

October 25, 2016

Mr. Brian Burkhardt, P.E.  
Environmental Quality Director  
Chatham County  
720 Renaissance Drive  
Pittsboro, North Carolina

**RE: Split Ash Sample Results – September 2016  
Charah Brickhaven Facility**

Dear Mr. Burkhardt:

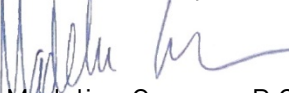
Smith Gardner, Inc. (S+G) is pleased to present the following results from the split ash sampling performed on September 28, 2016 by S+G personnel at the Charah Brickhaven Facility.

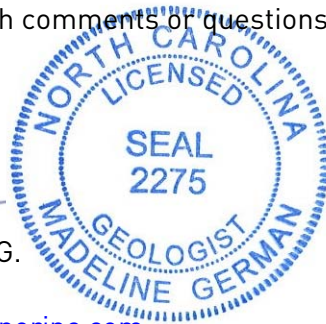
A composite ash sample was collected in the appropriate container provided by Prism Laboratories, Inc. and shipped, under proper chain of custody (COC), to the lab, on ice. Samples collected by S+G personnel were sent to Prism Laboratories, Inc.<sup>1</sup> (NC Certification No. 402) for analysis. TCLP analysis was performed for 8 RCRA Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver) as well as antimony, beryllium, boron, cobalt, copper, lithium, molybdenum, nickel, thallium, vanadium and zinc. The additional parameters were added due to their analysis in groundwater samples, to provide a direct comparison.

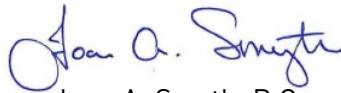
During the September event, vanadium and zinc were detected above the laboratory method detection limit (MDL). Analytical results from the September event are different than past events, because previous samples had not been analyzed under TCLP conditions. The attached table presents the laboratory results since May 2016.

Please contact us with comments or questions at (919) 828-0577 or by email below.

Sincerely,  
**SMITH GARDNER, INC.**

  
Madeline German, P.G.  
Project Geologist  
[madeline@smithgardnerinc.com](mailto:madeline@smithgardnerinc.com)



  
Joan A. Smyth, P.G.  
Senior Hydrogeologist  
[joan@smithgardnerinc.com](mailto:joan@smithgardnerinc.com)

Attachment: Laboratory Analytical Report  
cc: Dan LaMontagne – Chatham County

<sup>1</sup> Prism Laboratories, Inc. 449 Springbrook Road, Charlotte, NC 28224-0543

	5/26/2016	6/28/2016	7/29/2016	8/23/2016	9/28/2016*
Antimony	0.0305	0.0285	0.0135	0.049	<0.025
Arsenic	2.65	2.35	2.3	1.45	<0.05
Barium	18	19.5	22	15	<5
Beryllium	0.19	0.205	0.22	0.18	<0.01
Boron	1.1	1.15	1.3	1.25	<2.5
Cadmium	0.011	0.011	0.0165	0.0095	<0.025
Chromium	0.85	1.2	1.25	1.35	<0.25
Cobalt	0.55	0.6	0.55	0.475	<0.025
Copper	3.5	3.25	2.6	2.15	<0.05
Lead	0.85	0.9	1	0.7	<0.05
Lithium	1	1	1.05	0.85	NA
Mercury	0.00175	0.00485	0.0145	0.0125	<0.01
Molybdenum	0.135	0.145	0.085	0.08	<0.05
Nickel	1.1	1.2	1.15	1	<0.05
Selenium	0.1	0.185	0.495	0.85	<0.1
Thallium	0.0305	0.04	0.075	0.055	<0.05
Vanadium	3.45	3.65	3.9	3.15	0.04
Zinc	1.5	1.65	1.75	1.25	0.43

NOTE:

- 1) Units are mg/kg dry.
- 2) Total Constituent Analysis was performed for the May through August events; results were converted into maximum leachable concentrations by the EPA approved method of dividing by 20 (Section 1.2 of Method 1311, TCLP).
- 3) \* TCLP analysis, results in mg/L
- 4) NA = Constituent Not Analyzed



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Environmental Solutions

NC Certification No. 402  
NC Drinking Water Cert No. 37735  
SC Certification No. 99012

## Case Narrative

10/14/2016

Smith + Gardner, Inc.  
Joan Smyth  
14 N. Boylan Avenue  
Raleigh, NC 27603

Project: Chatham-16-2 Ash  
Project No.: Permit # 16-2  
Lab Submittal Date: 09/30/2016  
Prism Work Order: 6100014

This data package contains the analytical results for the project identified above and includes a Case Narrative, Sample Results and Chain of Custody. Unless otherwise noted, all samples were received in acceptable condition and processed according to the referenced methods.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative.

Please call if you have any questions relating to this analytical report.

Respectfully,

**PRISM LABORATORIES, INC.**

Angela D. Overcash  
VP Laboratory Services

Reviewed By Terri W. Cole For Angela D. Overcash  
Project Manager

### Data Qualifiers Key Reference:

BRL Below Reporting Limit

MDL Method Detection Limit

RPD Relative Percent Difference

\* Results reported to the reporting limit. All other results are reported to the MDL with values between MDL and reporting limit indicated with a J.

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449 Springbrook Road - P.O. Box 240543 - Charlotte, NC 28224-0543  
Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409

Client Sample ID	Lab Sample ID	Matrix	Date Sampled	Date Received
Charrah	6100014-01	Solid	09/28/16	09/30/16

Samples were received in good condition at 4.1 degrees C unless otherwise noted.

## Summary of Detections

10/14/2016

Prism Work Order: 6100014

Prism ID	Client ID	Parameter	Method	Result	Units
6100014-01	Charrah	Vanadium	*6010D	0.040	mg/L
6100014-01	Charrah	Zinc	*6010D	0.43	mg/L



Smith + Gardner, Inc.  
Attn: Joan Smyth  
14 N. Boylan Avenue  
Raleigh, NC 27603

Project: Chatham-16-2 Ash  
Project No.: Permit # 16-2  
Sample Matrix: Solid

Client Sample ID: Charrah  
Prism Sample ID: 6100014-01  
Prism Work Order: 6100014  
Time Collected: 09/28/16 08:30  
Time Submitted: 09/30/16 16:00

Parameter	Result	Units	SWSL	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>TCLP Extraction by EPA 1311</b>										
<b>TCLP Extraction</b>	<b>Complete</b>	<b>N/A</b>				<b>1</b>	<b>*1311</b>	<b>10/7/16 7:35</b>	<b>JAB</b>	<b>P6J0109</b>
<b>TCLP Metals</b>										
Mercury	<0.000030	mg/L		0.010	0.000030	1	*7470A	10/7/16 12:05	JAB	P6J0114
Antimony	<0.0045	mg/L		0.025	0.0045	1	*6010D	10/10/16 23:57	bgm	P6J0119
Arsenic	<0.0035	mg/L		0.050	0.0035	1	*6010D	10/10/16 23:57	bgm	P6J0119
Barium	<0.0035	mg/L		5.0	0.0035	1	*6010D	10/10/16 23:57	bgm	P6J0119
Beryllium	<0.00050	mg/L		0.010	0.00050	1	*6010D	10/10/16 23:57	bgm	P6J0119
Boron	<0.022	mg/L		2.5	0.022	1	*6010D	10/10/16 23:57	bgm	P6J0119
Cadmium	<0.00050	mg/L		0.025	0.00050	1	*6010D	10/10/16 23:57	bgm	P6J0119
Chromium	<0.0030	mg/L		0.25	0.0030	1	*6010D	10/10/16 23:57	bgm	P6J0119
Cobalt	<0.00040	mg/L	10	0.025	0.00040	1	*6010D	10/10/16 23:57	bgm	P6J0119
Copper	<0.0095	mg/L	10	0.050	0.0095	1	*6010D	10/10/16 23:57	bgm	P6J0119
Lead	<0.0065	mg/L		0.050	0.0065	1	*6010D	10/10/16 23:57	bgm	P6J0119
Molybdenum	<0.0015	mg/L	NE	0.050	0.0015	1	*6010D	10/10/16 23:57	bgm	P6J0119
Nickel	<0.0020	mg/L		0.050	0.0020	1	*6010D	10/10/16 23:57	bgm	P6J0119
Selenium	<0.016	mg/L		0.10	0.016	1	*6010D	10/10/16 23:57	bgm	P6J0119
Silver	<0.00050	mg/L		0.25	0.00050	1	*6010D	10/13/16 19:13	bgm	P6J0225
Thallium	<0.0065	mg/L	5.5	0.050	0.0065	1	*6010D	10/10/16 23:57	bgm	P6J0119
<b>Vanadium</b>	<b>0.040</b>	<b>mg/L</b>	<b>25</b>	<b>0.025</b>	<b>0.0015</b>	<b>1</b>	<b>*6010D</b>	<b>10/10/16 23:57</b>	<b>bgm</b>	<b>P6J0119</b>
<b>Zinc</b>	<b>0.43</b>	<b>mg/L</b>		<b>0.15</b>	<b>0.016</b>	<b>1</b>	<b>*6010D</b>	<b>10/10/16 23:57</b>	<b>bgm</b>	<b>P6J0119</b>



Smith + Gardner, Inc.  
 Attn: Joan Smyth  
 14 N. Boylan Avenue  
 Raleigh, NC 27603

Project: Chatham-16-2 Ash

Prism Work Order: 6100014

Time Submitted: 9/30/2016 4:00:00PM

Project No: Permit # 16-2

**TCLP Metals - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P6J0114 - 7470A</b>										
<b>Blank (P6J0114-BLK1)</b>				Prepared & Analyzed: 10/07/16						
Mercury	BRL	0.010	mg/L							
<b>LCS (P6J0114-BS1)</b>				Prepared & Analyzed: 10/07/16						
Mercury	0.00961	0.010	mg/L	0.009375		103	80-120			
<b>Batch P6J0119 - 3010A</b>										
<b>Blank (P6J0119-BLK1)</b>				Prepared: 10/07/16 Analyzed: 10/10/16						
Antimony	BRL	0.025	mg/L							
Arsenic	BRL	0.050	mg/L							
Barium	BRL	5.0	mg/L							
Beryllium	BRL	0.010	mg/L							
Boron	BRL	2.5	mg/L							
Cadmium	BRL	0.025	mg/L							
Chromium	BRL	0.25	mg/L							
Cobalt	BRL	0.025	mg/L							
Copper	BRL	0.050	mg/L							
Lead	BRL	0.050	mg/L							
Molybdenum	BRL	0.050	mg/L							
Nickel	BRL	0.050	mg/L							
Selenium	BRL	0.10	mg/L							
Thallium	BRL	0.050	mg/L							
Vanadium	BRL	0.025	mg/L							
Zinc	BRL	0.15	mg/L							
<b>LCS (P6J0119-BS1)</b>				Prepared: 10/07/16 Analyzed: 10/10/16						
Antimony	1.34	0.025	mg/L	1.250		107	80-120			
Arsenic	1.30	0.050	mg/L	1.250		104	80-120			
Barium	1.24	5.0	mg/L	1.250		99	80-120			
Beryllium	1.25	0.010	mg/L	1.250		100	80-120			
Boron	26.3	2.5	mg/L	25.00		105	80-120			
Cadmium	1.27	0.025	mg/L	1.250		102	80-120			
Chromium	1.30	0.25	mg/L	1.250		104	80-120			
Cobalt	1.31	0.025	mg/L	1.250		104	80-120			
Copper	1.31	0.050	mg/L	1.250		105	80-120			
Lead	1.23	0.050	mg/L	1.250		99	80-120			
Molybdenum	1.39	0.050	mg/L	1.250		111	80-120			
Nickel	1.24	0.050	mg/L	1.250		99	80-120			
Selenium	1.37	0.10	mg/L	1.250		109	80-120			
Thallium	1.21	0.050	mg/L	1.250		96	80-120			
Vanadium	1.33	0.025	mg/L	1.250		106	80-120			
Zinc	1.30	0.15	mg/L	1.250		104	80-120			

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Smith + Gardner, Inc.  
Attn: Joan Smyth  
14 N. Boylan Avenue  
Raleigh, NC 27603

Project: Chatham-16-2 Ash  
Project No: Permit # 16-2

Prism Work Order: 6100014  
Time Submitted: 9/30/2016 4:00:00PM

**TCLP Metals - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P6J0225 - 3010A</b>										
<b>Blank (P6J0225-BLK1)</b>					Prepared & Analyzed: 10/13/16					
Silver	BRL	0.25	mg/L							
<b>LCS (P6J0225-BS1)</b>					Prepared & Analyzed: 10/13/16					
Silver	0.490	0.25	mg/L	0.5000		98	80-120			

**Sample Extraction Data**

**Prep Method: 1311**

Lab Number	Batch	Initial	Final	Date/Time
6100014-01	P6J0109	100 g	2000 mL	10/06/16 15:25

**Prep Method: 3010A**

Lab Number	Batch	Initial	Final	Date/Time
6100014-01	P6J0225	10 mL	50 mL	10/13/16 10:35
6100014-01	P6J0119	10 mL	50 mL	10/07/16 9:50

**Prep Method: 7470A**

Lab Number	Batch	Initial	Final	Date/Time
6100014-01	P6J0114	20 mL	30 mL	10/07/16 8:25





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LABORATORIES, INC.

# CHAIN OF CUSTODY RECORD

PAGE     OF     QUOTE # TO ENSURE PROPER BILLING:    

Project Name: CHA22AH ASW SAMPLE

Short Hold Analysis: (Yes) (No)     UST Project: (Yes) (No)    

\*Please ATTACH any project specific reporting (QC LEVEL I II III IV) provisions and/or QC Requirements

Invoice To:    

Address:    

Reporting Address: 141 W. BOLKOW AVE  
FARGO, NC 27803

Phone:     Fax (Yes) (No):    

Email Address: lab@prism-lab.com

EDD Type: PDF  Excel  Other

Site Location Name: CHA22AH-16-2

Site Location Physical Address:    

### LAB USE ONLY

Samples INTACT upon arrival?	YES	NO	N/A
Received ON WET ICE?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PROPER PRESERVATIVES indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Received WITHIN HOLDING TIMES?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CUSTODY SEALS INTACT?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
VOLATILES rec'd W/OUT HEADSPACE?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PROPER CONTAINERS used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TEMP: Therm ID: <u>   </u>	Observed: <u>17.9C</u> / Corr: <u>11.1C</u>	<input type="checkbox"/>	<input type="checkbox"/>

Purchase Order No./Billing Reference      
Requested Due Date  1 Day  2 Days  3 Days  4 Days  5 Days  
"Working Days"  6-9 Days  Standard 10 days  Rush Work Must Be Pre-Approved  
Samples received after 14:00 will be processed next business day.  
Turnaround time is based on business days, excluding weekends and holidays.  
**SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT**

### TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL

Certification: NELAC     DOD     FL     NC    

Water Chlorinated: YES     NO    

Sample Iced Upon Collection: YES     NO    

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER			PRESERVATIVES	ANALYSIS REQUESTED	REMARKS	PRISM LAB ID NO.
				*TYPE SEE BELOW	NO.	SIZE				
CHARAH	9/28/16	0830	SOIL	G	1		N/A		was analyzed, results below, not analyzed, nickel, manganese, vanadium, zinc.	01

Sampler's Signature \_\_\_\_\_

Sampled By (Print Name) \_\_\_\_\_

Affiliation \_\_\_\_\_

Upon relinquishing, this Chain of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.

Additional Comments: \_\_\_\_\_

Relinquished By: (Signature) [Signature]

Received By: (Signature) [Signature]

Date 9/28/16 Military/Hours 1500

Relinquished By: (Signature) [Signature]

Received By: (Signature) [Signature]

Date 9-30-16 Military/Hours 1740

Method of Shipment:     NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.

COC Group No. 61000114

Fed Ex  UPS  Hand-delivered  Prism Field Service  Other

NIDES:  UST  GROUNDWATER:  DRINKING WATER:  SOLID WASTE:  RCRA:  CERCLA  LANDFILL  OTHER:

\*CONTAINER TYPE CODES: A = Amber C = Clear G = Glass P = Plastic; TL = Teflon-lined Cap VOA = Volatile Organics Analysis (Zero Head Space)

**PRESS DOWN FIRMLY - 3 COPIES**

**PRISM USE ONLY**

Site Arrival Time: \_\_\_\_\_

Site Departure Time: \_\_\_\_\_

Field Tech Fee: \_\_\_\_\_

Mileage: \_\_\_\_\_