October 25, 2013

Mrs. Carla M. Jordan
Casella Waste Services of Ontario, LLC
Ontario County Landfill
1879 State Routes 5 & 20
Stanley, New York 14561

RECEIVED
OCT 28 2013
Division of Materials Management
NYSDEC - Region 8 Avon

Re: Chemung County Landfill June 2013 Radionuclide Monitoring Event

File: 574.129.001

Dear Mrs. Jordan:

This letter report summarizes our June 2013 Radionuclide Monitoring event, which was conducted in accordance with the Site EMP Appendix F – Additional Considerations for Radionuclide Sampling. Included as attachments to this letter are the following supporting documents:

- Attachment A – Pace Analytical Services, Inc. Report (3096870)
- Table 1 – Chemung County Landfill Radionuclide Leachate Data Results
- Table 2 – Chemung County Landfill Radionuclide Sediment Data Results

Barton & Loguidice, P.C. (B&L) conducted the required sampling on June 11, 2013. Samples of both filtered and non-filtered media were collected from the Cell IV primary leachate collection system and also a sediment sample was collected from the Leachate Lagoon. The samples were submitted to Pace Analytical Services, Inc. (Pace) located in Greensburg, Pennsylvania for the following analysis in accordance with the EMP:

- Radium-226 per EPA 903.1
- Radium-228 per EPA 904.0
- Total Uranium per EPA 908.0
- Gamma Spectrum per EPA 901.1
- Total Uranium per HASL 300 for the sediment sample only

The results indicate that radionuclide concentrations for the Cell IV primary leachate have remained generally consistent with historical data. More importantly, the results remain far below applicable effluent and sewer discharge criteria established by the federal Nuclear Regulatory Commission (NRC) and/or NYSDEC. As we conduct further radionuclide monitoring and gain more analytical data from the required monitoring network, we will be better able to assess the data for potential changes/trends over time.

listen.
solve.

Also included in the attached Table 2 are the results for the leachate lagoon sediment sample. This marks the second event this location has been sampled. The concentrations are slightly higher than the initial sampling event but without any historical data there is no data for comparison purposes. We will be better able to assess the data for potential changes/trends over time.

Please contact me if you have any questions regarding this letter summary report.

Very truly yours,

BARTON & LOGUIDICE, P.C.

Michael R. Brother

Michael R. Brother
Senior Managing Hydrogeologist

MRB/akg
Attachments
cc: Mark Domagala, NYSDEC
Richard Clarkson, NYSDEC
Timothy Rice, NYSDEC

Attachment A

Pace Analytical Services, Inc.

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www.pacelabs.com

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

July 16, 2013

Mr. Brian J. McGrath
Barton & Loguidice
11 Centre Park, Suite 203
Rochester, NY 14614

RE: Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

Dear Mr. McGrath:
Enclosed are the analytical results for sample(s) received by the laboratory on June 18, 2013. 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,

Jacquelyn Collins

jacquelyn.collins@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

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/TNI Certification #: LA080002
Louisiana/TNI Certification #: 4086
Maine Certification #: PA0091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
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 #: ANTE
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia Certification #: 143
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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SAMPLE SUMMARY

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

Lab ID	Sample ID	Matrix	Date Collected	Date Received
3096870001	Chemung LF Cell IV Total Leach	Water	06/11/13 14:22	06/18/13 09:45
3096870002	Chemung LF Cell IV Filtered Le	Water	06/11/13 14:15	06/18/13 09:45
3096870003	Chemung LF Leachate Lagoon Slu	Solid	06/11/13 13:45	06/18/13 09:45
3096870004	Chemung LF Leachate Lagoon Slu	Water	06/11/13 13:45	06/18/13 09:45

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SAMPLE ANALYTE COUNT

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

Lab ID	Sample ID	Method	Analysts	Analytes Reported
3096870001	Chemung LF Cell IV Total Leach	EPA 901.1m	AEH	2
		EPA 903.1	SLA	1
		EPA 904.0	MAW	1
		EPA 908.0	LAL	1
3096870002	Chemung LF Cell IV Filtered Le	EPA 901.1m	AEH	2
		EPA 903.1	SLA	1
		EPA 904.0	MAW	1
		EPA 908.0	LAL	1
3096870003	Chemung LF Leachate Lagoon Slu	EPA 901.1m	AEH	2
		EPA 903.1m	SLA	1
		EPA 9320	MAW	1
		HSL-300m	MBT	3
3096870004	Chemung LF Leachate Lagoon Slu	EPA 908.0	LAL	1

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PROJECT NARRATIVE

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

Method: EPA 901.1m
Description: 901.1 Gamma Spec
Client: Barton & Loguidice
Date: July 16, 2013

General Information:
3 samples were analyzed for EPA 901.1m. 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 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:

Workorder Comments:

Sample 3096870004 was accidentally dried upon receipt. Client was notified.

Total uranium by EPA 908.0 is applicable to aqueous samples. The dried sample was reconstituted with DI water to its original measured weight, acidified to pH <2 with nitric acid, then held for 16 hours prior to analysis by EPA 908.0.

The analysis of sample 3096870004 for total uranium by EPA 908.0 consisted of the sample, a sample matrix spike, and a sample spike assessed for a recovery correction factor. All QC assessments were acceptable.

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PROJECT NARRATIVE

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

Method: EPA 903.1m
Description: 903.1 Radium 226
Client: Barton & Loguidice
Date: July 16, 2013

General Information:
1 sample was analyzed for EPA 903.1m. 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 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:

Workorder Comments:

Sample 3096870004 was accidentally dried upon receipt. Client was notified.

Total uranium by EPA 908.0 is applicable to aqueous samples. The dried sample was reconstituted with DI water to its original measured weight, acidified to pH <2 with nitric acid, then held for 16 hours prior to analysis by EPA 908.0.

The analysis of sample 3096870004 for total uranium by EPA 908.0 consisted of the sample, a sample matrix spike, and a sample spike assessed for a recovery correction factor. All QC assessments were acceptable.

Analyte Comments:

QC Batch: RADC/16370

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

- BLANK (Lab ID: 604803)
  - Radium-226
- Chemung LF Leachate Lagoon Slu (Lab ID: 3096870003)
  - Radium-226

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PROJECT NARRATIVE

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

Method: EPA 903.1
Description: 903.1 Radium 226
Client: Barton & Loguidice
Date: July 16, 2013

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 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:

Workorder Comments:

Sample 3096870004 was accidentally dried upon receipt. Client was notified.

Total uranium by EPA 908.0 is applicable to aqueous samples. The dried sample was reconstituted with DI water to its original measured weight, acidified to pH <2 with nitric acid, then held for 16 hours prior to analysis by EPA 908.0.

The analysis of sample 3096870004 for total uranium by EPA 908.0 consisted of the sample, a sample matrix spike, and a sample spike assessed for a recovery correction factor. All QC assessments were acceptable.

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PROJECT NARRATIVE

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

Method: EPA 904.0
Description: 904.0 Radium 228
Client: Barton & Loguidice
Date: July 16, 2013

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 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:

Workorder Comments:

Sample 3096870004 was accidentally dried upon receipt. Client was notified.

Total uranium by EPA 908.0 is applicable to aqueous samples. The dried sample was reconstituted with DI water to its original measured weight, acidified to pH <2 with nitric acid, then held for 16 hours prior to analysis by EPA 908.0.

The analysis of sample 3096870004 for total uranium by EPA 908.0 consisted of the sample, a sample matrix spike, and a sample spike assessed for a recovery correction factor. All QC assessments were acceptable.

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PROJECT NARRATIVE

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

Method: EPA 908.0
Description: 908.0 Total Uranium
Client: Barton & Loguidice
Date: July 16, 2013

General Information:
3 samples were analyzed for EPA 908.0. 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 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:

Workorder Comments:

Sample 3096870004 was accidentally dried upon receipt. Client was notified.

Total uranium by EPA 908.0 is applicable to aqueous samples. The dried sample was reconstituted with DI water to its original measured weight, acidified to pH <2 with nitric acid, then held for 16 hours prior to analysis by EPA 908.0.

The analysis of sample 3096870004 for total uranium by EPA 908.0 consisted of the sample, a sample matrix spike, and a sample spike assessed for a recovery correction factor. All QC assessments were acceptable.

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PROJECT NARRATIVE

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

Method: EPA 9320
Description: 9320 Radium 228
Client: Barton & Loguidice
Date: July 16, 2013

General Information:
1 sample was analyzed for EPA 9320. 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 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:

Workorder Comments:

Sample 3096870004 was accidentally dried upon receipt. Client was notified.

Total uranium by EPA 908.0 is applicable to aqueous samples. The dried sample was reconstituted with DI water to its original measured weight, acidified to pH <2 with nitric acid, then held for 16 hours prior to analysis by EPA 908.0.

The analysis of sample 3096870004 for total uranium by EPA 908.0 consisted of the sample, a sample matrix spike, and a sample spike assessed for a recovery correction factor. All QC assessments were acceptable.

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PROJECT NARRATIVE

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

Method: HSL-300m
Description: HSL300(AS) Actinides
Client: Barton & Loguidice
Date: July 16, 2013

General Information:
1 sample was analyzed for HSL-300m. 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 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:

Workorder Comments:

Sample 3096870004 was accidentally dried upon receipt. Client was notified.

Total uranium by EPA 908.0 is applicable to aqueous samples. The dried sample was reconstituted with DI water to its original measured weight, acidified to pH <2 with nitric acid, then held for 16 hours prior to analysis by EPA 908.0.

The analysis of sample 3096870004 for total uranium by EPA 908.0 consisted of the sample, a sample matrix spike, and a sample spike assessed for a recovery correction factor. All QC assessments were acceptable.

Analyte Comments:

QC Batch: RADC/16258

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

- BLANK (Lab ID: 599708)
  - Uranium-234
  - Uranium-235
  - Uranium-238
- Chemung LF Leachate Lagoon Slu (Lab ID: 3096870003)
  - Uranium-234
  - Uranium-235
  - Uranium-238

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

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ANALYTICAL RESULTS

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

Sample: Chemung LF Cell IV Total Leach **Lab ID: 3096870001** Collected: 06/11/13 14:22 Received: 06/18/13 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1m	**-0.220 ± 6.717 (10.660)**	pCi/L	06/25/13 15:18	10045-97-3	
Uranium-235	EPA 901.1m	**-7.697 ± 1507.700 (82.410)**	pCi/L	06/25/13 15:18	15117-96-1	
Radium-226	EPA 903.1	**9.43 ± 4.18 (1.22)**	pCi/L	07/01/13 12:40	13982-63-3	
Radium-228	EPA 904.0	**4.75 ± 5.58 (11.8)**	pCi/L	07/01/13 16:50	15262-20-1	
Total Uranium	EPA 908.0	**0.110 ± 0.516 (0.920)**	pCi/L	07/01/13 17:27	7440-61-1	

Sample: Chemung LF Cell IV Filtered Le **Lab ID: 3096870002** Collected: 06/11/13 14:15 Received: 06/18/13 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
Cesium-137	EPA 901.1m	**-0.013 ± 84.851 (11.080)**	pCi/L	06/25/13 19:26	10045-97-3	
Uranium-235	EPA 901.1m	**-19.799 ± 123.230 (94.040)**	pCi/L	06/25/13 19:26	15117-96-1	
Radium-226	EPA 903.1	**3.70 ± 3.48 (1.67)**	pCi/L	07/01/13 13:10	13982-63-3	
Radium-228	EPA 904.0	**-6.51 ± 7.30 (14.3)**	pCi/L	07/01/13 15:31	15262-20-1	
Total Uranium	EPA 908.0	**-0.554 ± 0.626 (1.20)**	pCi/L	07/01/13 17:27	7440-61-1	

Sample: Chemung LF Leachate Lagoon Slu **Lab ID: 3096870003** Collected: 06/11/13 13:45 Received: 06/18/13 09:45 Matrix: Solid
PWS: Site ID: Sample Type:

Results reported on a "dry-weight" basis

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 901.1m	**7.069 ± 2.237 (2.330)**	pCi/g	06/24/13 15:20	13982-63-3	
Radium-228	EPA 901.1m	**4.756 ± 0.680 (0.162)**	pCi/g	06/24/13 15:20	15262-20-1	
Radium-226	EPA 903.1m	**4.91 ± 1.11 (0.351)**	pCi/g	07/16/13 09:34	13982-63-3	N2
Radium-228	EPA 9320	**2.39 ± 0.543 (0.396)**	pCi/g	07/15/13 12:58	15262-20-1	
Uranium-234	HSL-300m	**0.411 ± 0.182 (0.158)**	pCi/g	07/03/13 06:41	13966-29-5	N2
Uranium-235	HSL-300m	**0.065 ± 0.082 (0.058)**	pCi/g	07/03/13 06:41	15117-96-1	N2
Uranium-238	HSL-300m	**0.329 ± 0.158 (0.125)**	pCi/g	07/03/13 06:41		N2

Sample: Chemung LF Leachate Lagoon Slu **Lab ID: 3096870004** Collected: 06/11/13 13:45 Received: 06/18/13 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
Total Uranium	EPA 908.0	**5.99 ± 2.05 (2.29)**	pCi/L	07/15/13 12:29	7440-61-1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

QC Batch: RADC/16250 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 3096870001, 3096870002

METHOD BLANK: 599700 Matrix: Water
Associated Lab Samples: 3096870001, 3096870002

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Radium-228	0.202 ± 0.258 (0.547)	pCi/L	07/01/13 12:14	

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QUALITY CONTROL DATA

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

QC Batch: RADC/16371
QC Batch Method: EPA 9320
Analysis Method: EPA 9320
Analysis Description: 9320 Radium 228
Associated Lab Samples: 3096870003

METHOD BLANK: 604804
Matrix: Solid
Associated Lab Samples: 3096870003

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Radium-228	0.333 ± 0.240 (0.466)	pCi/g	07/15/13 12:58	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

QC Batch: RADC/16254
QC Batch Method: EPA 908.0
Analysis Method: EPA 908.0
Analysis Description: 908.0 Total Uranium
Associated Lab Samples: 3096870001, 3096870002

METHOD BLANK: 599704
Matrix: Water
Associated Lab Samples: 3096870001, 3096870002

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Total Uranium	-0.0121 ± 0.470 (1.15)	pCi/L	07/01/13 18:49	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

QC Batch: RADC/16204
QC Batch Method: EPA 901.1m
Analysis Method: EPA 901.1m
Analysis Description: 901.1 Gamma Spec
Associated Lab Samples: 3096870003

METHOD BLANK: 597732
Matrix: Solid
Associated Lab Samples: 3096870003

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Radium-226	-0.003 ± 0.498 (0.869)	pCi/g	06/24/13 10:37	
Radium-228	0.033 ± 0.053 (0.214)	pCi/g	06/24/13 10:37	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

QC Batch: RADC/16247 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 3096870001, 3096870002

METHOD BLANK: 599697 Matrix: Water
Associated Lab Samples: 3096870001, 3096870002

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Radium-226	-0.076 ± 0.309 (0.634)	pCi/L	07/01/13 11:36	

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1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

QC Batch: RADC/16258 Analysis Method: HSL-300m
QC Batch Method: HSL-300m Analysis Description: HSL300(AS) Actinides
Associated Lab Samples: 3096870003

METHOD BLANK: 599708 Matrix: Solid
Associated Lab Samples: 3096870003

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Uranium-234	0.026 ± 0.045 (0.091)	pCi/g	07/02/13 15:05	N2
Uranium-235	0.033 ± 0.059 (0.044)	pCi/g	07/02/13 15:05	N2
Uranium-238	-0.006 ± 0.045 (0.074)	pCi/g	07/02/13 15:05	N2

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QUALITY CONTROL DATA

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

QC Batch: RADC/16140 Analysis Method: EPA 901.1m
QC Batch Method: EPA 901.1m Analysis Description: 901.1 Gamma Spec
Associated Lab Samples: 3096870001, 3096870002

METHOD BLANK: 594786 Matrix: Water
Associated Lab Samples: 3096870001, 3096870002

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Uranium-235	8.679 ± 24.958 (44.020)	pCi/L	06/17/13 08:45	

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QUALITY CONTROL DATA

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

QC Batch: RADC/16370 Analysis Method: EPA 903.1m
QC Batch Method: EPA 903.1m Analysis Description: 903.1 Radium-226
Associated Lab Samples: 3096870003

METHOD BLANK: 604803 Matrix: Solid
Associated Lab Samples: 3096870003

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Radium-226	-0.164 ± 0.227 (0.577)	pCi/g	07/16/13 09:34	N2

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

QC Batch: RADC/16383 Analysis Method: EPA 908.0
QC Batch Method: EPA 908.0 Analysis Description: 908.0 Total Uranium
Associated Lab Samples: 3096870004

METHOD BLANK: 604816 Matrix: Water
Associated Lab Samples: 3096870004

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Total Uranium	0.101 ± 0.228 (0.508)	pCi/L	07/12/13 18:49	

REPORT OF LABORATORY ANALYSIS

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(724)850-5600

QUALIFIERS

Project: Chemung Country LF Radionuclid
Pace Project No.: 3096870

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

(MDC) - Minimum Detectable Concentration

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

TNI - The NELAC Institute.

WORKORDER QUALIFIERS

WO: 3096870

[1] Sample 3096870004 was accidentally dried upon receipt. Client was notified.

[2] Total uranium by EPA 908.0 is applicable to aqueous samples. The dried sample was reconstituted with DI water to its original measured weight, acidified to pH <2 with nitric acid, then held for 16 hours prior to analysis by EPA 908.0.

[3] The analysis of sample 3096870004 for total uranium by EPA 908.0 consisted of the sample, a sample matrix spike, and a sample spike assessed for a recovery correction factor. All QC assessments were acceptable.

ANALYTE QUALIFIERS

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

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT All relevant fields must be completed accurately.

Page: 1 of 1

1220594

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Barton Loguidice (DPC)	Report To: Brian Inglesworth	Attention: Same as Client Info
Address: 11 Centre Park, Suite 203	Copy To:	Company Name:
Rochester, NY		Address:
Email To: [illegible]	Purchase Order No	Pace Quote Reference:
Phone: 585/325-7190 Fax:	Project Name: Chemung County LF Radio Nuclide Analysis	Pace Project Manager:
Requested Due Date/TAT:	Project Number: 574.120.001	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☑ OTHER NYSDEC

Site Location STATE: NY

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N) / Analysis Test:

Col	Analysis Test	Filtered (Y/N)
A1	EPA 903.1 Radium 226	Y
A2	EPA 904.0 Radium 228	Y
A3	EPA 908.0 T-Uranium	Y
A4	EPA 901.1 Gamma Spectroscopy	Y
A5	HASL 300 T-Uranium	N
A6	EPA 903.1 Radium 226	N
A7	EPA 904.0 Radium 228	N
A8	EPA 908.0 T-Uranium	N
A9	EPA 901.1 Gamma Spectroscopy	N

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	A1	A2	A3	A4	A5	A6	A7	A8	A9	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 3091870
1	Chemung LF Cell IV Total Leachate (unfiltered)	WW	G	~~6/11/13~~	—	6/11/13	14:22	78°F	4			X											X	X	X	X		001
2	Chemung LF Cell IV Filtered Leachate	WW	G	—	—	6/11/13	14:15	78°F	4			X						X	X	X	X							002
3	Chemung LF Leachate Lagoon Sludge	SL	G			6/11/13	13:45	73°F	8	X												X	X	X	X	X		003
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Brian Inglesworth	6/14/13	12:15	[illegible signature]	6/18/13	0945	NA	N	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brian Inglesworth

SIGNATURE of SAMPLER: Brian Inglesworth DATE Signed (MM/DD/YY): 6/11/13

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days

F-ALL-Q-020rev.07, 15-May-2007

Sample Condition Upon Receipt

MAK

Pace Analytical

Client Name: Barton & L   Project # 3096590

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other ____

Tracking #: Marie P. H. Lowe 7957 8968 7160

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 ____

Thermometer Used 5 6 7   Type of Ice: Wet Blue (None)   ☐ Samples on ice, cooling process has begun

Cooler Temperature NA   Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: TAW 6-18-13

		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 / SL	☐Yes ☑No ☐N/A	12. Sample #3 No label information on container label (No ID Date & Time)
All containers needing preservation have been checked.	☑Yes ☐No ☐N/A	13. Added 21 mL HNO_3 to samples #1 and #2 6-18-13 1355 PKZ
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 TAW / Lot # of added preservative DL13-0588
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:** 6/20/13

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)

F-ALL-C003-6 SCURF front 2April2012.xls

Page 25 of 25

Item No.	201	202	203
Matrix Code	WT	V	SL
Glass Jar (120 / 250 / 500 / (1L))			4
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	←	
Radchem Nalgene (1/2 gal. / 1 gal.L)			
Cubitainer (500 ml / 4L)			
Ziploc			
Other			
Other			

SCURF Back (C016-4 15May2012).xls

Pace Analytical

page 2

Project Number: 30963

Client Name: Burton +

Table 1

Chemung County Landfill
Radionuclide Leachate Data Results

Table 1 - Chemung County Landfill Radionuclide Leachate Data Results

		Cesium 137 (pCi/L)	Qual.	*Total uncert.*	Radium 226 (pCi/L)	Qual.	*Total uncert.*	Radium 228 (pCi/L)	Qual.	*Total uncert.*	Uranium 234 (pCi/L)	Qual.	*Total uncert.*	Uranium 235 (pCi/L)	Qual.	*Total uncert.*	Uranium 235 (pCi/L)	Qual.	*Total uncert.*
NRC/DEC	effluent limit	1000			60			60			300			300			300		
NRC/DEC	sewer limit	10000			600			600			3000			3000			3000		
RL		20.0			1.00			1.0			1.00			1.00			1.00		
EPA Method		901.1			903.1			904.0			HSL-300			901.1			HSL-300		
Leachate Monitoring Location	**Total Vs. Filtered**																		
Cell I/II/III																			
13-May-10	Total	-		-	3.3		*1.8*	12.3		*7.2*	1.6	U	*1.3*	-		-	-0.22	U	*0.22*
31-Jan-12	Total	<20	U	*4.9*	1.72		*0.55*	1.4		*1.3*	-		-	-		-	-		-
31-Jan-12	Total - Dupe	0.07	U	*7.9*	-		-	-		-	-		-	-		-	-		-
31-Jan-12	Filtered	<20	U	*2.4*	1.59		*0.46*	1.76		*0.99*	-		-	-		-	-		-
Cell IV																			
13-May-10	Total	-		-	0.7	J	*0.22*	0.74	J	*0.42*	0.73	J	*0.28*	-		-	0.042	U	*0.085*
31-Jan-12	Total	1.1	U	*7.2*	2.43		*0.68*	1.8	U	*1.5*	-		-	-		-	-		-
31-Jan-12	Filtered	2.8	U	*8.0*	1.80		*0.48*	1.91		*0.94*	-		-	-		-	-		-
29-Jun-12	Total	-0.435		*3.35*	1.04		*0.71*	7.01		*4.92*	15.7		*281*	-1.2		*47*	0.093		*0.424*
29-Jun-12	Filtered	0.085		*2.52*	0.811		*0.654*	4.91		*3.02*	2.25		*1.76*	-4.53		*154*	0.490		*1.12*
11-Jun-13	Total	-0.22		*6.717*	9.43		*4.18*	4.75		*5.58*	-		-	-7.697		*1508*	-		-
11-Jun-13	Filtered	-0.013		*84.85*	3.7		*3.48*	-6.51		*7.3*	-		-	-19.799		*123.2*	-		-
Leachate Lagoon																			
31-Jan-12	Total	1	U	*6.0*	0.74		*0.21*	0.39	U	*0.46*	-		-	-		-	-		-
31-Jan-12	Total - Dupe	-		-	0.59		*0.2*	0.73	U	*0.57*	-		-	-		-	-		-
31-Jan-12	Filtered	-1.6	U	*7.0*	0.39		*0.16*	0.77		*0.5*	-		-	-		-	-		-

Notes:

Qual. = Qualifer
U = Result is less than detection limit
J = Lab estimated result
B = Lab estimated result; result is less than reporting limit
Total Uncert. = Total uncertainty (2 σ +/-)

Table 1 - Chemung County Landfill Radionuclide Leachate Data Results

		Uranium 238 (pCi/L)	Qual.	Total uncert.	Total Uranium pCi/L	Qual.	Total uncert.	Thorium 228 (pCi/L)	Qual.	Total uncert.	Thorium 230 (pCi/L)	Qual.	Total uncert.	Thorium 232 (pCi/L)	Qual.	Total uncert.
NRC/DEC	effluent limit	300			-			200			100			30		
NRC/DEC	sewer limit	3000			-			2000			1000			300		
RL		1.00			--			1.00			1.00			1.00		
EPA Method		HSL-300			908.0			HSL-300			HSL-300			HSL-300		
Leachate Monitoring Location	**Total Vs. Filtered**															
Cell I/II/III																
13-May-10	Total	0.33	U	*0.67*	-			0.18	U	*0.41*	0.68	U	*0.7*	0.0	U	*0.12*
31-Jan-12	Total	-		-	-1.34		3.73	-		-	-		-	-		-
31-Jan-12	Total - Dupe	-		-	-			-		-	-		-	-		-
31-Jan-12	Filtered	-		-	3.65		*3.52*	-		-	-		-	-		-
Cell IV																
13-May-10	Total	0.46	J	*0.22*	-			-0.008	U	*0.012*	0.081	J	*0.085*	0.0	U	*0.019*
31-Jan-12	Total	-		-	1.65		3.03	-		-	-		-	-		-
31-Jan-12	Filtered	-		-	-1.44		*3.43*	-		-	-		-	-		-
29-Jun-12	Total	0.000		*0.325*	0.403		2.75	1.012		*1.02*	1.093		*0.669*	-0.199		*0.455*
29-Jun-12	Filtered	0.563		*0.861*	3.88		3.09	2.88		*2.08*	0.605		*0.923*	0.242		*0.672*
11-Jun-13	Total	-		-	0.11		0.516	-		-	-		-	-		-
11-Jun-13	Filtered	-		-	-0.554		0.626	-		-	-		-	-		-
Leachate Lagoon																
31-Jan-12	Total	-		-	1.34		3.08	-		-	-		-	-		-
31-Jan-12	Total - Dupe	-		-	-			-		-	-		-	-		-
31-Jan-12	Filtered	-		-	2.75		*3.47*	-		-	-		-	-		-

Notes:

Qual.	=	Qualifer
U	=	Result is less than detection limit
J	=	Lab estimated result
B	=	Lab estimated result; result is less than reporting limit
Total Uncert.	=	Total uncertainty (2 σ +/-)

Table 2

Chemung County Landfill
Radionuclide Sediment Data Results

Table 2 - Chemung County Landfill Radionuclide Sediment Data Results

	Cesium 137 (pCi/g)	Qual.	*Total uncert.*	Radium 226 (pCi/g)	Qual.	*Total uncert.*	Radium 228 (pCi/g)	Qual.	*Total uncert.*	Uranium 234 (pCi/g)	Qual.	*Total uncert.*	Uranium 235 (pCi/g)	Qual.	*Total uncert.*	Uranium 235 (pCi/g)	Qual.	*Total uncert.*
EPA Method	901.1			903.1			904.0			HSL-300			901.1			HSL-300		
Sediment Monitoring Location																		
Leachate Lagoon Sediment																		
29-Jun-12	-0.005		*0.037*	2.27		*0.782*	2.02		*0.718*	0.265		*0.132*	0.172		*0.070*	0.027		*0.071*
11-Jun-13	-		-	4.91		*1.11*	-		-	0.411		*0.182*	-		-	0.065		*0.058*

Notes:

Qual. = Qualifer
U = Result is less than detection limit
J = Lab estimated result
B = Lab estimated result; result is less than reporting limit
Total Uncert = Total uncertainty (2 σ +/-)

Table 2 - Chemung County Landfill Radionuclide Sediment Data Results

	Uranium 238 (pCi/g)	Qual.	*Total uncert.*	Total Uranium (pCi/g)	Qual.	*Total uncert.*	Thorium 228 (pCi/g)	Qual.	*Total uncert.*	Thorium 230 (pCi/g)	Qual.	*Total uncert.*	Thorium 232 (pCi/g)	Qual.	*Total uncert.*
EPA Method	HSL-300			908.0			HSL-300			HSL-300			HSL-300		
Sediment Monitoring Location															
Leachate Lagoon Sediment															
29-Jun-12	0.334		*0.151*	0.806		0.388	1.12		*0.434*	0.098		*0.120*	0.300		*0.192*
11-Jun-13	0.329		*0.158*	5.99		2.05	-		-	-		-	-		-

Notes:

Qual. = Qualifer
U = Result is less than detection limit
J = Lab estimated result
B = Lab estimated result; result is less than reporting limit
Total Uncert = Total uncertainty (2 σ +/-)