

May 28, 2014

Cheryl Elswick
Waste Management
625 Cherrington Parkway
Coraopolis, PA 15108

RE: Project: Range Cowden
Pace Project No.: 30120930

Dear Cheryl Elswick:

Enclosed are the analytical results for sample(s) received by the laboratory on May 20, 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,



Timothy Reed
timothy.reed@pacelabs.com
Project Manager

Enclosures

cc: Vicki Stanga, Waste Management



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Range Cowden

Pace Project No.: 30120930

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

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Range Cowden

Pace Project No.: 30120930

Method: EPA 6010B

Description: 6010 MET ICP, TCLP

Client: Waste Management

Date: May 28, 2014

General Information:

1 sample was analyzed for EPA 6010B. 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.

Sample Preparation:

The samples were prepared in accordance with EPA 3005A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements 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.

QC Batch: MPRP/13050

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30120897003,30120930001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 733497)
 - Selenium
- MS (Lab ID: 733500)
 - Barium
 - Strontium
- MSD (Lab ID: 733498)
 - Selenium

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Range Cowden

Pace Project No.: 30120930

Method: EPA 7470A

Description: 7470 Mercury, TCLP

Client: Waste Management

Date: May 28, 2014

General Information:

1 sample was analyzed for EPA 7470A. 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.

Sample Preparation:

The samples were prepared in accordance with EPA 7470A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements 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.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Range Cowden
Pace Project No.: 30120930

Method: EPA 8270C
Description: 8270 MSSV TCLP
Client: Waste Management
Date: May 28, 2014

General Information:

1 sample was analyzed for EPA 8270C. 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.

Sample Preparation:

The samples were prepared in accordance with EPA 3535A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

QC Batch: OEXT/19369

S6: Surrogate recovery outside control limits. Data accepted based on valid recovery of applicable surrogates (no analytes associated with this surrogate)

- MS (Lab ID: 734884)
 - Terphenyl-d14 (S)
- MSD (Lab ID: 734885)
 - Terphenyl-d14 (S)

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.

QC Batch: OEXT/19369

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30121107001

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MSD (Lab ID: 734885)
 - Pyridine

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PROJECT NARRATIVE

Project: Range Cowden

Pace Project No.: 30120930

Method: EPA 8270C

Description: 8270 MSSV TCLP

Client: Waste Management

Date: May 28, 2014

Additional Comments:

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PROJECT NARRATIVE

Project: Range Cowden
Pace Project No.: 30120930

Method: EPA 8260B
Description: 8260 MSV TCLP
Client: Waste Management
Date: May 28, 2014

General Information:

1 sample was analyzed for EPA 8260B. 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.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits 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: Range Cowden

Pace Project No.: 30120930

Method: EPA 900.0

Description: 900.0 Gross Alpha/Beta

Client: Waste Management

Date: May 28, 2014

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:

Analyte Comments:

QC Batch: RADC/19904

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

- BLANK (Lab ID: 734919)
 - Gross Alpha
 - Gross Beta
- Range Cowden (Lab ID: 30120930001)
 - Gross Alpha
 - Gross Beta

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PROJECT NARRATIVE

Project: Range Cowden

Pace Project No.: 30120930

Method: EPA 901.1

Description: 901.1 Gamma Spec

Client: Waste Management

Date: May 28, 2014

General Information:

1 sample was analyzed for EPA 901.1. 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: Range Cowden
Pace Project No.: 30120930

Method: EPA 1010
Description: 1010 Flashpoint,Closed Cup
Client: Waste Management
Date: May 28, 2014

General Information:

1 sample was analyzed for EPA 1010. 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.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Range Cowden

Pace Project No.: 30120930

Method: EPA 160.4

Description: 160.4 Total Volatile Solids

Client: Waste Management

Date: May 28, 2014

General Information:

1 sample was analyzed for EPA 160.4. 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.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Range Cowden

Pace Project No.: 30120930

Method: EPA 9045C

Description: 9045 pH Soil

Client: Waste Management

Date: May 28, 2014

General Information:

1 sample was analyzed for EPA 9045C. 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.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Range Cowden

Pace Project No.: 30120930

Method: EPA 9071B

Description: 9071 Oil and Grease/TPH

Client: Waste Management

Date: May 28, 2014

General Information:

1 sample was analyzed for EPA 9071B. 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.

Sample Preparation:

The samples were prepared in accordance with EPA 9071B 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.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Range Cowden

Pace Project No.: 30120930

Method: EPA 9095A

Description: 9095 Paint Filter Liquid Test

Client: Waste Management

Date: May 28, 2014

General Information:

1 sample was analyzed for EPA 9095A. 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.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Range Cowden

Pace Project No.: 30120930

Method: SM 4500-CN-E

Description: 4500CNE Cyanide, Total

Client: Waste Management

Date: May 28, 2014

General Information:

1 sample was analyzed for SM 4500-CN-E. 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.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements 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.

QC Batch: WETA/16421

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 30120520001

M2: Matrix spike recovery was below QC limits due to sample dilution. Data acceptance based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 733887)
 - Cyanide
- MSD (Lab ID: 733886)
 - Cyanide

Additional Comments:

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PROJECT NARRATIVE

Project: Range Cowden

Pace Project No.: 30120930

Method: SW-846 7.3.4.2

Description: 735S Reactive Sulfide

Client: Waste Management

Date: May 28, 2014

General Information:

1 sample was analyzed for SW-846 7.3.4.2. 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.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements 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.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Range Cowden

Pace Project No.: 30120930

Sample: Range Cowden **Lab ID: 30120930001** Collected: 05/19/14 04:30 Received: 05/20/14 12:15 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
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6010 MET ICP, TCLP

Analytical Method: EPA 6010B Preparation Method: EPA 3005A
Leachate Method/Date: EPA 1311; 05/21/14 14:50 Initial pH: 7.9; Final pH: 5.61

Arsenic	ND	mg/L	0.050	1	05/22/14 11:28	05/22/14 17:34	7440-38-2	
Barium	12.6	mg/L	1.0	1	05/22/14 11:28	05/22/14 17:34	7440-39-3	
Cadmium	ND	mg/L	0.050	1	05/22/14 11:28	05/22/14 17:34	7440-43-9	
Chromium	ND	mg/L	0.050	1	05/22/14 11:28	05/22/14 17:34	7440-47-3	
Copper	ND	mg/L	0.050	1	05/22/14 11:28	05/22/14 17:34	7440-50-8	
Lead	ND	mg/L	0.050	1	05/22/14 11:28	05/22/14 17:34	7439-92-1	
Nickel	ND	mg/L	0.10	1	05/22/14 11:28	05/22/14 17:34	7440-02-0	
Selenium	ND	mg/L	0.10	1	05/22/14 11:28	05/22/14 17:34	7782-49-2	
Silver	ND	mg/L	0.050	1	05/22/14 11:28	05/22/14 17:34	7440-22-4	
Strontium	24.2	mg/L	0.50	10	05/22/14 11:28	05/22/14 18:05	7440-24-6	
Zinc	0.38	mg/L	0.20	1	05/22/14 11:28	05/22/14 17:34	7440-66-6	

7470 Mercury, TCLP

Analytical Method: EPA 7470A Preparation Method: EPA 7470A
Leachate Method/Date: EPA 1311; 05/21/14 14:50 Initial pH: 7.9; Final pH: 5.61

Mercury	ND	ug/L	1.0	1	05/22/14 11:23	05/22/14 15:43	7439-97-6	
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8270 MSSV TCLP

Analytical Method: EPA 8270C Preparation Method: EPA 3535A
Leachate Method/Date: EPA 1311; 05/21/14 14:50 Initial pH: 7.9; Final pH: 5.61

1,4-Dichlorobenzene	ND	ug/L	500	1	05/25/14 12:25	05/27/14 15:51	106-46-7	
2,4-Dinitrotoluene	ND	ug/L	100	1	05/25/14 12:25	05/27/14 15:51	121-14-2	
Hexachloro-1,3-butadiene	ND	ug/L	100	1	05/25/14 12:25	05/27/14 15:51	87-68-3	
Hexachlorobenzene	ND	ug/L	100	1	05/25/14 12:25	05/27/14 15:51	118-74-1	
Hexachloroethane	ND	ug/L	500	1	05/25/14 12:25	05/27/14 15:51	67-72-1	
2-Methylphenol(o-Cresol)	ND	ug/L	2000	1	05/25/14 12:25	05/27/14 15:51	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	2000	1	05/25/14 12:25	05/27/14 15:51		
Nitrobenzene	ND	ug/L	100	1	05/25/14 12:25	05/27/14 15:51	98-95-3	
Pentachlorophenol	ND	ug/L	5000	1	05/25/14 12:25	05/27/14 15:51	87-86-5	
Pyridine	ND	ug/L	500	1	05/25/14 12:25	05/27/14 15:51	110-86-1	
2,4,5-Trichlorophenol	ND	ug/L	5000	1	05/25/14 12:25	05/27/14 15:51	95-95-4	
2,4,6-Trichlorophenol	ND	ug/L	100	1	05/25/14 12:25	05/27/14 15:51	88-06-2	

Surrogates

Nitrobenzene-d5 (S)	78	%	35-114	1	05/25/14 12:25	05/27/14 15:51	4165-60-0	
2-Fluorobiphenyl (S)	66	%	43-116	1	05/25/14 12:25	05/27/14 15:51	321-60-8	
Terphenyl-d14 (S)	38	%	33-141	1	05/25/14 12:25	05/27/14 15:51	1718-51-0	
Phenol-d6 (S)	80	%	10-110	1	05/25/14 12:25	05/27/14 15:51	13127-88-3	
2-Fluorophenol (S)	82	%	21-110	1	05/25/14 12:25	05/27/14 15:51	367-12-4	
2,4,6-Tribromophenol (S)	81	%	10-123	1	05/25/14 12:25	05/27/14 15:51	118-79-6	

8260 MSV TCLP

Analytical Method: EPA 8260B Leachate Method/Date: EPA 1311; 05/27/14 15:28

Benzene	ND	ug/L	50.0	1		05/28/14 15:17	71-43-2	
2-Butanone (MEK)	ND	ug/L	5000	1		05/28/14 15:17	78-93-3	
Carbon tetrachloride	ND	ug/L	50.0	1		05/28/14 15:17	56-23-5	
Chlorobenzene	ND	ug/L	1000	1		05/28/14 15:17	108-90-7	
Chloroform	ND	ug/L	500	1		05/28/14 15:17	67-66-3	
1,2-Dichloroethane	ND	ug/L	50.0	1		05/28/14 15:17	107-06-2	

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ANALYTICAL RESULTS

Project: Range Cowden

Pace Project No.: 30120930

Sample: Range Cowden **Lab ID: 30120930001** Collected: 05/19/14 04:30 Received: 05/20/14 12:15 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV TCLP		Analytical Method: EPA 8260B Leachate Method/Date: EPA 1311; 05/27/14 15:28						
1,1-Dichloroethene	ND	ug/L	50.0	1		05/28/14 15:17	75-35-4	
Tetrachloroethene	ND	ug/L	50.0	1		05/28/14 15:17	127-18-4	
Trichloroethene	ND	ug/L	50.0	1		05/28/14 15:17	79-01-6	
Vinyl chloride	ND	ug/L	50.0	1		05/28/14 15:17	75-01-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	108	%	70-130	1		05/28/14 15:17	17060-07-0	
Toluene-d8 (S)	99	%	70-130	1		05/28/14 15:17	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130	1		05/28/14 15:17	460-00-4	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	56.4	%	0.10	1		05/27/14 16:21		
1010 Flashpoint,Closed Cup		Analytical Method: EPA 1010						
Flashpoint	>200	deg F	60.0	1		05/27/14 15:00		
160.4 Total Volatile Solids		Analytical Method: EPA 160.4						
Total Volatile Solids	20.2	% (w/w)	10.0	1		05/21/14 18:20		
9045 pH Soil		Analytical Method: EPA 9045C						
pH at 25 Degrees C	7.0	Std. Units	1.0	1		05/20/14 21:55		
9071 Oil and Grease/TPH		Analytical Method: EPA 9071B Preparation Method: EPA 9071B						
Oil and Grease	34200	mg/kg	230	1	05/22/14 13:50	05/23/14 08:00		
9095 Paint Filter Liquid Test		Analytical Method: EPA 9095A						
Free Liquids	FAIL		1.0	1		05/22/14 17:45		
4500CNE Cyanide, Total		Analytical Method: SM 4500-CN-E						
Cyanide	ND	mg/kg	1.3	1		05/22/14 22:45	57-12-5	
735S Reactive Sulfide		Analytical Method: SW-846 7.3.4.2						
Sulfide, Reactive	ND	mg/kg	22.8	1		05/27/14 22:00		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

QC Batch:	MERP/5505	Analysis Method:	EPA 7470A
QC Batch Method:	EPA 7470A	Analysis Description:	7470 Mercury TCLP
Associated Lab Samples:	30120930001		

METHOD BLANK: 733483 Matrix: Water
Associated Lab Samples: 30120930001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	1.0	05/22/14 15:14	

LABORATORY CONTROL SAMPLE: 733484

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	1	1.1	108	85-115	

MATRIX SPIKE SAMPLE: 733486

Parameter	Units	30120897003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	2.5	2.8	111	80-120	

MATRIX SPIKE SAMPLE: 733488

Parameter	Units	30120930001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	2.5	2.2	87	80-120	

SAMPLE DUPLICATE: 733485

Parameter	Units	30120897003 Result	Dup Result	RPD	Qualifiers
Mercury	ug/L	ND	ND		

SAMPLE DUPLICATE: 733487

Parameter	Units	30120930001 Result	Dup Result	RPD	Qualifiers
Mercury	ug/L	ND	ND		

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QUALITY CONTROL DATA

Project: Range Cowden
Pace Project No.: 30120930

QC Batch: MPRP/13050 Analysis Method: EPA 6010B
QC Batch Method: EPA 3005A Analysis Description: 6010 MET TCLP
Associated Lab Samples: 30120930001

METHOD BLANK: 733494 Matrix: Water
Associated Lab Samples: 30120930001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.050	05/22/14 17:12	
Barium	mg/L	ND	1.0	05/22/14 17:12	
Cadmium	mg/L	ND	0.050	05/22/14 17:12	
Chromium	mg/L	ND	0.050	05/22/14 17:12	
Copper	mg/L	ND	0.050	05/22/14 17:12	
Lead	mg/L	ND	0.050	05/22/14 17:12	
Nickel	mg/L	ND	0.10	05/22/14 17:12	
Selenium	mg/L	ND	0.10	05/22/14 17:12	
Silver	mg/L	ND	0.050	05/22/14 17:12	
Strontium	mg/L	ND	0.050	05/22/14 17:12	
Zinc	mg/L	ND	0.20	05/22/14 17:12	

LABORATORY CONTROL SAMPLE: 733495

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	.5	0.51	102	80-120	
Barium	mg/L	.5	.53J	107	80-120	
Cadmium	mg/L	.5	0.53	106	80-120	
Chromium	mg/L	.5	0.52	104	80-120	
Copper	mg/L	.5	0.53	107	80-120	
Lead	mg/L	.5	0.50	100	80-120	
Nickel	mg/L	.5	0.53	106	80-120	
Selenium	mg/L	.5	0.52	104	80-120	
Silver	mg/L	.25	0.26	104	80-120	
Strontium	mg/L	.5	0.53	106	80-120	
Zinc	mg/L	.5	0.52	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 733497 733498

Parameter	Units	30120897003		MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.							
Arsenic	mg/L	ND	.5	.5	.62	0.62	0.61	123	123	75-125	0	
Barium	mg/L	ND	.5	.5	.66J	.66J	.67J	108	108	75-125		
Cadmium	mg/L	ND	.5	.5	0.60	0.60	0.60	119	119	75-125	0	
Chromium	mg/L	ND	.5	.5	0.52	0.52	0.52	104	102	75-125	1	
Copper	mg/L	ND	.5	.5	0.56	0.56	0.56	112	112	75-125	0	
Lead	mg/L	ND	.5	.5	0.52	0.50	0.50	104	101	75-125	3	
Nickel	mg/L	ND	.5	.5	0.50	0.49	0.49	96	94	75-125	1	

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 733497												733498	
Parameter	Units	30120897003 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	% Rec	Limits	RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Selenium	mg/L	ND	.5	.5	0.67	0.66	127	127	75-125	1	M1		
Silver	mg/L	ND	.25	.25	0.31	0.30	123	122	75-125	1			
Strontium	mg/L	4.3	.5	.5	4.9	4.9	125	117	75-125	1			
Zinc	mg/L	ND	.5	.5	0.52	0.50	100	97	75-125	3			

MATRIX SPIKE SAMPLE: 733500									
Parameter	Units	30120930001		Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers	
		Result	Conc.						
Arsenic	mg/L		ND	.5	0.58	116	75-125		
Barium	mg/L		12.6	.5	13.2	134	75-125	M1	
Cadmium	mg/L		ND	.5	0.57	115	75-125		
Chromium	mg/L		ND	.5	0.51	101	75-125		
Copper	mg/L		ND	.5	0.55	109	75-125		
Lead	mg/L		ND	.5	0.51	102	75-125		
Nickel	mg/L		ND	.5	0.55	94	75-125		
Selenium	mg/L		ND	.5	0.59	118	75-125		
Silver	mg/L		ND	.25	0.30	119	75-125		
Strontium	mg/L		24.2	.5	25.1	174	75-125	M1	
Zinc	mg/L		0.38	.5	0.87	98	75-125		

SAMPLE DUPLICATE: 733496					
Parameter	Units	30120897003		RPD	Qualifiers
		Result	Dup Result		
Arsenic	mg/L	ND	ND		
Barium	mg/L	ND	.13J		
Cadmium	mg/L	ND	.0025J		
Chromium	mg/L	ND	.003J		
Copper	mg/L	ND	.0047J		
Lead	mg/L	ND	ND		
Nickel	mg/L	ND	.018J		
Selenium	mg/L	ND	.025J		
Silver	mg/L	ND	ND		
Strontium	mg/L	4.3	4.3	1	
Zinc	mg/L	ND	.02J		

SAMPLE DUPLICATE: 733499					
Parameter	Units	30120930001		RPD	Qualifiers
		Result	Dup Result		
Arsenic	mg/L	ND	ND		
Barium	mg/L	12.6	12.7	1	
Cadmium	mg/L	ND	ND		

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

SAMPLE DUPLICATE: 733499

Parameter	Units	30120930001 Result	Dup Result	RPD	Qualifiers
Chromium	mg/L	ND	.0027J		
Copper	mg/L	ND	.0035J		
Lead	mg/L	ND	ND		
Nickel	mg/L	ND	.083J		
Selenium	mg/L	ND	ND		
Silver	mg/L	ND	ND		
Strontium	mg/L	24.2	23.5		3
Zinc	mg/L	0.38	0.38		2

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

QC Batch: MSV/19750

Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B

Analysis Description: 8260 MSV TCLP

Associated Lab Samples: 30120930001

METHOD BLANK: 735677

Matrix: Water

Associated Lab Samples: 30120930001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1-Dichloroethene	ug/L	ND	50.0	05/28/14 14:52	
1,2-Dichloroethane	ug/L	ND	50.0	05/28/14 14:52	
2-Butanone (MEK)	ug/L	ND	5000	05/28/14 14:52	
Benzene	ug/L	ND	50.0	05/28/14 14:52	
Carbon tetrachloride	ug/L	ND	50.0	05/28/14 14:52	
Chlorobenzene	ug/L	ND	1000	05/28/14 14:52	
Chloroform	ug/L	ND	500	05/28/14 14:52	
Tetrachloroethene	ug/L	ND	50.0	05/28/14 14:52	
Trichloroethene	ug/L	ND	50.0	05/28/14 14:52	
Vinyl chloride	ug/L	ND	50.0	05/28/14 14:52	
1,2-Dichloroethane-d4 (S)	%	110	70-130	05/28/14 14:52	
4-Bromofluorobenzene (S)	%	100	70-130	05/28/14 14:52	
Toluene-d8 (S)	%	98	70-130	05/28/14 14:52	

LABORATORY CONTROL SAMPLE: 735678

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/L	200	196	98	57-127	
1,2-Dichloroethane	ug/L	200	210	105	62-125	
2-Butanone (MEK)	ug/L	200	204J	102	48-136	
Benzene	ug/L	200	190	95	66-122	
Carbon tetrachloride	ug/L	200	204	102	55-126	
Chlorobenzene	ug/L	200	196J	98	70-121	
Chloroform	ug/L	200	200J	100	62-126	
Tetrachloroethene	ug/L	200	205	102	62-125	
Trichloroethene	ug/L	200	199	100	62-125	
Vinyl chloride	ug/L	200	148	74	52-145	
1,2-Dichloroethane-d4 (S)	%			113	70-130	
4-Bromofluorobenzene (S)	%			100	70-130	
Toluene-d8 (S)	%			99	70-130	

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

QC Batch: OEXT/19369

Analysis Method: EPA 8270C

QC Batch Method: EPA 3535A

Analysis Description: 8270 TCLP MSSV

Associated Lab Samples: 30120930001

METHOD BLANK: 734879

Matrix: Water

Associated Lab Samples: 30120930001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	ug/L	ND	500	05/27/14 14:30	
2,4,5-Trichlorophenol	ug/L	ND	5000	05/27/14 14:30	
2,4,6-Trichlorophenol	ug/L	ND	100	05/27/14 14:30	
2,4-Dinitrotoluene	ug/L	ND	100	05/27/14 14:30	
2-Methylphenol(o-Cresol)	ug/L	ND	2000	05/27/14 14:30	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	2000	05/27/14 14:30	
Hexachloro-1,3-butadiene	ug/L	ND	100	05/27/14 14:30	
Hexachlorobenzene	ug/L	ND	100	05/27/14 14:30	
Hexachloroethane	ug/L	ND	500	05/27/14 14:30	
Nitrobenzene	ug/L	ND	100	05/27/14 14:30	
Pentachlorophenol	ug/L	ND	5000	05/27/14 14:30	
Pyridine	ug/L	ND	500	05/27/14 14:30	
2,4,6-Tribromophenol (S)	%	77	10-123	05/27/14 14:30	
2-Fluorobiphenyl (S)	%	62	43-116	05/27/14 14:30	
2-Fluorophenol (S)	%	89	21-110	05/27/14 14:30	
Nitrobenzene-d5 (S)	%	75	35-114	05/27/14 14:30	
Phenol-d6 (S)	%	84	10-110	05/27/14 14:30	
Terphenyl-d14 (S)	%	48	33-141	05/27/14 14:30	

METHOD BLANK: 734882

Matrix: Water

Associated Lab Samples: 30120930001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	ug/L	ND	500	05/27/14 15:10	
2,4,5-Trichlorophenol	ug/L	ND	5000	05/27/14 15:10	
2,4,6-Trichlorophenol	ug/L	ND	100	05/27/14 15:10	
2,4-Dinitrotoluene	ug/L	ND	100	05/27/14 15:10	
2-Methylphenol(o-Cresol)	ug/L	ND	2000	05/27/14 15:10	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	2000	05/27/14 15:10	
Hexachloro-1,3-butadiene	ug/L	ND	100	05/27/14 15:10	
Hexachlorobenzene	ug/L	ND	100	05/27/14 15:10	
Hexachloroethane	ug/L	ND	500	05/27/14 15:10	
Nitrobenzene	ug/L	ND	100	05/27/14 15:10	
Pentachlorophenol	ug/L	ND	5000	05/27/14 15:10	
Pyridine	ug/L	ND	500	05/27/14 15:10	
2,4,6-Tribromophenol (S)	%	79	10-123	05/27/14 15:10	
2-Fluorobiphenyl (S)	%	71	43-116	05/27/14 15:10	
2-Fluorophenol (S)	%	83	21-110	05/27/14 15:10	
Nitrobenzene-d5 (S)	%	81	35-114	05/27/14 15:10	

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

METHOD BLANK: 734882

Matrix: Water

Associated Lab Samples: 30120930001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Phenol-d6 (S)	%	81	10-110	05/27/14 15:10	
Terphenyl-d14 (S)	%	41	33-141	05/27/14 15:10	

LABORATORY CONTROL SAMPLE: 734880

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	500	292J	58	25-108	
2,4,5-Trichlorophenol	ug/L	500	431J	86	49-130	
2,4,6-Trichlorophenol	ug/L	500	414	83	49-133	
2,4-Dinitrotoluene	ug/L	500	402	80	31-135	
2-Methylphenol(o-Cresol)	ug/L	500	398J	80	42-132	
3&4-Methylphenol(m&p Cresol)	ug/L	1000	857J	86	42-132	
Hexachloro-1,3-butadiene	ug/L	500	276	55	19-107	
Hexachlorobenzene	ug/L	500	317	63	21-105	
Hexachloroethane	ug/L	500	287J	57	21-105	
Nitrobenzene	ug/L	500	444	89	38-142	
Pentachlorophenol	ug/L	500	406J	81	32-139	
Pyridine	ug/L	500	247J	49	10-61	
2,4,6-Tribromophenol (S)	%			86	10-123	
2-Fluorobiphenyl (S)	%			64	43-116	
2-Fluorophenol (S)	%			88	21-110	
Nitrobenzene-d5 (S)	%			83	35-114	
Phenol-d6 (S)	%			86	10-110	
Terphenyl-d14 (S)	%			67	33-141	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 734884

734885

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
		30121107001 Result	Spike Conc.	Spike Conc.	MS Result					
1,4-Dichlorobenzene	ug/L	ND	500	500	281J	265J	56	53	25-108	
2,4,5-Trichlorophenol	ug/L	ND	500	500	437J	425J	87	85	49-130	
2,4,6-Trichlorophenol	ug/L	ND	500	500	446	457	89	91	49-133	3
2,4-Dinitrotoluene	ug/L	ND	500	500	443	452	89	90	31-135	2
2-Methylphenol(o-Cresol)	ug/L	ND	500	500	396J	402J	79	80	42-132	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	1000	1000	838J	863J	84	86	42-132	
Hexachloro-1,3-butadiene	ug/L	ND	500	500	287	251	57	50	19-107	14
Hexachlorobenzene	ug/L	ND	500	500	123	135	25	27	21-105	10
Hexachloroethane	ug/L	ND	500	500	267J	245J	53	49	21-105	
Nitrobenzene	ug/L	ND	500	500	435	422	87	84	38-142	3
Pentachlorophenol	ug/L	ND	500	500	438J	447J	88	89	32-139	
Pyridine	ug/L	ND	500	500	304J	331J	61	66	10-61	M0
2,4,6-Tribromophenol (S)	%						88	88	10-123	

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		734884		734885									
Parameter	Units	30121107001	MS	MSD	MS	MSD	MS	MSD	% Rec	Limits	RPD	Qual	
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
2-Fluorobiphenyl (S)	%						68	67	43-116				
2-Fluorophenol (S)	%						86	86	21-110				
Nitrobenzene-d5 (S)	%						86	84	35-114				
Phenol-d6 (S)	%						81	81	10-110				
Terphenyl-d14 (S)	%						19	21	33-141		S6		

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

QC Batch: PMST/4524

Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87

Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 30120930001

SAMPLE DUPLICATE: 735303

Parameter	Units	30120495006 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	68.2	69.8	2	

SAMPLE DUPLICATE: 735304

Parameter	Units	30120495008 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	60.6	55.7	8	

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

QC Batch: WET/23547

Analysis Method: EPA 1010

QC Batch Method: EPA 1010

Analysis Description: 1010 Flash Point, Closed Cup

Associated Lab Samples: 30120930001

METHOD BLANK: 735325

Matrix: Water

Associated Lab Samples: 30120930001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Flashpoint	deg F	>200	60.0	05/27/14 15:00	

SAMPLE DUPLICATE: 735326

Parameter	Units	30121107001 Result	Dup Result	RPD	Qualifiers
Flashpoint	deg F	>200	>200		

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

QC Batch: WET/23485

Analysis Method: EPA 160.4

QC Batch Method: EPA 160.4

Analysis Description: 160.4 Total Volatile Solids

Associated Lab Samples: 30120930001

METHOD BLANK: 733050

Matrix: Solid

Associated Lab Samples: 30120930001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Volatile Solids	% (w/w)	ND	10.0	05/21/14 18:20	

SAMPLE DUPLICATE: 733051

Parameter	Units	30120954002 Result	Dup Result	RPD	Qualifiers
Total Volatile Solids	% (w/w)	45.0	44.2	2	

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

QC Batch: WET/23478 Analysis Method: EPA 9045C

QC Batch Method: EPA 9045C Analysis Description: 9045 pH

Associated Lab Samples: 30120930001

SAMPLE DUPLICATE: 732749

Parameter	Units	30120954002 Result	Dup Result	RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.1	7.2	1	

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

QC Batch: WET/23507

Analysis Method: EPA 9071B

QC Batch Method: EPA 9071B

Analysis Description: 9071 ASE, Oil and Grease/TPH

Associated Lab Samples: 30120930001

METHOD BLANK: 733845

Matrix: Solid

Associated Lab Samples: 30120930001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Oil and Grease	mg/kg	ND	99.7	05/23/14 08:00	

LABORATORY CONTROL SAMPLE: 733846

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Oil and Grease	mg/kg	1600	1590	99	85-115	

MATRIX SPIKE SAMPLE: 733850

Parameter	Units	30120520001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Oil and Grease	mg/kg	4400	3280	8030	111	85-115	

SAMPLE DUPLICATE: 733851

Parameter	Units	30120520001 Result	Dup Result	RPD	Qualifiers
Oil and Grease	mg/kg	4400	4380	1	

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

QC Batch: WET/23510

Analysis Method: EPA 9095A

QC Batch Method: EPA 9095A

Analysis Description: 9095 PAINT FILTER LIQUID TEST

Associated Lab Samples: 30120930001

SAMPLE DUPLICATE: 733882

Parameter	Units	30121107001 Result	Dup Result	RPD	Qualifiers
Free Liquids		FAIL	FAIL		

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

QC Batch: WETA/16421

Analysis Method: SM 4500-CN-E

QC Batch Method: SM 4500-CN-E

Analysis Description: 4500CNE Cyanide, Total

Associated Lab Samples: 30120930001

METHOD BLANK: 733884

Matrix: Solid

Associated Lab Samples: 30120930001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	ND	0.60	05/22/14 22:45	

LABORATORY CONTROL SAMPLE: 733885

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	4.8	5.1	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 733887

733886

Parameter	Units	30120520001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits		
Cyanide	mg/kg	ND	5.1	5.9	4.6	5.4	85	89	90-110	17	M2

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

QC Batch: WETA/16450

Analysis Method: SW-846 7.3.4.2

QC Batch Method: SW-846 7.3.4.2

Analysis Description: 734S Reactive Sulfide

Associated Lab Samples: 30120930001

METHOD BLANK: 735299

Matrix: Solid

Associated Lab Samples: 30120930001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide, Reactive	mg/kg	ND	10	05/27/14 22:00	

SAMPLE DUPLICATE: 735300

Parameter	Units	4095880005 Result	Dup Result	RPD	Qualifiers
Sulfide, Reactive	mg/kg	<12.8	ND		

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ANALYTICAL RESULTS

Project: Range Cowden

Pace Project No.: 30120930

Sample: Range Cowden **Lab ID: 30120930001** Collected: 05/19/14 04:30 Received: 05/20/14 12:15 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	1,881 ± 342 (9.24) C:NA T:NA	pCi/g	05/28/14 06:12	12587-46-1	N2
Gross Beta	EPA 900.0	770 ± 140 (6.09) C:NA T:NA	pCi/g	05/28/14 06:12	12587-47-2	N2
Potassium-40	EPA 901.1	25.020 ± 11.298 (9.325) C:NA T:NA	pCi/g	05/28/14 08:27	13966-00-2	
Radium-226	EPA 901.1	570.300 ± 83.996 (34.510) C:NA T:NA	pCi/g	05/28/14 08:27	13982-63-3	
Radium-228	EPA 901.1	161.170 ± 21.723 (4.116) C:NA T:NA	pCi/g	05/28/14 08:27	15262-20-1	
Thorium-228	EPA 901.1	231.720 ± 68.532 (95.010) C:NA T:NA	pCi/g	05/28/14 08:27	14274-82-9	
Thorium-230	EPA 901.1	-97.424 ± 367.100 (600.400) C:NA T:NA	pCi/g	05/28/14 08:27	14269-63-7	
Thorium-232	EPA 901.1	189.210 ± 491.130 (811.600) C:NA T:NA	pCi/g	05/28/14 08:27	7440-29-1	
Uranium-234	EPA 901.1	55.781 ± 13.494 (46.400) C:NA T:NA	pCi/g	05/28/14 08:27	13966-29-5	
Uranium-235	EPA 901.1	-0.438 ± 8.705 (10.800) C:NA T:NA	pCi/g	05/28/14 08:27	15117-96-1	
Uranium-238	EPA 901.1	11.831 ± 12.711 (20.740) C:NA T:NA	pCi/g	05/28/14 08:27		

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

QC Batch: RADC/19904

Analysis Method: EPA 900.0

QC Batch Method: EPA 900.0

Analysis Description: 900.0 Gross Alpha/Beta

Associated Lab Samples: 30120930001

METHOD BLANK: 734919

Matrix: Solid

Associated Lab Samples: 30120930001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.075 ± 0.0988 (0.206) C:NA T:NA	pCi/g	05/28/14 07:23	N2
Gross Beta	0.112 ± 0.116 (0.236) C:NA T:NA	pCi/g	05/28/14 07:23	N2

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QUALITY CONTROL DATA

Project: Range Cowden

Pace Project No.: 30120930

QC Batch: RADC/19923

Analysis Method: EPA 901.1

QC Batch Method: EPA 901.1

Analysis Description: 901.1 Gamma Spec

Associated Lab Samples: 30120930001

METHOD BLANK: 735307

Matrix: Solid

Associated Lab Samples: 30120930001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Potassium-40	-0.097 ± 1.037 (0.781) C:NA T:NA	pCi/g	05/28/14 07:54	
Radium-226	-0.066 ± 0.859 (1.239) C:NA T:NA	pCi/g	05/28/14 07:54	
Radium-228	-0.026 ± 0.962 (0.223) C:NA T:NA	pCi/g	05/28/14 07:54	
Thorium-228	0.369 ± 1.956 (3.594) C:NA T:NA	pCi/g	05/28/14 07:54	
Thorium-230	-2.048 ± 13.963 (19.050) C:NA T:NA	pCi/g	05/28/14 07:54	
Thorium-232	-8.460 ± 44.514 (36.620) C:NA T:NA	pCi/g	05/28/14 07:54	
Uranium-234	0.198 ± 0.902 (1.675) C:NA T:NA	pCi/g	05/28/14 07:54	
Uranium-235	-0.068 ± 0.609 (0.372) C:NA T:NA	pCi/g	05/28/14 07:54	
Uranium-238	0.356 ± 0.407 (0.653) C:NA T:NA	pCi/g	05/28/14 07:54	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Range Cowden

Pace Project No.: 30120930

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.

PRL - Pace Reporting 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

- | | |
|----|--|
| M0 | Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits. |
| M1 | Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |
| M2 | Matrix spike recovery was below QC limits due to sample dilution. Data acceptance based on laboratory control sample (LCS) recovery. |
| N2 | The lab does not hold TNI accreditation for this parameter. |
| S6 | Surrogate recovery outside control limits. Data accepted based on valid recovery of applicable surrogates (no analytes associated with this surrogate) |

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Range Cowden

Pace Project No.: 30120930

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30120930001	Range Cowden	EPA 3005A	MPRP/13050	EPA 6010B	ICP/12380
30120930001	Range Cowden	EPA 7470A	MERP/5505	EPA 7470A	MERC/5279
30120930001	Range Cowden	EPA 3535A	OEXT/19369	EPA 8270C	MSSV/6349
30120930001	Range Cowden	EPA 8260B	MSV/19750		
30120930001	Range Cowden	ASTM D2974-87	PMST/4524		
30120930001	Range Cowden	EPA 900.0	RADC/19904		
30120930001	Range Cowden	EPA 901.1	RADC/19923		
30120930001	Range Cowden	EPA 1010	WET/23547		
30120930001	Range Cowden	EPA 160.4	WET/23485		
30120930001	Range Cowden	EPA 9045C	WET/23478		
30120930001	Range Cowden	EPA 9071B	WET/23507	EPA 9071B	WET/23508
30120930001	Range Cowden	EPA 9095A	WET/23510		
30120930001	Range Cowden	SM 4500-CN-E	WETA/16421		
30120930001	Range Cowden	SW-846 7.3.4.2	WETA/16450		

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Sample Condition Upon Receipt

JSH

Client Name: WM Kelly Run

Project # 30120930

Courier: Fed Ex UPS USPS Client Commercial Pace Other

Tracking #: _____

Optional Proj. Due Date: Proj. Name:

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other plastic bag

Thermometer Used 6 7 8

Type of Ice: Wet Blue None

Samples on ice, cooling process has begun

Cooler Temperature 3.6 + 4.0

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: JSH 5/20/14

Table with 16 rows of inspection criteria and checkboxes. Includes items like Chain of Custody Present, Short Hold Time Analysis, and Containers Intact.

Client Notification/ Resolution: Field Data Required? Y / N. Person Contacted: Date/Time: Comments/ Resolution:

Project Manager Review: [Signature] Date: 5/20/14

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)

