrix: Water
Associated Lab Samples: 30143866001, 30143866002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.343 ± 0.333 (0.683) C:75% T:92%	pCi/L	04/08/15 11:11	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 1503N68
Pace Project No.: 30143866

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

N2 The lab does not hold TNI accreditation for this parameter.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3458 | PAGE: 1 | OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUB CONTRATOR: PACE_PA COMPANY: PACE ANALYTICAL SERVIC
ADDRESS: 1638 ROSEYTOWN ROAD
CITY, STATE, ZIP: GREENSBURG, PA 15601
PHONE: (724) 850-5600 FAX:
ACCOUNT #: 050719EVF1 EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:
State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. Results to Kathy Berry kberry@reiclabs.com. Thanks

ANALYTICAL PARAMETERS

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	GROSS_ALPHA_SUB (EPA 900.0)	GROSS_BETA_SUB (EPA 900.0)	RADIUM_226_SUB (EPA 903.1)	RADIUM_228_SUB (EPA 904.0)	STRONTIUM_90_SUB (EPA 905.0)	COMMENTS
						*	2	2	2	2	2	30143866
1	1503N68-01A	RALEIGH CO. LF LEACHATE		Leachate	3/19/2015 10:40:00 AM	1	√	√	√	√	√	001
2	1503N68-02A	N. BECKLEY WWTP EFF		Liquid	3/19/2015 11:35:00 AM	1	√	√	√	√	√	002

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS:

Relinquished By:	Date: 3-19-15	Time: 1600	Received By: UPS	Date:	Time:
Relinquished By: UPS	Date: 3/20/15	Time: 1215	Received By: Cliff Mt Joy Pace	Date: 3/25/15	Time: 1235
Relinquished By: Cliff Mt Joy Pace	Date: 3/25/15	Time: 2:45	Received By: Pace	Date: 3/25/15	Time: 1445

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:
☑ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples _____ °C Attempt to Cool ? _____
Comments: _____

Sample Condition Upon Receipt

Pace Analytical

Client Name: RETC

Project # 30143866

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☒ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no **Biological Tissue is Frozen:** Yes No

Packing Material: Bubble Wrap ____ Bubble Bags ____ None ____ Other _____

Thermometer Used NA **Type of Ice:** Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.: NA °C **Correction Factor:** ____ °C **Final Temp:** ____ °C

Date and initials of person examining contents: AML 3-25-15

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☒No	☐N/A	4.
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes	☒No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☒No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11.
Sample Labels match COC:	☒Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT				
All containers needing preservation have been checked.	☒Yes	☐No	☐N/A	13. added 6mL HNO_3 to all 3 bottles for sample 001 3-25-15 1530 PHC2
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☒No	☐N/A	
exceptions: VOA, coliform, TOC, O&G, Phenols	☐Yes	☒No		Initial when completed AML / Lot # of added preservative 0115-01167
Samples checked for dechlorination:	☐Yes	☐No	☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☒N/A	15.
Trip Blank Present:	☐Yes	☐No	☒N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carlos Santiago **Date:** 3/25/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30143866

Client Name: REIC

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other	Other
001	WT																		3					
002	WT																		3					

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

March 23, 2015

Ms. Kathy Berry
REI Consultants, Inc.
225 Industrial Park Drive
PO Box 286
Beaver, WV 25813

RE: Project: 1503N68
Pace Project No.: 30143386

Dear Ms. Berry:
Enclosed are the analytical results for sample(s) received by the laboratory on March 20, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carin A. Ferris

Carin Ferris
carin.ferris@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
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Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 1503N68
Pace Project No.: 30143386

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: PA014572014-4
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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SAMPLE SUMMARY

Project: 1503N68
Pace Project No.: 30143386

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30143386001	**1503N68-01A**	Water	03/19/15 10:40	03/20/15 09:45
30143386002	**1503N68-02A**	Water	03/19/15 11:35	03/20/15 09:45

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SAMPLE ANALYTE COUNT

Project: 1503N68
Pace Project No.: 30143386

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30143386001	**1503N68-01A**	SM 7500Rn-B	FCC	1
30143386002	**1503N68-02A**	SM 7500Rn-B	FCC	1

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PROJECT NARRATIVE

Project: 1503N68
Pace Project No.: 30143386

Method: **SM 7500Rn-B**
Description: 7500RnB Radon
Client: REI Consultants, Inc.
Date: March 23, 2015

General Information:
2 samples were analyzed for SM 7500Rn-B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1503N68
Pace Project No.: 30143386

Sample: 1503N68-01A **Lab ID: 30143386001** Collected: 03/19/15 10:40 Received: 03/20/15 09:45 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**-37.8 ± 24.2 (44.1)** **C:NA T:NA**	pCi/L	03/21/15 03:13	10043-92-2	

Sample: 1503N68-02A **Lab ID: 30143386002** Collected: 03/19/15 11:35 Received: 03/20/15 09:45 Matrix: Water
PWS: Site ID: Sample Type:
Comments: • Sample Acceptance Policy Waiver on file from the client.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radon	SM 7500Rn-B	**-7.9 ± 24.8 (43.9)** **C:NA T:NA**	pCi/L	03/21/15 03:46	10043-92-2	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1503N68
Pace Project No.: 30143386

QC Batch: RADC/23788 | Analysis Method: SM 7500Rn-B
QC Batch Method: SM 7500Rn-B | Analysis Description: 7500Rn B Radon
Associated Lab Samples: 30143386001, 30143386002

METHOD BLANK: 867184 | Matrix: Water
Associated Lab Samples: 30143386001, 30143386002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radon	13.5 ± 19.4 (32.4) C:NA T:NA	pCi/L	03/21/15 00:28	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: 1503N68
Pace Project No.: 30143386

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REIC

Improving the environment, one client at a time...

CHAIN OF CUSTODY RECORD

COC ID: 3457	PAGE: 1	OF: 1

ADDRESS
REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: (304) 255-2500
FAX: (304) 255-2572
Website: www.reiclabs.com

Please Include Email Address of Report Recipient Whenever Possible!!!

SUBCONTRATOR: PACE_PA
COMPANY: PACE ANALYTICAL SERVIC
ADDRESS: 1638 ROSEYTOWN ROAD
CITY, STATE, ZIP: GREENSBURG, PA 15601
PHONE: (724) 850-5600
FAX:
ACCOUNT #: 050719EVF1
EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:
State Code: WV Please use SampleID as purchase order number.
After analysis, the samples do not need to be returned and can be disposed per your standard laboratory practices. Results to Kathy Berry kberry@reiclabs.com. Thanks

ANALYTICAL PARAMETERS

* Preservation Codes:
0 None
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide/ Sodium Arsenite
6 Sodium Hydroxide
7 Ascorbic Acid
8 Sodium Sulfite/HCL
9 Potassium Dihydrogen Citrate
10 Bromium Chloride

COMMENTS: 30143386

ITEM	SAMPLE ID	Client Sample ID	Bottle Type	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	RADON (913.0)	COMMENTS
						*	0	
1	1503N68-01A	RALEIGH CO. LF LEACHATE	.	Leachate	3/19/2015 10:40:00 AM	1	√	001
2	1503N68-02A	N. BECKLEY WWTP EFF	.	Liquid	3/19/2015 11:35:00 AM	1	√	002

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[signature]	3-19-15	1600	UPS		
UPS			[signature]	3-2015	0945

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

Note: RUSH requests will incur surcharges!

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☑ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples _____ °C Attempt to Cool ? _____
Comments: _____

Sample Condition Upon Receipt

Pace Analytical

Client Name: REIC

Project # 30143386

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 1Z 26X 713137526 836

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no **Biological Tissue is Frozen:** Yes No

Packing Material: Bubble Wrap X Bubble Bags X None ___ Other _____

Thermometer Used #7 **Type of Ice:** Wet Blue None ☐ Samples on Ice, cooling process has begun

Cooler Temp.: Observed Temp.: 4.7 °C **Correction Factor:** -0.1 °C **Final Temp:** 4.6 °C

Date and Initials of person examining contents: SRA 3-20-15

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☒No	☐N/A	4.
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☒Yes	☐No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A	7.
Sufficient Volume:	☒Yes	☐No	☐N/A	8.
Correct Containers Used:	☒Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☒No	☐N/A	
Containers Intact:	☒Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A	11.
Sample Labels match COC:	☒Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT				
All containers needing preservation have been checked.	☐Yes	☐No	☒N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☒N/A	
exceptions: VOA, coliform, TOC, O&G, Phenols	☐Yes	☒No		Initial when completed SRA / Lot # of added preservative
Samples checked for dechlorination:	☐Yes	☐No	☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☒No	☐N/A	15.
Trip Blank Present:	☐Yes	☒No	☐N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Carrie Serra **Date:** 3/20/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30143386

Client Name: REIC

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other Radon	Other
001	wt																						3	
002	t																						4	

SCURF Back (C016-4 15May2012).xls