Email Scanned

From: Logsdon, Cynthia J. <logsdocj@westinghouse.com>

Sent: Thursday, August 8, 2019 4:38 PM

To: Kuhn, Kimberly M. <kuhnkm@dhec.sc.gov>

Cc: Wills Jr, Edward L. <willsel@westinghouse.com>; Parr, Nancy B. <parrnb@westinghouse.com>

Subject: Westinghouse_RI Work Plan Addendum 1 SSAOU Assessment Report

*** Caution. This is an EXTERNAL email. DO NOT open attachments or click links from unknown senders or unexpected email. ***

Kim,

Please see attached for the Westinghouse Remedial Investigation Work Plan Addendum 1 Assessment Report on the Southern Storage Area Operable Unit. The hard copy will be postmarked to you tomorrow. Let me know if you have any questions or concerns. Best regards.

Cynthia Logsdon Principal Environmental Engineer Columbia Fuel Fabrication Facility (CFFF)

Environment, Health & Safety (EHS) Westinghouse Electric Company LLC 803.647.3171 desk 803.312.4171 cell 803.695.3964 fax

www.westinghousenuclear.com





Westinghouse Electric Company Nuclear Fuel Columbia Fuel Fabrication Facility 5801 Bluff Road Hopkins, South Carolina 29061 USA

RECEIVED

SCDHEC, BLWM Kim Kuhn 2600 Bull Street Columbia, SC 29201

AUG 1 2 2019

REMED ON & REVITALIZATION

Direct tel: 803.647.3171 Direct fax: 803.695.3964

e-mail: logsdocj@westinghouse.com

Your ref:

Our ref: LTR-RAC-19-65

August 8, 2019

Subject: Southern Storage Area Operable Unit Remedial Investigation Work Plan Addendum 1 Assessment Report

Mrs. Kuhn:

On June 18, 2019, Westinghouse submitted to the Department a work plan to investigate the Southern Storage Area (SSA) Operable Unit (OU). The SSAOU investigation was submitted as Addendum 1¹ of the overall Remedial Investigation being performed under the Consent Agreement CA-19-02-HW. This assessment report describes the work completed, sample results and the remaining actions for this investigation.

The SSAOU, in part, is used for the intermodal storage of materials awaiting uranium (U) recovery. On May 30, 2019, a scheduled inspection of intermodal containers (sea-lands) within the SSAOU was completed and identified impaired roofing and degraded drums due to rainwater intrusion in one sea-land, C-40. The drums within this sea-land included solid combustible materials, such as mop heads and filters, awaiting U reclamation by onsite incineration. C-40 was safely emptied of its contents by June 5, 2019; all drums were transferred to the main building for processing and C-40 was wrapped with tarps to minimize further water intrusion. Three soil samples were collected at 1 foot below soil surface (bss) in the area of the degraded drums beneath C-40, with results ranging in U concentrations from 2-4 ppm.

In addition, the groundwater wells associated with the SSAOU (W-7A, W-10, W-11, 13R, W-15, W-16, and W-32) were sampled on June 4-5, 2019. The results were received on June 21, 2019, and submitted to the Department on August 1, 2019, in the July 2019 CA progress Report². These results indicated that the intermodal storage has not contributed to the state of the groundwater beneath the site. Further review and comparison of groundwater well data from 2004 indicate that gross beta, Tc-99, and VOC contamination levels have not changed during the time of sea-land occupancy.

The initial extent of condition (EOC) evaluation for other onsite sea-lands identified a degraded floor in C-44 and roof leaks in C-35 and C-65. The roof leaks were immediately repaired. Corrective Action Program (CAP) issue number 2019-8970 was created, and a prioritized plan, starting with C-44, was developed for emptying each sea-land and inspecting each drum removed.



¹ Southern Storage Area Operable Unit Sampling Work Plan, Remedial Investigation Work Plan, Addendum 1, LTR-RAC-19-45, June 18, 2019

² July 2019 CA Progress Report, LTR-RAC-19-60, August 1, 2019

Phase 1 Sampling Results

Phase 1 of the Work Plan installed gravel to create a safe work area for operation of a forklift and/or other mobile machinery. This safe work area was needed to subsequently empty the drums within the sea-lands containing uranium-bearing material and to remove the containers from the site, starting with C-40.

Prior to gravel addition, the general area around the sea-lands, pictured in Figure 1, was sampled on June 21, 2019 for Contaminants of Potential Concern (CPOC) that could be present in the soil from materials stored in the intermodal containers, including isotopic uranium, Tc-99, pH, ammonia, nitrate and fluoride.

On June 28, 2019³, Westinghouse reported to the Department the radiological survey and GEL analytical results of Phase 1 sampling. Soil sampling followed EPA Regional⁴ guidance, were collected from 0-1 foot bss, and were analyzed by GEL using a chain of custody to ensure sample integrity.



Figure 1: Phase 1 Sampling Locations

³ June 2019 CA Progress Report, LTR-RAC-19-50, June 28, 2019

⁴ EPA Region 4 Science and Ecosystem Support Division (SESD), Operating Procedure SESDPROC-300-R3, *Soil Sampling*

Page 3 of 4 Our ref: LTR-RAC-19-65 August 8, 2019

Samples 1-8 are from the planned systematic grid, and bias samples 9-11 were taken behind C-40 where some low level contamination was detected during radiological survey and excavated prior to sampling. Based on these results tabulated in **Attachment A**, Westinghouse determined that the soil in the area met radiological unrestricted use criteria and acquired Department approval to install the gravel. The full laboratory report is included in **Attachment C**.

Phase 2 Sampling Results

C-40 was removed on June 28, 2019, and sent off for burial at a licensed low-level radioactive waste facility. The soil beneath C-40 was damp and allowed to dry in order to survey direct radiological readings. Radiological surveys showed low-level contamination above background levels. The Department was notified and approved Westinghouse's request to excavate the top layer of soil. The soil was removed, and the remaining area was resurveyed. The direct reading surveys were at or below background levels. The excavated soil is manifested for low-level radioactive waste burial.

Phase 2 sampling underneath the C-40 footprint was initiated. Eighteen soil samples were taken from the C-40 area on July 1, 2019, according to the work plan. Laboratory results were received on July 10, 2019. Radiological results for sample #9 exceeded the regional screening level for unrestricted use; therefore, the site elected to remove an additional 24" of soil in the immediately accessible vicinity (2' x 10'). The additional excavated soil from this area is manifested for low-level radioactive waste burial.

Following this further excavation, three additional soil samples were collected for uranium analysis on July 30, 2019. Results indicate that remediation has been completed in this area to levels that meet the unrestricted use criteria.

The results for sampling conducted on July 1, 2019, and July 30, 2019, are attached to this report in diagram and tabular formats as **Attachment B**.

Full laboratory reports are included as **Attachment C**.

Next Steps

Following the initial EOC evaluation, intermodal containers C-44, C-35 and C-65 have been safely emptied of their contents. Internal surveys of the empty containers indicate no material leaks or potential impact to the soil. However, as sea-lands are removed, the soil underneath will be sampled for confirmation.

A risk based action plan has been developed to empty the remaining intermodal containers containing uranium-bearing material and remove the emptied intermodal containers from the site.

If there is no visible indication of potential environmental impact when a sea-land is removed, sampling underneath the container will be initiated in accordance with a project plan that optimizes crane usage. That is, a crane will be scheduled onsite for a period of time that allows removal of multiple emptied intermodal containers. If there is indication of potential impact, Westinghouse will notify the Department per the communication protocol and discuss the appropriate actions including necessary sampling and Department approvals.

Page 4 of 4 Our ref: LTR-RAC-19-65 August 8, 2019

Respectfully,

Cynthia J. Logsdon Principal Environmental Engineer Westinghouse Electric Company, CFFF 803.312.4171 (m)

N. Parr, Environmental Manager E. Wills, EH&S Manager Cc:

ENOVIA Records

Fluoride (mg/kg) 0.724 0.405 0.372 0.778 0.832 0.702 0.382 0.363 0.362 1.36 1.32 Nitrate (mg/kg) 0.799 0.722 0.873 2.15 1.19 1.30 1.08 1.60 2.17 1.88 2.84 Ammonia (mg/kg) 58.8 53.0 51.0 86.4 84.8 55.4 53.5 149 134 46.1 76.1 (pCi/g) Tc-99 0.785 -4.81 3.62 5.16 4.22 3.60 2.21 2.07 -2.3 4.46 4.81 \vee ٧ V \vee V V ٧ V Total Isotopic Uranium $(\mu g/g)$ 0.915 0.815 0.811 2.64 0.681 2.80 1.37 1.83 1.86 3.42 8.35 V ٧ U_{238} (ug/g) 0.804 0.802 0.903 0.671 1.35 1.79 1.82 3.37 8.07 2.58 2.74 0.00829 0.00958 0.00752 U_{235} (ug/g) 0.055 0.0609 0.00661 0.0162 0.0345 0.0362 0.0519 0.279 0.00215 0.00216 0.00211 0.00223 0.00207 0.00231 0.00207 0.00211 0.00221 0.00219 0.0021 U_{234} (ug/g) ٧ ٧ ٧ ٧ ٧ ٧ 4.72 5.49 5.00 5.23 4.75 5.55 4.92 4.48 4.95 5.23 4.63 \mathbf{pH} Sample Location 10 \mathfrak{S} 4 2 9 ∞ 6 Systematic (S) or Bias (B) Sample S \mathbf{v} \mathbf{v} \mathbf{v} \mathbf{v} \mathbf{v} \mathbf{v} \mathbf{v} \mathbf{B} B

Attachment A Addendum 1 to RI Work Plan Phase 1 Soil Sampling Results (Pre-Gravel) Sampling conducted June 21, 2019

excavated area following first round of sampling 2.51 0.714 21.31 1.29 7.39 #18 #12 å ¥ 9# 0.568 0.674 73 83 9990 2 3.92 #17 initial Chem Lab samples C-40 FRONT C-40 REAR 0.776 2.92 1.48 #10 1.17 2.93 2.86 #16 #13 SAMPLE RESULTS ARE IN PPM U systematic samples #4 #2 bias samples 4.59 #15 0.638 0.667 0.772 6.81 2.27 3.85 2.91 #14 #11 #1 ¥ # 0.714 0.776 0.638 6.70 1.29 6.81 2.86 2.51 2.27 1.48 4.59 2.92 3.92 7.39 0.772 0.667 1.17 Total U 0.00532 0.0215 0.905 0.240 0.0641 0.019 0.179 0.118 0.0439 0.0838 0.248 0.666 0.568 0.00618 0.674 0.0925 0.0059 0.0513 0.00508 0.0193 0.00727 1 ug/g = 1 ppmTotal U U235 Phase 2 Southern Storage Area Operable Unit - Soil Sampling - Beneath Sea-land C-40 0.00258 0.00461 0.00493 0.00402 0.00881 0.00238 1000 ug/kg = 1 ppm0.00212 0.00218 0.768 0.00206 0.00218 0.00228 0.00213 0.00216 0.00221 0.00218 0.00207 0.00207 0.0021 0.00225 **U234 U235** 6.46 2.46 20.4 1.46 0.763 0.630 2.20 1.27 6.63 0.706 0.660 1.15 4.47 3.83 0.00218 0.00216 0.00211 U238 **U234** 0.659 0.562 0.667 14.0 11.9 22.9 22.5 16.8 19.3 20.9 22.2 21.9 20.0 14.0 15.2 pCi/g Tc-99 NOTE: italicized = non-detectable, reported at detection limit Re-sampling following soil excavation of Sample #9 Area 666.110 568.180 4.52 4.53 4.63 4.15 4.74 5.52 4.84 4.66 4.79 4.66 4.60 4.65 4.75 4.85 4.61 673.720 Total U SO (H) Hd 2.60 2.23 3.23 15.4 1.26 4.93 4.02 2.14 1.95 2.18 2.43 2.69 Ammonia Nitrate **U235** 1 mg/kg = 1 ppm37.6 76.9 28.8 50.2 33.3 35.9 49.9 50.0 81.3 38.2 36.3 42.3 91.0 88.6 46.1 87.8 56.5 2.18 2.16 **U234** July 30, 2019 Sampling July 1, 2019 Sampling 667 659 562 0.593 1.00 0.658 1.52 0.851 0.900 1.06 0.495 0.957 Fluoride 0.396 0.375 0.391 0.366 0.374 0.391 1.1 (H): out of holding **U238**

C-40-13

C-40-14

C-40-12

C-40-10

C-40-8 C-40-9

C-40-4 C-40-5

C-40-2 C-40-1

C-40-3

C-40-6 C-40-7

C-40-11

C-40-15 C-40-16 C-40-18

C-40-17

C-40-R3

C-40-R2

C-40-R1

Attachment B Addendum 1 to RI Work Plan Phase 2 Soil Sampling Results (Under C-40)

Attachment C

Addendum 1 to RI Work Plan

Phase 1 Soil Sampling Laboratory Results (Pre-Gravel) Sampling conducted June 21, 2019

GEL Work Order: 482639

Report Date: June 28, 2019

Phase 2 Soil Sampling Laboratory Results Sampling conducted July 1, 2019 GEL Work Order: 483471 Report Date: July 10, 2019

Phase 2 Soil Sampling Laboratory Results Post-Excavation of Sample #9 Area Sampling conducted July 30, 2019 GEL Work Order: 486245

Report Date: August 5, 2019



a member of The GEL Group INC







PO Box 30712 Charleston, SC 29417 2040 Savage Road Charleston, SC 29407 P 843.556.8171 F 843.766.1178

gel.com

June 28, 2019

Ms. Cynthia Logsdon Westinghouse Electric Company, LLC PO Drawer R Columbia, South Carolina 29205

Re: Soil and Vegetation Analysis

Work Order: 482639

Dear Ms. Logsdon:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 21, 2019. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4778.

Sincerely,

Taylor Cannon fo Hope Taylor Project Manager

Purchase Order: 4500745037

Enclosures



2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis Report for

WNUC007 Westinghouse Electric Co, LLC Client SDG: 482639 GEL Work Order: 482639

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- H Analytical holding time was exceeded
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Hope Taylor.

	78(10G)	
Reviewed by		

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-1 Sample ID: 482639001

Matrix: Soil

Moisture:

Collect Date: 20-JUN-19 06:27 Receive Date: 21-JUN-19 Collector: Client

11.4%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	e Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	e and Nitrate	"Dry Weight Corr	ected"									
Fluoride		1.32	0.375	1.10	mg/kg	9.78	1	LXA2	06/24/19	1731	1890034	1
Nitrate-N		2.15	0.364	1.10	mg/kg	9.78	1					
Metals Analysis-ICP-M	IS											
SW846 3050B/6020A	Uranium Soli	d "Dry Weight Co	rrected"									
Uranium-235		0.055	0.0022	0.0154	ug/g	97.5	2	SKJ	06/25/19	1438	1889555	2
Uranium-238		2.58	0.0145	0.044	ug/g	97.5	2					
Uranium-234	U	ND	0.00207	0.0103	ug/g	91.6	2	SKJ	06/27/19	1318	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	y Weight Correcte	d"									
Nitrogen, Ammonia	•	86.4	4.46	12.4	mg/kg	43.9	5	KLP1	06/24/19	1429	1889626	4
Titration and Ion Analy	vsis											
SW9045D Corrosivity	(pH<2or>14)	"As Received"										
Corrosivity	Н	5.55	0.010	0.100	SU		1	RXB5	06/24/19	1435	1889313	5
The following Prep Me	thods were p	erformed:										
Method	Description	n		Analyst	Date		Tim	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	Iod. Ammonia Nitroge	n Prep	AXH3	06/24/19		0730	18	89625			
SW846 3050B	ICP-MS 3050	OBS PREP		SXW1	06/24/19		0541	18	89554			
SW846 3050B	ICP-MS 3050	OBS PREP		SXW1	06/25/19		0531	18	90062			
SW846 9056A	SW846 9056	A Total Anions in Soil		JLD1	06/24/19		1246	18	90032			
The following Analytic	cal Methods v	were performed:										

The following A	analytical Methods were performed.	
Method	Description	Analyst Comment

1 SW846 9056A 2 SW846 3050B/6020A 3 SW846 3050B/6020A 4 EPA 350.1 Modified 5 SW846 9045D

Notes:

Page 3 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-1 Project: WNUC00518 Sample ID: 482639001 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-2 Sample ID: 482639002

Matrix: Soil

Collect Date: 20-JUN-19 06:36
Receive Date: 21-JUN-19
Collector: Client

Moisture: 14.6%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	e Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	e and Nitrate '	'Dry Weight Cor	rected"									
Fluoride	J	0.724	0.395	1.16	mg/kg	9.93	1	LXA2	06/24/19	2001	1890034	1
Nitrate-N	J	0.799	0.384	1.16	mg/kg	9.93	1					
Metals Analysis-ICP-M	IS											
SW846 3050B/6020A	Uranium Soli	d "Dry Weight Co	orrected"									
Uranium-235	J	0.00958	0.00231	0.0162	ug/g	98.8	2	SKJ	06/25/19	1445	1889555	2
Uranium-238		0.903	0.0153	0.0463	ug/g	98.8	2					
Uranium-234	U	ND	0.00231	0.0116	ug/g	98.8	2	SKJ	06/27/19	1328	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	.mmonia "Dry	Weight Correcte	ed"									
Nitrogen, Ammonia		134	4.54	12.6	mg/kg	43.1	5	KLP1	06/24/19	1431	1889626	4
Titration and Ion Analy	vsis .											
SW9045D Corrosivity	(pH<2or>14)	"As Received"										
Corrosivity	Н	5.23	0.010	0.100	SU		1	RXB5	06/24/19	1437	1889313	5
The following Prep Me	thods were pe	erformed:										
Method	Description	1		Analyst	Date	,	Time	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	od. Ammonia Nitrogo	en Prep	AXH3	06/24/19	(0730	188	89625			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/24/19		0541	188	89554			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/25/19		0531	189	90062			
SW846 9056A	SW846 9056	A Total Anions in Soi	1	JLD1	06/24/19		1246	189	90032			
The following Analytic	cal Methods v	vere performed:										
Method	Description				P	Analyst	t Co	mments	s			
1	CHIOACOOFCA											

1 SW846 9056A 2 SW846 3050B/6020A 3 SW846 3050B/6020A 4 EPA 350.1 Modified 5 SW846 9045D

Notes:

Page 5 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-2 Project: WNUC00518 Sample ID: 482639002 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 6 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Project:

Client ID:

Certificate of Analysis

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon Soil and Vegetation Analysis Project:

Client Sample ID: SSAOU-3 Sample ID: 482639003

Matrix: Soil

Collect Date: 20-JUN-19 06:42 21-JUN-19 Receive Date: Collector: Client

Moisture: 12%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	e and Nitrate	"Dry Weight Co	rrected"									
Fluoride	U	ND	0.382	1.12	mg/kg	9.88	1	LXA2	06/24/19	2030	1890034	1
Nitrate-N		1.19	0.371	1.12	mg/kg	9.88	1					
Metals Analysis-ICP-M	1S											
SW846 3050B/6020A	Uranium Soli	d "Dry Weight C	Corrected"									
Uranium-235		0.0609	0.00226	0.0158	ug/g	99.2	2	SKJ	06/25/19	1424	1889555	2
Uranium-238		2.74	0.0149	0.0451	ug/g	99.2	2					
Uranium-234	U	ND	0.00211	0.0105	ug/g	92.6	2	SKJ	06/27/19	1330	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	Weight Correct	ted"									
Nitrogen, Ammonia		84.8	0.812	2.26	mg/kg	39.7	1	KLP1	06/24/19	1401	1889626	4
Titration and Ion Analy	/sis											
SW9045D Corrosivity	(pH<2or>14)	"As Received"										
Corrosivity	Н	4.48	0.010	0.100	SU		1	RXB5	06/24/19	1439	1889313	5
The following Prep Me	ethods were pe	erformed:										
Method	Description	n		Analyst	Date	,	Γime	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	Iod. Ammonia Nitro	gen Prep	AXH3	06/24/19	(0730	188	39625			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/24/19	(0541	188	89554			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/25/19	(0531	189	90062			
SW846 9056A	SW846 9056.	A Total Anions in So	oil	JLD1	06/24/19		1246	189	90032			
The following Analytic	cal Methods v	were performed:										
Method	Description	1		<u> </u>	A	nalyst	Coı	nments	3			

SW846 9056A 2 SW846 3050B/6020A 3 SW846 3050B/6020A 4 EPA 350.1 Modified 5 SW846 9045D

Notes:

Page 7 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-3 Project: WNUC00518 Sample ID: 482639003 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method
-----------	-----------	--------	----	----	-------	----	-----------------	-------------------

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Analyst Comments

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon Soil and Vegetation Analysis Project:

9.72%

Client Sample ID: SSAOU-4 Sample ID: 482639004

Matrix: Soil

Moisture:

Collect Date: 20-JUN-19 06:49 21-JUN-19 Receive Date: Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	and Nitrate '	"Dry Weight Corrected	l"									
Fluoride	U	ND	0.363	1.07	mg/kg	9.64	1	LXA2	06/24/19	2100	1890034	1
Nitrate-N		1.30	0.352	1.07	mg/kg	9.64	1					
Metals Analysis-ICP-M	S											
SW846 3050B/6020A U	Jranium Solid	d "Dry Weight Correct	ed"									
Uranium-235	J	0.00829	0.00208	0.0146	ug/g	94.0	2	SKJ	06/25/19	1426	1889555	2
Uranium-238		0.804	0.0137	0.0416	ug/g	94.0	2					
Uranium-234	U	ND	0.00221	0.0111	ug/g	99.8	2	SKJ	06/27/19	1331	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	Weight Corrected"										
Nitrogen, Ammonia		55.4	0.997	2.77	mg/kg	50.0	1	KLP1	06/24/19	1402	1889626	4
Titration and Ion Analys	sis											
SW9045D Corrosivity (pH<2or>14)	"As Received"										
Corrosivity	Н	4.63	0.010	0.100	SU		1	RXB5	06/24/19	1439	1889313	5
The following Prep Met	thods were pe	erformed:										
Method	Description	1		Analyst	Date	-	Гітє	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	od. Ammonia Nitrogen Prep)	AXH3	06/24/19	(0730	18	89625			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/24/19	(0541	18	89554			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/25/19	(0531	18	90062			
SW846 9056A	SW846 9056A	A Total Anions in Soil		JLD1	06/24/19		1246	18	90032			
The following Analytic	al Methods v	vere performed:										

Description

SW846 9056A 2 SW846 3050B/6020A 3 SW846 3050B/6020A 4 EPA 350.1 Modified 5 SW846 9045D

Notes:

Method

Page 9 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-4 Project: WNUC00518 Sample ID: 482639004 Client ID: WNUC007

Parameter Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch	Method
---------------------	--------	----	----	-------	----	-----------------	------------	--------

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 10 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-5 Sample ID: 482639005

Matrix: Soil

Collect Date: 20-JUN-19 06:55
Receive Date: 21-JUN-19
Collector: Client

Moisture: 8.26%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	e Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	e and Nitrate	"Dry Weight	Corrected"									
Fluoride	U	ND	0.362	1.07	mg/kg	9.78	1	LXA2	06/24/19	2130	1890034	1
Nitrate-N		1.08	0.352	1.07	mg/kg	9.78	1					
Metals Analysis-ICP-M	IS											
SW846 3050B/6020A U	Uranium Soli	d "Dry Weig	nt Corrected"									
Uranium-235	J	0.00661	0.00204	0.0143	ug/g	93.6	2	SKJ	06/25/19	1427	1889555	2
Uranium-238		0.802	0.0135	0.0408	ug/g	93.6	2					
Uranium-234	U	ND	0.00207	0.0103	ug/g	94.9	2	SKJ	06/27/19	1333	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	Weight Cor	rected"									
Nitrogen, Ammonia		53.5	0.926	2.57	mg/kg	47.2	1	KLP1	06/24/19	1434	1889626	4
Titration and Ion Analy	rsis											
SW9045D Corrosivity	(pH<2or>14)	"As Receive	d"									
Corrosivity	Н	5.23	0.010	0.100	SU		1	RXB5	06/24/19	1440	1889313	5
The following Prep Me	thods were pe	erformed:										
Method	Description	n		Analyst	Date	,	Time	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	lod. Ammonia N	itrogen Prep	AXH3	06/24/19	(0730	188	89625			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/24/19	(0541	188	89554			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/25/19		0531	189	90062			
SW846 9056A	SW846 9056.	A Total Anions	n Soil	JLD1	06/24/19		1246	189	90032			
The following Analytic	cal Methods v	were perform	ed:									
Method	Description	1			A	Analyst	Co	mments	S			

1 SW846 9056A 2 SW846 3050B/6020A 3 SW846 3050B/6020A 4 EPA 350.1 Modified 5 SW846 9045D

Notes:

Page 11 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-5 Project: WNUC00518 Sample ID: 482639005 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 12 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Analyst Comments

Report Date: June 28, 2019

WNUC00518

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-6 Sample ID: 482639006

Matrix: Soil

Moisture:

Collect Date: 20-JUN-19 07:01 21-JUN-19 Receive Date: Collector: Client

8.86%

Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	e and Nitrate	"Dry Weight Corrected	"									
Fluoride	J	0.405	0.368	1.08	mg/kg	9.88	1	LXA2	06/24/19	2200	1890034	1
Nitrate-N	J	0.722	0.358	1.08	mg/kg	9.88	1					
Metals Analysis-ICP-N	1S											
SW846 3050B/6020A	Uranium Soli	d "Dry Weight Correcte	ed"									
Uranium-235		0.0162	0.00213	0.0149	ug/g	96.9	2	SKJ	06/25/19	1429	1889555	2
Uranium-238		1.35	0.014	0.0425	ug/g	96.9	2					
Uranium-234	U	ND	0.00216	0.0108	ug/g	98.2	2	SKJ	06/27/19	1334	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	.mmonia "Dry	Weight Corrected"										
Nitrogen, Ammonia		58.8	0.796	2.21	mg/kg	40.3	1	KLP1	06/24/19	1435	1889626	4
Titration and Ion Analy	vsis											
SW9045D Corrosivity	(pH<2or>14)	"As Received"										
Corrosivity	Н	4.75	0.010	0.100	SU		1	RXB5	06/24/19	1441	1889313	5
The following Prep Me	thods were pe	erformed:										
Method	Description	n		Analyst	Date	,	Tim	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	Iod. Ammonia Nitrogen Prep		AXH3	06/24/19		0730	18	89625			

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	AXH3	06/24/19	0730	1889625
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/24/19	0541	1889554
SW846 3050B	ICP-MS 3050BS PREP	SXW1	06/25/19	0531	1890062
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	06/24/19	1246	1890032

The following Analytical Methods were performed:

Method	Description	
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	

SW846 9045D

Notes:

Page 13 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-6 Project: WNUC00518 Sample ID: 482639006 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 14 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-7 Sample ID: 482639007

Matrix: Soil

Moisture:

Collect Date: 21-JUN-19 Receive Date: Collector: Client

20-JUN-19 07:08

10.2%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	e and Nitrate	"Dry Weight Co	orrected"									
Fluoride		1.36	0.378	1.11	mg/kg	9.98	1	LXA2	06/24/19	2230	1890034	1
Nitrate-N		1.60	0.366	1.11	mg/kg	9.98	1					
Metals Analysis-ICP-M	1S											
SW846 3050B/6020A	Uranium Soli	d "Dry Weight (Corrected"									
Uranium-235		0.0345	0.00222	0.0156	ug/g	99.8	2	SKJ	06/25/19	1430	1889555	2
Uranium-238		1.79	0.0147	0.0444	ug/g	99.8	2					
Uranium-234	U	ND	0.00211	0.0105	ug/g	94.7	2	SKJ	06/27/19	1339	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	y Weight Correc	ted"									
Nitrogen, Ammonia		149	4.32	12.0	mg/kg	43.1	5	KLP1	06/24/19	1435	1889626	4
Titration and Ion Analy	/sis											
SW9045D Corrosivity	(pH<2or>14)	"As Received"										
Corrosivity	Н	5.49	0.010	0.100	SU		1	RXB5	06/24/19	1442	1889313	5
The following Prep Me	thods were pe	erformed:										
Method	Description	n		Analyst	Date	,	Time	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	Iod. Ammonia Nitro	gen Prep	AXH3	06/24/19	(0730	188	89625			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/24/19	(0541	188	89554			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/25/19	(0531	189	90062			
SW846 9056A	SW846 9056.	A Total Anions in S	oil	JLD1	06/24/19		1246	189	90032			
The following Analytic	cal Methods v	were performed:										
Method	Method Description				Α	Analyst	t Co	mments	s			

Michiou	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	EPA 350.1 Modified
5	SW846 9045D

Notes:

Page 15 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-7 Project: WNUC00518 Sample ID: 482639007 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method
-----------	-----------	--------	----	----	-------	----	-----------------	-------------------

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 16 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Analyst Comments

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-8 Sample ID: 482639008

Matrix: Soil

Collect Date: 20-JUN-19 07:14 21-JUN-19 Receive Date:

Collector: Client Moisture: 9.39%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	e Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	and Nitrate	"Dry Weight C	orrected"									
Fluoride	U	ND	0.372	1.09	mg/kg	9.90	1	LXA2	06/24/19	2300	1890034	1
Nitrate-N	J	0.873	0.361	1.09	mg/kg	9.90	1					
Metals Analysis-ICP-M	IS											
SW846 3050B/6020A U	Jranium Soli	d "Dry Weight	Corrected"									
Uranium-235	J	0.00752	0.0019	0.0133	ug/g	86.2	2	SKJ	06/25/19	1432	1889555	2
Uranium-238		0.671	0.0126	0.0381	ug/g	86.2	2					
Uranium-234	U	ND	0.00219	0.0109	ug/g	99.2	2	SKJ	06/27/19	1341	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	Weight Corre	cted"									
Nitrogen, Ammonia		46.1	0.974	2.71	mg/kg	49.0	1	KLP1	06/24/19	1436	1889626	4
Titration and Ion Analy	sis											
SW9045D Corrosivity ((pH<2or>14)	"As Received"	1									
Corrosivity	Н	4.95	0.010	0.100	SU		1	RXB5	06/24/19	1443	1889313	5
The following Prep Me	thods were pe	erformed:										
Method	Description	n		Analyst	Date	,	Time	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	lod. Ammonia Nitr	ogen Prep	AXH3	06/24/19	(0730	183	89625			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/24/19		0541	188	89554			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/25/19		0531	189	90062			
SW846 9056A	SW846 9056	A Total Anions in	Soil	JLD1	06/24/19		1246	189	90032			
The following Analytic	cal Methods v	vere performed	:									

Description

SW846 9056A 2 SW846 3050B/6020A 3 SW846 3050B/6020A 4 EPA 350.1 Modified

SW846 9045D

Notes:

Method

Page 17 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-8 Project: WNUC00518 Sample ID: 482639008 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method
-----------	-----------	--------	----	----	-------	----	-----------------	-------------------

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 18 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Project:

Client ID:

Analyst Comments

Certificate of Analysis

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-9 Sample ID: 482639009

Matrix: Soil

Collect Date: 20-JUN-19 15:33 21-JUN-19 Receive Date: Collector: Client

Moisture: 10.9%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	e and Nitrate	"Dry Weight Cor	rected"									
Fluoride	J	0.778	0.369	1.09	mg/kg	9.69	1	LXA2	06/24/19	2330	1890034	1
Nitrate-N		2.17	0.359	1.09	mg/kg	9.69	1					
Metals Analysis-ICP-M	IS											
SW846 3050B/6020A	Uranium Soli	d "Dry Weight C	orrected"									
Uranium-235		0.0362	0.002	0.014	ug/g	89.0	2	SKJ	06/25/19	1339	1889555	2
Uranium-238		1.82	0.0132	0.0399	ug/g	89.0	2					
Uranium-234	U	ND	0.00215	0.0107	ug/g	95.6	2	SKJ	06/27/19	1342	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	.mmonia "Dry	y Weight Correcte	ed"									
Nitrogen, Ammonia		53.0	0.918	2.55	mg/kg	45.5	1	KLP1	06/24/19	1441	1889626	4
Titration and Ion Analy	vsis .											
SW9045D Corrosivity	(pH<2or>14)	"As Received"										
Corrosivity	Н	4.92	0.010	0.100	SU		1	RXB5	06/24/19	1444	1889313	5
The following Prep Me	thods were pe	erformed:										
Method	Description	n		Analyst	Date	ŗ	Time	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	Iod. Ammonia Nitrog	en Prep	AXH3	06/24/19	(0730	18	89625			
SW846 3050B	ICP-MS 3050)BS PREP		SXW1	06/24/19	(0541	18	89554			
SW846 3050B	ICP-MS 3050)BS PREP		SXW1	06/25/19	(0531	189	90062			
SW846 9056A	SW846 9056.	A Total Anions in So	1	JLD1	06/24/19		1246	189	90032			

The following	g Analytical Methods were performed	1:
Method	Description	

1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	EPA 350.1 Modified
5	SW846 9045D

Notes:

Page 19 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-9 Project: WNUC00518 Sample ID: 482639009 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 20 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Analyst Comments

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-10 Sample ID: 482639010

Matrix: Soil

Collect Date: 20-JUN-19 15:38
Receive Date: 21-JUN-19
Collector: Client
Moisture: 10.5%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	and Nitrate	"Dry Weight Cor	rrected"									
Fluoride	J	0.832	0.380	1.12	mg/kg	10.0	1	LXA2	06/25/19	0000	1890034	1
Nitrate-N		1.88	0.369	1.12	mg/kg	10.0	1					
Metals Analysis-ICP-M	IS .											
SW846 3050B/6020A U	Jranium Soli	d "Dry Weight C	'orrected"									
Uranium-235		0.0519	0.00214	0.0149	ug/g	95.6	2	SKJ	06/25/19	1341	1889555	2
Uranium-238		3.37	0.0141	0.0427	ug/g	95.6	2					
Uranium-234	U	ND	0.0021	0.0105	ug/g	94.2	2	SKJ	06/27/19	1344	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	Weight Correct	ed"									
Nitrogen, Ammonia		76.1	0.914	2.54	mg/kg	45.5	1	KLP1	06/24/19	1442	1889626	4
Titration and Ion Analy	sis											
SW9045D Corrosivity ((pH<2or>14)	"As Received"										
Corrosivity	Н	5.00	0.010	0.100	SU		1	RXB5	06/24/19	1444	1889313	5
The following Prep Me	thods were pe	erformed:										
Method	Description	n		Analyst	Date	,	Time	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	Iod. Ammonia Nitrog	gen Prep	AXH3	06/24/19	(0730	183	89625			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/24/19		0541	188	89554			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/25/19	(0531	189	90062			
SW846 9056A	SW846 9056.	A Total Anions in So	il	JLD1	06/24/19		1246	189	90032			
The following Analytic	al Methods v	were performed:										

Method Description

1 SW846 9056A
2 SW846 3050B/6020A
3 SW846 3050B/6020A
4 EPA 350.1 Modified
5 SW846 9045D

Notes:

Page 21 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-10 Project: WNUC00518 Sample ID: 482639010 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch	Method
-----------	-----------	--------	----	----	-------	----	-----------------	------------	--------

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 22 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-11 Sample ID: 482639011

Matrix: Soil

Collect Date: 20-JUN-19 15:44
Receive Date: 21-JUN-19
Collector: Client

Moisture: 11.3%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	and Nitrate	"Dry Weight	Corrected"									
Fluoride	J	0.702	0.383	1.13	mg/kg	10.0	1	LXA2	06/25/19	0029	1890034	1
Nitrate-N		2.84	0.372	1.13	mg/kg	10.0	1					
Metals Analysis-ICP-M	IS											
SW846 3050B/6020A U	Jranium Soli	d "Dry Weig	nt Corrected"									
Uranium-235		0.279	0.0108	0.0755	ug/g	95.6	10	SKJ	06/25/19	1342	1889555	2
Uranium-238		8.07	0.0712	0.216	ug/g	95.6	10					
Uranium-234	U	ND	0.00223	0.0112	ug/g	99.0	2	SKJ	06/27/19	1345	1890064	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	Weight Cor	rected"									
Nitrogen, Ammonia		51.0	0.651	1.81	mg/kg	32.1	1	KLP1	06/24/19	1443	1889626	4
Titration and Ion Analy	sis											
SW9045D Corrosivity ((pH<2or>14)	"As Receive	d"									
Corrosivity	Н	4.72	0.010	0.100	SU		1	RXB5	06/24/19	1445	1889313	5
The following Prep Met	thods were pe	erformed:										
Method	Description	n		Analyst	Date	,	Гimе	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	lod. Ammonia N	itrogen Prep	AXH3	06/24/19	(0730	18	89625			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/24/19	(0541	183	89554			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	06/25/19	(0531	189	90062			
SW846 9056A	SW846 9056	A Total Anions	n Soil	JLD1	06/24/19		1246	189	90032			
The following Analytic	cal Methods v	were perform	ed:									
Method	Description	1			A	Analyst	Coı	nments	S			

1 SW846 9056A 2 SW846 3050B/6020A 3 SW846 3050B/6020A 4 EPA 350.1 Modified 5 SW846 9045D

Notes:

Page 23 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 28, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-11 Project: WNUC00518 Sample ID: 482639011 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch	Method
-----------	-----------	--------	----	----	-------	----	-----------------	------------	--------

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 24 of 54 SDG: 482639

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: June 28, 2019

Page 1 of 5

Westinghouse Electric Company, LLC

PO Drawer R

Columbia, South Carolina

Contact: Ms. Cynthia Logsdon

Workorder: 482639

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range Anlst	Date Time
Ion Chromatography Batch 1890034								
QC1204316080 482639001 DUP Fluoride		1.32	2.04	mg/kg	42.7 ^		(+/-1.12) LXA2	06/24/19 18:01
Nitrate-N		2.15	2.20	mg/kg	2.2 ^		(+/-1.12)	
QC1204316081 482639011 DUP Fluoride	J	0.702 ^J	0.775	mg/kg	9.91 ^		(+/-1.12)	06/25/19 01:59
Nitrate-N		2.84	2.78	mg/kg	2.15 ^		(+/-1.12)	
QC1204316079 LCS Fluoride	24.8		24.9	mg/kg		100	(90%-110%)	06/24/19 17:01
Nitrate-N	24.8		23.4	mg/kg		94.1	(90%-110%)	
QC1204316078 MB Fluoride		U	ND	mg/kg				06/24/19 16:31
Nitrate-N		U	ND	mg/kg				
QC1204316082 482639001 MS Fluoride	28.2	1.32	15.4	mg/kg		49.8	(44%-130%)	06/24/19 18:31
Nitrate-N	28.2	2.15	29.0	mg/kg		95.2	(71%-117%)	
QC1204316083 482639011 MS Fluoride	28.0 Ј	0.702	8.48	mg/kg		27.8*	(44%-130%)	06/25/19 02:29
Nitrate-N	28.0	2.84	29.8	mg/kg		96.3	(71%-117%)	

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 482639 Page 2 of 5 Sample Qual **Parmname** NOM \mathbf{QC} Units RPD% REC% Range Anlst Date Time Metals Analysis - ICPMS 1889555 Batch QC1204314811 482639001 DUP 0.055 0.057 Uranium-235 3.46 ^ (+/-0.0154)SKJ 06/25/19 14:39 ug/g Uranium-238 2.58 2.85 ug/g10 (0%-20%)QC1204314810 LCS Uranium-235 0.0342 0.0345 ug/g 101 (80%-120%) 06/25/19 13:38 Uranium-238 4.71 4.97 106 (80%-120%) ug/g QC1204314809 MB Uranium-235 U ND 06/25/19 13:36 ug/g U Uranium-238 ND ug/gQC1204314812 482639001 MS Uranium-235 0.0397 0.055 0.102 119 (75% - 125%)06/25/19 14:41 ug/g Uranium-238 5.47 2.58 8.47 108 (75%-125%)ug/g OC1204314813 482639001 SDILT Uranium-235 0.250J0.0489 ug/L 2.24 (0%-10%)06/25/19 14:44 Uranium-238 11.7 2.35 ug/L (0%-10%).325 Batch 1890064 QC1204316173 482639001 DUP U NDU ND Uranium-234 SKJ 06/27/19 13:19 ug/g N/A QC1204316172 LCS Uranium-234 0.0513 0.0573 112 (80%-120%) 06/27/19 13:16 ug/g QC1204316171 MB

U

ND

ug/g

06/27/19 13:14

Uranium-234

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 482639 Page 3 of 5 **Parmname** NOM Sample Qual \mathbf{QC} Units RPD% REC% Range Anlst Date Time Metals Analysis - ICPMS 1890064 Batch QC1204316174 482639001 MS ND 0.061 U 0.0659 107 Uranium-234 (75%-125%) SKJ 06/27/19 13:21 ug/g QC1204316175 482639001 SDILT U Uranium-234 NDU ND N/A 06/27/19 13:22 ug/L **Nutrient Analysis** Batch 1889626 QC1204314990 482639001 DUP Nitrogen, Ammonia 86.4 109 mg/kg 23.5* (0%-20%) KLP1 06/24/19 14:29 QC1204314991 482639002 DUP Nitrogen, Ammonia 134 60.7 mg/kg 75.2*^ (+/-13.3)06/24/19 14:32 QC1204314989 LCS 50.0 54.5 109 (90%-110%) 06/24/19 13:55 Nitrogen, Ammonia mg/kg QC1204314988 MB U ND Nitrogen, Ammonia mg/kg 06/24/19 13:54 QC1204314992 482639001 MS 109 86.4 Nitrogen, Ammonia 36.2 mg/kg 61.2* (90%-110%) 06/24/19 14:30 QC1204314993 482639002 MS 53.2 134 126 (90%-110%) 06/24/19 14:33 Nitrogen, Ammonia mg/kg Titration and Ion Analysis Batch 1889313 QC1204314207 482639001 DUP Corrosivity Η 5.55H 5.56 SU 0.18 (0%-10%) RXB5 06/24/19 14:36 QC1204314208 482639002 DUP Н 5.23H 5.22 SU 0.191 06/24/19 14:38 Corrosivity (0%-10%)

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 482639 Page 4 of 5 Parmname **NOM** Sample Qual QC Units RPD% REC% Range Anlst Date Time **Titration and Ion Analysis** 1889313 Batch OC1204314206 LCS 7.00 7.02 SU 100 (95%-105%) RXB5 06/24/19 14:33 Corrosivity

Notes:

The Qualifiers in this report are defined as follows:

- < Result is less than value reported
- > Result is greater than value reported
- B The target analyte was detected in the associated blank.
- E %difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- E General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
- FB Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
- H Analytical holding time was exceeded
- J Value is estimated
- N Metals--The Matrix spike sample recovery is not within specified control limits
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- Z Paint Filter Test--Particulates passed through the filter, however no free liquids were observed.
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- d 5-day BOD--The 2:1 depletion requirement was not met for this sample
- e 5-day BOD--Test replicates show more than 30% difference between high and low values. The data is qualified per the method and can be used for reporting purposes
- h Preparation or preservation holding time was exceeded

Page 28 of 54 SDG: 482639

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Page 5 of 5

-Parmname NOM Sample Qual \mathbf{QC} Units RPD% REC% Range Anlst Date Time N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

Workorder:

482639

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Page 29 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-1 Sample ID: 482639001

Matrix: Soil

Collect Date: 20-JUN-19 06:27 Receive Date: 21-JUN-19 Client Collector:

Moisture: 11.4%

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 3.62 +/-14.6 25.2 50.0 pCi/g CXS7 06/26/19 1138 1889966

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer 109 (15%-125%)

Liquid Scint Tc99, Soil "As Received"

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 30 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-2 Sample ID: 482639002

Matrix: Soil

Collect Date: 20-JUN-19 06:36 Receive Date: 21-JUN-19 Client Collector:

Moisture: 14.6%

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 5.16 +/-17.9 30.8 50.0 pCi/g CXS7 06/26/19 1155 1889966

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer 104 (15%-125%)

Liquid Scint Tc99, Soil "As Received"

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-3 Sample ID: 482639003

Matrix: Soil

Collect Date: 20-JUN-19 06:42 21-JUN-19 Receive Date: Collector: Client

Moisture: 12%

Parameter	Qualifier	Result Uncertainty	MDC	RL	Units	PF	DF Analyst Date	Time Batch M	lethod
-----------	-----------	--------------------	-----	----	-------	----	-----------------	--------------	--------

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 0.785 pCi/g U +/-14.124.5 50.0 CXS7 06/26/19 1211 1889966

The following Analytical Methods were performed:

Method Description Analyst Comments

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received" 105 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 32 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-4 Sample ID: 482639004

Matrix: Soil

Collect Date: 20-JUN-19 06:49 Receive Date: 21-JUN-19 Client Collector:

Moisture: 9.72%

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 4.81 +/-17.229.7 50.0 pCi/g CXS7 06/26/19 1228 1889966

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer 109 (15%-125%)

Liquid Scint Tc99, Soil "As Received"

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 33 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

8.26%

Client Sample ID: SSAOU-5 Sample ID: 482639005

Matrix: Soil

Collect Date: 20-JUN-19 06:55 Receive Date: 21-JUN-19 Client Collector:

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Moisture:

Liquid Scint Tc99, Soil "As Received"

Technetium-99 4.22 +/-16.7 28.9 50.0 pCi/g CXS7 06/26/19 1245 1889966

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received" 110 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 34 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

8.86%

Client Sample ID: SSAOU-6 Sample ID: 482639006

Matrix: Soil

Collect Date: 20-JUN-19 07:01 Receive Date: 21-JUN-19 Client Collector:

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Moisture:

Liquid Scint Tc99, Soil "As Received"

Technetium-99 -4.81 +/-15.3 27.2 50.0 pCi/g CXS7 06/26/19 1301 1889966

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received" 107 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 35 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-7 Sample ID: 482639007

Matrix: Soil

Collect Date: 20-JUN-19 07:08 Receive Date: 21-JUN-19 Client Collector:

Moisture: 10.2%

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 3.60 +/-8.23 14.1 50.0 pCi/g CXS7 06/26/19 1318 1889966

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer 107 (15%-125%)

Liquid Scint Tc99, Soil "As Received"

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 36 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-8 Sample ID: 482639008

Matrix: Soil

Collect Date: 20-JUN-19 07:14 Receive Date: 21-JUN-19

Client Collector: Moisture: 9.39%

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 2.21 +/-8.76 15.1 50.0 pCi/g CXS7 06/26/19 1334 1889966

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits 113 (15%-125%)

Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received"

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 37 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

10.9%

Client Sample ID: SSAOU-9 Sample ID: 482639009

Matrix: Soil

Collect Date: 20-JUN-19 15:33 Receive Date: 21-JUN-19 Client Collector:

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Moisture:

Liquid Scint Tc99, Soil "As Received"

Technetium-99 2.07 +/-5.02 8.62 50.0 pCi/g CXS7 06/26/19 1351 1889966

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received" 104 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 38 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Project:

Client ID:

Certificate of Analysis

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

10.5%

Client Sample ID: SSAOU-10 Sample ID: 482639010

Matrix: Soil

Collect Date: 20-JUN-19 15:38 Receive Date: 21-JUN-19 Collector: Client

Parameter Qualifier Result Uncertainty MDC RL Units PF DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Moisture:

Liquid Scint Tc99, Soil "As Received"

Technetium-99 U -2.3 +/-18.9 33.3 50.0 pCi/g CXS7 06/26/19 1408 1889966 1

The following Analytical Methods were performed:

Method Description Analyst Comments

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits
Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received" 106 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 39 of 54 SDG: 482639

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: June 28, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: SSAOU-11 Sample ID: 482639011

Matrix: Soil

Collect Date: 20-JUN-19 15:44 21-JUN-19 Receive Date: Collector: Client

Moisture: 11.3%

Parameter	Qualifier	Result Uncertainty	MDC	RL	Units	PF	DF Analyst Date	Time Batch M	lethod
-----------	-----------	--------------------	-----	----	-------	----	-----------------	--------------	--------

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 12.1 pCi/g U 4.46 +/-7.1350.0 CXS7 06/26/19 1424 1889966

The following Analytical Methods were performed:

Method Description Analyst Comments

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received" 103 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 40 of 54 SDG: 482639

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: June 28, 2019

Westinghouse Electric Company, LLC

PO Drawer R

Columbia, South Carolina

Contact: Ms. Cynthia Logsdon

Workorder: 482639

Parmname		NOM	Sample Qual	QC	Units	RPD%	REC%	Range Anlst	Date Time
Rad Liquid Scintillati Batch 1889	ion 9966 ——								
QC1204315876	482639011 DUP								
Technetium-99		U	4.46 ^U	4.25	pCi/g	N/A		N/A CXS7	06/26/19 14:57
		Uncertainty	+/-7.13	+/-9.58					
QC1204315877 Technetium-99	LCS	202		156	pCi/g		77.4	(75%-125%)	06/26/19 15:14
recimenum-99		Uncertainty		+/-10.1	pCI/g		77.4	(73%-123%)	00/20/19 15:14
		Oncertainty		+/-10.1					
QC1204315875 Technetium-99	MB		U	-2.74	pCi/g				06/26/19 14:41
		Uncertainty		+/-4.91	1 - 0				

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M M if above MDC and less than LLD
- M REMP Result > MDC/CL and < RDL
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification

Page 41 of 54 SDG: 482639

Page 1 of 2

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 482639 Page 2 of 2

Parmname NOM Sample Qual QC Units RPD% REC% Range Anlst Date Time

- UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

- ^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
- * Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Page 42 of 54 SDG: 482639

Technical Case Narrative Westinghouse Electric Co, LLC SDG #: 482639

Metals

<u>Product:</u> Determination of Metals by ICP-MS <u>Analytical Method:</u> SW846 3050B/6020A <u>Analytical Procedure:</u> GL-MA-E-014 REV# 33

Analytical Batch: 1889555

Preparation Method: SW846 3050B

Preparation Procedure: GL-MA-E-009 REV# 28

Preparation Batch: 1889554

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
482639001	SSAOU-1
482639002	SSAOU-2
482639003	SSAOU-3
482639004	SSAOU-4
482639005	SSAOU-5
482639006	SSAOU-6
482639007	SSAOU-7
482639008	SSAOU-8
482639009	SSAOU-9
482639010	SSAOU-10
482639011	SSAOU-11
1204314809	Method Blank (MB)ICP-MS
1204314810	Laboratory Control Sample (LCS)
1204314813	482639001(SSAOU-1L) Serial Dilution (SD)
1204314811	482639001(SSAOU-1D) Sample Duplicate (DUP)
1204314812	482639001(SSAOU-1S) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

ICSA/ICSAB Statement

For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Technical Information

Preparation/Analytical Method Verification

Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that

Page 43 of 54 SDG: 482639

will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions

Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range. Sample 482639011 (SSAOU-11) was diluted to ensure that the analyte concentration was within the linear calibration range of the instrument. The ICPMS solid samples in this SDG were diluted the standard two times.

A 14 -	482639										
Analyte	001	002	003	004	005	006	007	008	009	010	
Uranium-235	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X	
Uranium-238	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X	

A1	482639
Analyte	011
Uranium-235	10X
Uranium-238	10X

<u>Product:</u> Determination of Metals by ICP-MS <u>Analytical Method:</u> SW846 3050B/6020A <u>Analytical Procedure:</u> GL-MA-E-014 REV# 33

Analytical Batch: 1890064

Preparation Method: SW846 3050B

Preparation Procedure: GL-MA-E-009 REV# 28

Preparation Batch: 1890062

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
482639001	SSAOU-1
482639002	SSAOU-2
482639003	SSAOU-3
482639004	SSAOU-4
482639005	SSAOU-5
482639006	SSAOU-6
482639007	SSAOU-7
482639008	SSAOU-8
482639009	SSAOU-9
482639010	SSAOU-10
482639011	SSAOU-11
1204316171	Method Blank (MB)ICP-MS
1204316172	Laboratory Control Sample (LCS)
1204316175	482639001(SSAOU-1L) Serial Dilution (SD)
1204316173	482639001(SSAOU-1D) Sample Duplicate (DUP)
1204316174	482639001(SSAOU-1S) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

ICSA/ICSAB Statement

For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Technical Information

Preparation/Analytical Method Verification

Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions

Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range. The ICPMS solid samples in this SDG were diluted the standard two times.

Amolysta					482	639				
Analyte	001	002	003	004	005	006	007	008	009	010
Uranium-234	2X									

Amalasta	482639
Analyte	011
Uranium-234	2X

General Chemistry

Product: Ion Chromatography Analytical Method: SW846 9056A

Analytical Procedure: GL-GC-E-086 REV# 26 **Analytical Batches:** 1890034 and 1890032

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
482639001	SSAOU-1
482639002	SSAOU-2
482639003	SSAOU-3

482639004	SSAOU-4
482639005	SSAOU-5
482639006	SSAOU-6
482639007	SSAOU-7
482639008	SSAOU-8
482639009	SSAOU-9
482639010	SSAOU-10
482639011	SSAOU-11
1204316078	Method Blank (MB)
1204316079	Laboratory Control Sample (LCS)
1204316080	482639001(SSAOU-1) Sample Duplicate (DUP)
1204316081	482639011(SSAOU-11) Sample Duplicate (DUP)
1204316082	482639001(SSAOU-1) Matrix Spike (MS)
1204316083	482639011(SSAOU-11) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Fluoride	1204316083 (SSAOU-11MS)	27.8* (44%-130%)

Product: Ammonia Nitrogen

Preparation Method: EPA 350.1 Modified **Preparation Procedure:** GL-GC-E-106 REV# 10

Preparation Batch: 1889626

Preparation Method: EPA 350.2 Modified Prep **Preparation Procedure:** GL-GC-E-072 REV# 17

Preparation Batch: 1889625

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
482639001	SSAOU-1
482639002	SSAOU-2
482639003	SSAOU-3
482639004	SSAOU-4
482639005	SSAOU-5

482639006	SSAOU-6
482639007	SSAOU-7
482639008	SSAOU-8
482639009	SSAOU-9
482639010	SSAOU-10
482639011	SSAOU-11
1204314988	Method Blank (MB)
1204314989	Laboratory Control Sample (LCS)
1204314990	482639001(SSAOU-1) Sample Duplicate (DUP)
1204314991	482639002(SSAOU-2) Sample Duplicate (DUP)
1204314992	482639001(SSAOU-1) Matrix Spike (MS)
1204314993	482639002(SSAOU-2) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Nitrogen, Ammonia	1204314992 (SSAOU-1MS)	61.2* (90%-110%)
	1204314993 (SSAOU-2MS)	-13.8* (90%-110%)

Duplicate Relative Percent Difference (RPD) Statement

The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample:

Analyte	Sample	Value
Nitrogen, Ammonia	1204314990 (SSAOU-1DUP)	23.5* (0%-20%)
	1204314991 (SSAOU-2DUP)	abs(60.7 - 134)* (+/-13.3 mg/kg)

Technical Information

Sample Dilutions

The following samples 1204314990 (SSAOU-1DUP), 1204314991 (SSAOU-2DUP), 1204314992 (SSAOU-1MS), 1204314993 (SSAOU-2MS), 482639001 (SSAOU-1), 482639002 (SSAOU-2) and 482639007 (SSAOU-7) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

A14-	4	8263	9
Analyte	001	002	007

Sample Re-analysis

Samples482639005 (SSAOU-5), 482639006 (SSAOU-6), 482639007 (SSAOU-7), 482639008 (SSAOU-8), 482639009 (SSAOU-9), 482639010 (SSAOU-10) and 482639011 (SSAOU-11) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

Product: pH

Analytical Method: SW846 9045D

Analytical Procedure: GL-GC-E-008 REV# 23

Analytical Batch: 1889313

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
482639001	SSAOU-1
482639002	SSAOU-2
482639003	SSAOU-3
482639004	SSAOU-4
482639005	SSAOU-5
482639006	SSAOU-6
482639007	SSAOU-7
482639008	SSAOU-8
482639009	SSAOU-9
482639010	SSAOU-10
482639011	SSAOU-11
1204314206	Laboratory Control Sample (LCS)
1204314207	482639001(SSAOU-1) Sample Duplicate (DUP)
1204314208	482639002(SSAOU-2) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Holding Times

Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
1204314207 (SSAOU-1DUP)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
1204314208 (SSAOU-2DUP)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
482639001 (SSAOU-1)	Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19

Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
Corrosivity	Received 21-JUN-19, out of holding 20-JUN-19
	Corrosivity Corrosivity Corrosivity Corrosivity Corrosivity Corrosivity Corrosivity Corrosivity

Radiochemistry

Product: Dry Weight

Analytical Method: ASTM D 2216 (Modified) **Analytical Procedure:** GL-OA-E-020 REV# 13

Analytical Batch: 1889504

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
482639001	SSAOU-1
482639002	SSAOU-2
482639003	SSAOU-3
482639004	SSAOU-4
482639005	SSAOU-5
482639006	SSAOU-6
482639007	SSAOU-7
482639008	SSAOU-8
482639009	SSAOU-9
482639010	SSAOU-10
482639011	SSAOU-11
1204314687	482639001(SSAOU-1) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Page 49 of 54 SDG: 482639

Product: Liquid Scint Tc99, Soil

Analytical Method: DOE EML HASL-300, Tc-02-RC Modified

Analytical Procedure: GL-RAD-A-059 REV# 5

Analytical Batch: 1889966

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
482639001	SSAOU-1
482639002	SSAOU-2
482639003	SSAOU-3
482639004	SSAOU-4
482639005	SSAOU-5
482639006	SSAOU-6
482639007	SSAOU-7
482639008	SSAOU-8
482639009	SSAOU-9
482639010	SSAOU-10
482639011	SSAOU-11
1204315875	Method Blank (MB)
1204315876	482639011(SSAOU-11) Sample Duplicate (DUP)
1204315877	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Page 50 of 54 SDG: 482639

				***************************************			E		s		T							ľ
	ز					Sample Analysis Requested (Fill in the number of containers for each test)	< Preservative Type (6)		Comments Note: extra sample is	required for sample specific QC								
Lion III	ics, LL	oad	29407	56-8171	8/11-	ontaine												
GEI I obarotorios 11C	auonato	2040 Savage Road	Charleston, SC 29407	Phone: (843) 556-8171	Fax: (843) 766-1178	per of c												
כבו	1	2040 S	Charle	Phone:	rax: (8	e num												
						II in th			əte	niN	×	×	×	×	×	×	×	×
					9	E) (E)		ļ	ŀ	d	×	×	×	×	×	×	X	X
	100					ested		-			×	×	×	×	×	×	×	×
	due	4				s Requ			sinor	umA	×	×	×	×	×	×	×	×
	Re	*			,	nalysi			66	эТ	×	×	×	×	×	×	×	×
	Custody and Analytical Request	ance SO				sample A		be' i (pk	nnins Il isoto SM	isotopic u individus ICP.	×	×	×	×	×	×	×	×
		ccepts				2	8.19	nistao	2 To 19	dmun letoT	-		-					
	A	ple A					e pe	duus pisuos	paju	TSCA Regul								
	ano	's San			-	+	2;4+ P	InodS	_	E adioactive								
	ody	or GEL								Sample Matrix (4)	SO	so	SO	S	SO	SO	SO	SO
	Cust	Lcom fo		から	} =	-	4			QC Field Code (2) Filtered (3)	z	z	z	z	Z	z	z	z
		ww.ge		(بر ريز	647.31	15.770	95.396		e.com	OC Code (3	Ŋ	Ö	Ö	9	g	Ð	D	O
		See www.gel.com for GEL's Sample Acceptance SOP		lber: L	Phone #: 803 647 3171	THOUSE H. DOOR	Fax #: 803.695.3964		estinghous	*Time Collected (Military) (hhmm)	0627	0636	0642	0649	0655	0701	0708	0714
	GEL Chain of			GEL Work Order Number: 482(29					Send Results: logsdocj@westinghouse.com	*Date Collected (mm-dd-yy)	6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019
				GEL Wor	VI.I.C		ı Facility			т								
7 10 1 e	IN TO A COLUMN TO THE COLUMN THE	Oject #: SSAUU Soil Sampling Work Plan	MC Mumber (I).	Q Number: 4500745037	Lent Name: Westinghouse Electric Company 1.1 C	fundings among some	ject/Site Name: Columbia Fuel Fabrication Facility	Edress: 5801 Bluff Road, Hopkins, SC 29061	Mected by: Randy Crews	Sample ID * For composites - indicate start and stop date time	SSAOU-1	SSAOU-2	SSAOU-3	SSAOU-4	SSAOU-5	SSAOU-6	SSAOU-7	SSAOU-8

TAT Requested: Normal: Rush: X Specify: ASAP				Circle Deliverable:	iverable:
(Subject to Surcharge)		Fax Results: Yes	Yes / No	C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4	/ Level 2 / Level 3 / Level 4
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards	o these samples? If	so, please list the ha	ızards		Sample Collection Time Zone
****5 STRAIGHT day turnaround****					Central Other
					Mountain
Chain of Custody Signatures	ody Signatures			Sample Shipping and Delivery Details	Delivery Details
Relinquished By (Signed) Date Time	Received by (signed)	Date Time			
	" " " " " " " " " " " " " " " " " " " "			GEL PM: Hope Taylor	
1 Randy Crews (Chilly 06/21/2019 / CO.	1 Say Brows		3	6/21/19 10 S Method of Shipment:	Date Shinned: N/A
7	2				5.6
3	3			Airbill #:	
1.1 00 1.1					

1.) Chain of Custody Number = Client Determined

2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite

3.) Field Filtered. For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.

4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Water, WL=Water, ML=Mise Liquid, SO=Soit, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oit, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal

5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 6010B 7470A - 1).

6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank
WHITE = LABORATORY
YELLOW = FILE
PINK = CLIENT

For Lab Receiving Use Only
Custody Seal Intact?
YES NO
Cooler Temp:

GEL Laboratories, LLC	2040 Savage Road	Charleston, SC 29407	Phone: (843) 556-8171 Env. (843) 766-1170	Sample Analysis Requested (5) (Fill in the number of containers for each test)	< Preservative Type (6)		Comments Note: extra sample is	required for sample specific QC								
IJ		<u> </u>	문 급	in the r	-		ate	niN	×	×	×			-	-	
				(Fill			ŀ	Iq	×	×	×				+	1
4	,			sted (5			əbir	on[4	×	×	×					
Q Q) 			Sedne			sino	mmA	×	X	×					
Custody and Analytical Request	***			nalysis F			66	-ə <u>.</u> L	×	×	X					
	ince SOI			ample A		be,	otosi l	isotopic ur individua ICP-	×	×	×					1
T	cepta			S		nistno	o to to	dmun IstoT	-	-	-					1
A	ole Ac				t	dmss bisnoo	pəji	TSCA Regul								
a de la constant de l	Sam				sid) t	Quous	<u> </u>	Radioactive								-
odv 2	or GEL's							Sample Matrix (4)	SO	SO	SO		*****			
	com fc							QC Field Code (2) Filtered (3)	z	z	z	***************************************				
	ww.gel.			.647.3171	95.3964		e.com	QC Code (3)	Ŋ	Ŋ	Ö					7
	See www.gel.com for GEL's Sample Acceptance SOP		ıber:	Phone #: 803.647.3171	Fax #: 803.695.3964		estinghous	*Time Collected (Military) (thmm)	1533	1538	1544					,
GEL Chain of			GEL Work Order Number:				Send Results: logsdocj@westinghouse.com	*Date Collected (mm-dd-yy)	6/20/2019	6/20/2019	6/20/2019					
2 01 2 01 2 02 02 03 03 03 03 03 03 03 03 03 03 03 03 03	#Joject #: SSAOU Soil Sampling Work Plan	Or Sumbor (1).	745037	Thent Name: Westinghouse Electric Company LLC	pject/Site Name: Columbia Fuel Fabrication Facility	Adress: 5801 Bluff Road, Hopkins, SC 29061	Send Resul	Sample ID * For composites - indicate start and stop date time	SSAOU-9	SSAOU-10	SSAOU-11					

TAT Requested: Normal:Rush:X_Specify: _ASAP(Subject to Surcharge)	:_ASAP_	Fax Results:	Yes / No	MAC-1444	Circle Deliverable:	*
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards	to these samples? L	f so, please list th	e hazards		Sample Collection Time Zone	Zone
					Eastern Pacific	
****5 STRAIGHT day turnaround****					Central Other_	
					Mountain	
Chain of Custe	Chain of Custody Signatures				Sample Shinning and Delivery Details	
Relinquished By (Signed) Date Time	Received by (signed)	Data	Time		cums con a contract	
The second secon	:	, arc	200	GEL PM: Hope Taylor		
1 Randy Crews (July 506/21/2019 (DO3	1 Star Down 6/21	9/21/18	105	Method of Shinnent:	Data Chimaga, Mita	
	_				Date Shipped, IVA	
2	2			Airbill #:		
	3			Airbill #:		
1.) Chain of Custody Number = Client Determined						

2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite

3.) Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.

4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Water, WI=Water, ML=Mise Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal

6.) Preservative Type. Ha = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

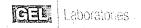
WHITE = LABORATORY

YELLOW = FILE

PINK = CLIENT 5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 6010B 7470A - 1).

Custody Seal Intact? NO Cooler Temp: YES

For Lab Receiving Use Only



SAMPLE RECEIPT & REVIEW FORM

Clie	nt: WNUC			SDC	G/AR/COC/Work Order: 482639
Reco	ived By: SLEGONE	, 		Dat	te Received: 6/21/19
	Carrier and Tracking Number				Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other
Susp	ected Hazard Information	Yes	No No	*11	Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
A)Sl	ipped as a DOT Hazardous?		2	Haz	ard Class Shipped: UN#: N2910, Is the Radioactive Shipment Survey Compliant? Yes No
B) D	id the client designate the samples are to be ved as radioactive?		SECRETARIO	CO	C notation or radioactive stickers on containers equal client designation.
	id the RSO classify the samples as active?			Ma: Cla	ximum Net Counts Observed* (Observed Counts - Area Background Counts):CPM / mR/Hr ssified as: Rad 1
	id the client designate samples are rdous?			co	C notation or hazard labels on containers equal client designation.
E) D	id the RSO identify possible hazards?		orde	If D PCI	or E is yes, select Hazards below. B's Flammable Foreign Soil RCRA Asbestos Beryllium Other:
	Sample Receipt Criteria	Yes	ž	ž	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	2000			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	_			Circle Applicable: Client contacted and provided COC COC created upon receipt
3	Samples requiring cold preservation within $(0 \le 6 \text{ deg. C})$?*	E			Preservation Method: Wet lee lee Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: 1 C
4	Daily check performed and passed on IR temperature gun?	6			Temperature Device Serial #: TRI-IY Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	L-			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?		Ber	,	Sample ID's and Containers Affected: If Preservation added, Lot#
7	Do any samples require Volatile Analysis?			Carmenas	If Yes, are Encores or Soil Kits present for solids? Yes No NA (If yes, take to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes No NA (If unknown, select No) Are liquid VOA vials free of headspace? Yes No NA Sample ID's and containers affected
8	Samples received within holding time?	3			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	2.73			ID's and containers affected:
10	Date & time on COC match date & time on bottles?	Barret			Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
11	Number of containers received match number indicated on COC?	instru			Circle Applicable: No container count on COC Other (describe)
12	Are sample containers identifiable as GEL provided?			Berter	
13	COC form is properly signed in relinquished/received sections?	n and a			Circle Applicable: Not relinquished Other (describe)
	ments (Use Continuation Form if needed):				
L	PM (or PM	IA) re	view	: Ini	tials TMC Date (a 24 9 Page (of) GI-CHI-SR-001 Rev 6

Page 53 of 54 SDG: 482639

List of current GEL Certifications as of 28 June 2019

State	Certification
Alaska	17–018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122019-3
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-19-15
Utah NELAP	SC000122018-27
Vermont	VT87156
Virginia NELAP	460202
Washington	C780











PO Box 30712 Charleston, SC 29417 2040 Savage Road Charleston, SC 29407 P 843.556.8171 F 843.766.1178

gel.com

July 10, 2019

Ms. Cynthia Logsdon Westinghouse Electric Company, LLC PO Drawer R Columbia, South Carolina 29205

Re: Soil and Vegetation Analysis

Work Order: 483471

Dear Ms. Logsdon:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 02, 2019. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. This package is being resubmitted to include Tc99 results.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4778.

Sincerely,

Hope Taylor Project Manager

Purchase Order: 4500745037

Enclosures



2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis Report for

WNUC007 Westinghouse Electric Co, LLC Client SDG: 483471 GEL Work Order: 483471

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- H Analytical holding time was exceeded
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Hope Taylor.



2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

96.0 2 SKJ

ug/g

SU

Report Date: July 10, 2019

07/10/19 1102 1892841

1 RXB5 07/05/19 1709 1892518

2

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-1 Sample ID: 483471001

Matrix: Soil

Collect Date: 01-JUL-19 11:06
Receive Date: 02-JUL-19
Collector: Client

	Moisture: 9.49	9%								
Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst Date	Time Batch	Method
Ion Chrom	atography									
SW846 90	56A Fluoride and Nitrate	"Dry Weight Correcte	d"							
Fluoride		1.52	0.374	1.10	mg/kg	9.95	1	LXA2 07/08/19	1741 1893930	1
Nitrate-N		2.05	0.363	1.10	mg/kg	9.95	1			

Metals Analysis-ICP-MS
SW846 3050B/6020A Uranium Solid "Dry Weight Corrected"
Uranium-235

J 0.00727 0.00212

Η

EPA 350.1 Modified

Uranium-238		0.763	0.014	0.0424	ug/g	96.0	2				
Uranium-234	U	ND	0.00212	0.0106	ug/g	96.0	2	SKJ	07/10/19	1255 1892841	3
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammon	ia "Dry '	Weight Corrected"									
Nitrogen, Ammonia		28.8	0.765	2.12	mg/kg	38.5	1	KLP1	07/05/19	1015 1893310	4
Titration and Ion Analysis											
SW9045D Corrosivity (pH<2	or>14) ".	As Received"									

0.0148

0.100

The following Prep Methods were performed:

The following Frep Me	mous were performed.					
Method	Description	Analyst	Date	Time	Prep Batch	
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/05/19	0935	1893309	
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840	
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929	

0.010

The following Analytical Methods were performed:

The following r	mary treat victious were performed.		
Method	Description	Analyst Comments	
1	SW846 9056A	·	
2	SW846 3050B/6020A		
3	SW846 3050B/6020A		

SW846 9045D

Notes:

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-1 Project: WNUC00518 Sample ID: 483471001 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Report Date: July 10, 2019

WNUC00518

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon Project: Soil and Vegetation Analysis

Client Sample ID: C-40-2 Sample ID: 483471002

Matrix:

Moisture:

Collect Date: 01-JUL-19 11:09 02-JUL-19 Receive Date: Collector: Client

10.2%

Client ID: WNUC007 Soil

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	' Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	e and Nitrate	"Dry Weight Corrected"										
Fluoride	J	0.593	0.368	1.08	mg/kg	9.73	1	LXA2	07/08/19	1914	1893930	1
Nitrate-N		1.77	0.358	1.08	mg/kg	9.73	1					
Metals Analysis-ICP-M	IS											
SW846 3050B/6020A U	Uranium Soli	d "Dry Weight Corrected	l"									
Uranium-235		0.0925	0.00218	0.0153	ug/g	97.8	2	SKJ	07/10/19	1055	1892841	2
Uranium-238		2.77	0.0144	0.0436	ug/g	97.8	2					
Uranium-234	U	ND	0.00218	0.0109	ug/g	97.8	2	SKJ	07/10/19	1301	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	y Weight Corrected"										
Nitrogen, Ammonia		37.6	0.726	2.02	mg/kg	36.2	1	KLP1	07/05/19	0946	1892643	4
Titration and Ion Analy	sis											
SW9045D Corrosivity	(pH<2or>14)	"As Received"										
Corrosivity	Н	4.75	0.010	0.100	SU		1	RXB5	07/05/19	1710	1892518	5
The following Prep Me	thods were p	erformed:										
Method	Description	n		Analyst	Date	,	Tim	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	Iod. Ammonia Nitrogen Prep		KLP1	07/04/19		1510	18	92642			
SW846 3050B	ICP-MS 3050)BS PREP		SXW1	07/03/19		0949	18	92840			

JLD1

07/08/19

1158

Analyst Comments

1893929

The following Analytical Methods were performed:

SW846 9056A Total Anions in Soil

Method	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	EPA 350.1 Modified
5	SW846 9045D

Notes:

SW846 9056A

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-2 Project: WNUC00518 Sample ID: 483471002 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Analyst Comments

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-3 Sample ID: 483471003

Matrix: Soil

Moisture:

Collect Date: 01-JUL-19 11:12
Receive Date: 02-JUL-19
Collector: Client

9.48%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	and Nitrate '	'Dry Weight Corrected"										
Fluoride	J	1.00	0.366	1.08	mg/kg	9.73	1	LXA2	07/08/19	1945	1893930	1
Nitrate-N		2.60	0.355	1.08	mg/kg	9.73	1					
Metals Analysis-ICP-MS	S											
SW846 3050B/6020A U	ranium Solic	d "Dry Weight Corrected	"									
Uranium-235	J	0.00618	0.00207	0.0145	ug/g	93.8	2	SKJ	07/10/19	1101	1892841	2
Uranium-238		0.706	0.0137	0.0415	ug/g	93.8	2					
Uranium-234	U	ND	0.00207	0.0104	ug/g	93.8	2	SKJ	07/10/19	1314	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ar	nmonia "Dry	Weight Corrected"										
Nitrogen, Ammonia		50.2	0.507	1.41	mg/kg	25.5	1	KLP1	07/05/19	0949	1892643	4
Titration and Ion Analys	is											
SW9045D Corrosivity (pH<2or>14)	"As Received"										
Corrosivity	Н	4.95	0.010	0.100	SU		1	RXB5	07/05/19	1712	1892518	5
The following Prep Met	hods were pe	erformed:										
Method	Description	1		Analyst	Date	,	Time	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	od. Ammonia Nitrogen Prep		KLP1	07/04/19		1510	18	92642			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	07/03/19	(0949	18	92840			
SW846 9056A	SW846 9056A	A Total Anions in Soil		JLD1	07/08/19		1158	18	93929			
Nitrogen, Ammonia Titration and Ion Analys SW9045D Corrosivity (particular of the following Prep Metal Method EPA 350.2 Modified Prep SW846 3050B	pH<2or>14) H hods were pe Description EPA 350.1 M ICP-MS 3050	"As Received" 4.95 erformed: od. Ammonia Nitrogen Prep BS PREP		0.100 Analyst KLP1 SXW1	SU Date 07/04/19 07/03/19	,	1 <u>Fime</u> 1510 0949	RXB5	07/05/19 ep Batch 92642 92840	1712		

The following Analytical Methods were performed:

Method

Description

Method	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	EPA 350.1 Modified
5	SW846 9045D

Notes:

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-3 Project: WNUC00518 Sample ID: 483471003 Client ID: WNUC007

Parameter C	Dualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch	Method
1 drameter	duillioi	resurt		ILL	CIII	1 1	DI Imaryot Date	Time Datem	TVICTIO

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Report Date: July 10, 2019

WNUC00518

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon Project: Soil and Vegetation Analysis

Client Sample ID: C-40-4 Sample ID:

Matrix: Soil

Collect Date: 01-JUL-19 11:15 02-JUL-19 Receive Date: Collector: Client Moisture: 10.3%

483471004 Client ID: WNUC007

Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	e Batch	Method
and Nitrate	"Dry Weight C	orrected"									
	1.36	0.372	1.09	mg/kg	9.80	1	LXA2	07/08/19	2016	1893930	1
	1.75	0.361	1.09	mg/kg	9.80	1					
S											
Jranium Soli	d "Dry Weight	Corrected"									
J	0.0059	0.00206	0.0145	ug/g	92.6	2	SKJ	07/10/19	1104	1892841	2
	0.768	0.0136	0.0413	ug/g	92.6	2					
U	ND	0.00206	0.0103	ug/g	92.6	2	SKJ	07/10/19	1315	1892841	3
mmonia "Dry	y Weight Corre	cted"									
	33.3	0.678	1.88	mg/kg	33.8	1	KLP1	07/05/19	0956	1892643	4
sis											
pH<2or>14)	"As Received"										
Н	5.52	0.010	0.100	SU		1	RXB5	07/05/19	1713	1892518	5
hods were p	erformed:										
Description	n		Analyst	Date	,	Tim	e Pr	ep Batch			
EPA 350.1 M	Iod. Ammonia Nitro	ogen Prep	KLP1	07/04/19		1510	18	92642			
ICP-MS 3050	BS PREP		SXW1	07/03/19		0949	18	92840			
SW846 9056	A Total Anions in S	Soil	JLD1	07/08/19		1158	18	93929			
	and Nitrate S Uranium Soli U mmonia "Dry sis pH<2or>14) H hods were pu Description EPA 350.1 M ICP-MS 3050	and Nitrate "Dry Weight Control of the state	and Nitrate "Dry Weight Corrected" 1.36	and Nitrate "Dry Weight Corrected" 1.36	and Nitrate "Dry Weight Corrected" 1.36 0.372 1.09 mg/kg 1.75 0.361 1.09 mg/kg S S Franium Solid "Dry Weight Corrected" J 0.0059 0.00206 0.0145 ug/g 0.768 0.0136 0.0413 ug/g U ND 0.00206 0.0103 ug/g mmonia "Dry Weight Corrected" 33.3 0.678 1.88 mg/kg sis pH<2or>>14) "As Received" H 5.52 0.010 0.100 SU hods were performed: Description Analyst Date EPA 350.1 Mod. Ammonia Nitrogen Prep ICP-MS 3050BS PREP SXW1 07/03/19	and Nitrate "Dry Weight Corrected" 1.36 0.372 1.09 mg/kg 9.80 1 LXA2 07/08/19 1.75 0.361 1.09 mg/kg 9.80 1 LXA2 07/08/19 0.768 0.0059 0.00206 0.0145 0.768 0.0136 0.0413 0.09/g 92.6 0.0168 0.0136 0.0413 0.09/g 92.6 0.0103 0.09/g 92.6 0.0103 0.09/g 92.6 0.01013 0.09/g 92.6 0.01013 0.00206 0.0103 0.00206 0.0103 0.00206 0.0103 0.002/g 92.6 0.002/g 0.0	and Nitrate "Dry Weight Corrected" 1.36 0.372 1.09 mg/kg 9.80 1 LXA2 07/08/19 2016 1.75 0.361 1.09 mg/kg 9.80 1 LXA2 07/08/19 2016 S S Jranium Solid "Dry Weight Corrected" J 0.0059 0.00206 0.0145 ug/g 92.6 2 SKJ 07/10/19 1104 0.768 0.0136 0.0413 ug/g 92.6 2 SKJ 07/10/19 1315 mmonia "Dry Weight Corrected" 33.3 0.678 1.88 mg/kg 33.8 1 KLP1 07/05/19 0956 sis pH<2or>>14) "As Received" H 5.52 0.010 0.100 SU 1 RXB5 07/05/19 1713 hods were performed: Description Analyst Date Time Prep Batch EPA 350.1 Mod. Ammonia Nitrogen Prep SXW1 07/03/19 0949 1892840	and Nitrate "Dry Weight Corrected" 1.36			

Analyst Comments

The following Analytical Methods were performed:

Method	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	EPA 350.1 Modified
5	SW846 9045D

Notes:

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-4 Project: WNUC00518 Sample ID: 483471004 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 10 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Analyst Comments

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

9.81%

Client Sample ID: C-40-5 Sample ID: 483471005

Matrix: Soil

Moisture:

Collect Date: 01-JUL-19 11:18
Receive Date: 02-JUL-19
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	and Nitrate '	'Dry Weight Corrected"										
Fluoride	J	0.851	0.371	1.09	mg/kg	9.83	1	LXA2	07/08/19	2046	1893930	1
Nitrate-N		2.14	0.360	1.09	mg/kg	9.83	1					
Metals Analysis-ICP-MS	S											
SW846 3050B/6020A U	ranium Solic	l "Dry Weight Corrected	"									
Uranium-235	J	0.00532	0.00218	0.0152	ug/g	98.2	2	SKJ	07/10/19	1105	1892841	2
Uranium-238		0.630	0.0144	0.0436	ug/g	98.2	2					
Uranium-234	U	ND	0.00218	0.0109	ug/g	98.2	2	SKJ	07/10/19	1317	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ar	nmonia "Dry	Weight Corrected"										
Nitrogen, Ammonia		35.9	1.16	3.22	mg/kg	58.1	1	KLP1	07/05/19	0957	1892643	4
Titration and Ion Analys	sis											
SW9045D Corrosivity (pH<2or>14)	"As Received"										
Corrosivity	Н	4.73	0.010	0.100	SU		1	RXB5	07/05/19	1714	1892518	5
The following Prep Met	hods were pe	rformed:										
Method	Description	1		Analyst	Date	,	Time	e Pr	ep Batch			
EPA 350.2 Modified Prep				KLP1	07/04/19							
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	07/03/19	(0949	18	92840			
SW846 9056A	SW846 9056A	A Total Anions in Soil		JLD1	07/08/19		1158	18	93929			
Corrosivity The following Prep Met Method EPA 350.2 Modified Prep SW846 3050B	hods were pe Description EPA 350.1 Mo ICP-MS 3050	4.73 erformed: lod. Ammonia Nitrogen Prep BS PREP	0.010	Analyst KLP1 SXW1	Date 07/04/19 07/03/19		1510 0949	e Pr	ep Batch 92642 92840		1892518	5

The following Analytical Methods were performed:

Method	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	EPA 350.1 Modified
5	SW846 9045D

Notes:

Page 11 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-5 Project: WNUC00518 Sample ID: 483471005 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 12 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Report Date: July 10, 2019

WNUC00518

Westinghouse Electric Company, LLC Company:

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon Project: Soil and Vegetation Analysis

Client Sample ID: C-40-6 Sample ID:

Matrix: Soil

Collect Date: 01-JUL-19 11:26 02-JUL-19 Receive Date: Collector: Client Moisture: 14.8%

483471006 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	and Nitrate	"Dry Weight Corrected"										
Fluoride	U	ND	0.396	1.16	mg/kg	9.93	1	LXA2	07/08/19	2117	1893930	1
Nitrate-N		2.23	0.384	1.16	mg/kg	9.93	1					
Metals Analysis-ICP-M	IS .											
SW846 3050B/6020A U	Jranium Soli	d "Dry Weight Corrected	l"									
Uranium-235		0.0513	0.00228	0.0159	ug/g	97.1	2	SKJ	07/10/19	1107	1892841	2
Uranium-238		2.46	0.015	0.0456	ug/g	97.1	2					
Uranium-234	U	ND	0.00228	0.0114	ug/g	97.1	2	SKJ	07/10/19	1318	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	Weight Corrected"										
Nitrogen, Ammonia		76.9	0.866	2.40	mg/kg	41.0	1	KLP1	07/05/19	0957	1892643	4
Titration and Ion Analy	sis											
SW9045D Corrosivity ((pH<2or>14)	"As Received"										
Corrosivity	Н	4.84	0.010	0.100	SU		1	RXB5	07/05/19	1715	1892518	5
The following Prep Mer	The following Prep Methods were performed:											
Method	Description	n		Analyst	Date	,	Time	e Pr	ep Batch			_
EPA 350.2 Modified Prep	EPA 350.1 M	lod. Ammonia Nitrogen Prep		KLP1	07/04/19		1510	18	92642			

SXW1

JLD1

07/03/19

07/08/19

0949

1158

Analyst Comments

1892840

1893929

SW846 9056A Total Anions in Soil The following Analytical Methods were performed:

ICP-MS 3050BS PREP

Method	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	EPA 350.1 Modified
5	SW846 9045D

Notes:

SW846 3050B

SW846 9056A

Page 13 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-6 Project: WNUC00518 Sample ID: 483471006 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method
-----------	-----------	--------	----	----	-------	----	-----------------	-------------------

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 14 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Analyst Comments

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-7 Sample ID: 483471007

Matrix: Soil

Collect Date: 01-JUL-19 11:29
Receive Date: 02-JUL-19
Collector: Client
Moisture: 11%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography	<i>y</i>											
SW846 9056A Fluor	ride and Nitrate	"Dry Weight Co	rrected"									
Fluoride	J	0.900	0.375	1.10	mg/kg	9.80	1	LXA2	07/08/19	2250	1893930	1
Nitrate-N		5.00	0.364	1.10	mg/kg	9.80	1					
Metals Analysis-ICF	P-MS											
SW846 3050B/6020	A Uranium Soli	d "Dry Weight C	Corrected"									
Uranium-235	J	0.00508	0.00211	0.0148	ug/g	93.8	2	SKJ	07/10/19	1133	1892841	2
Uranium-238		0.660	0.0139	0.0422	ug/g	93.8	2					
Uranium-234	U	ND	0.00211	0.0105	ug/g	93.8	2	SKJ	07/10/19	1320	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen	, Ammonia "Dry	Weight Correc	ted"									
Nitrogen, Ammonia	•	49.9	0.936	2.60	mg/kg	46.3	1	KLP1	07/05/19	0958	1892643	4
Titration and Ion An	alysis											
SW9045D Corrosivi	ity (pH<2or>14)	"As Received"										
Corrosivity	Н	4.52	0.010	0.100	SU		1	RXB5	07/05/19	1715	1892518	5
The following Prep	Methods were pe	erformed:										
Method	Description	n		Analyst	Date	,	Tim	e Pr	en Batch			

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

Method	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	EPA 350.1 Modified
5	SW846 9045D

Notes:

Page 15 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-7 Project: WNUC00518 Sample ID: 483471007 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 16 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Project:

Client ID:

Analyst Comments

Certificate of Analysis

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-8 Sample ID: 483471008

Matrix: Soil

Collect Date: 01-JUL-19 11:31
Receive Date: 02-JUL-19
Collector: Client
Moisture: 9.96%

RL PF Qualifier DL Units Parameter Result DF Analyst Date Time Batch Method Ion Chromatography SW846 9056A Fluoride and Nitrate "Dry Weight Corrected" Fluoride ND 0.375 1.10 mg/kg 9.93 1 LXA2 07/08/19 2321 1893930 1 1.95 0.364 9.93 Nitrate-N 1.10 mg/kg 1 Metals Analysis-ICP-MS SW846 3050B/6020A Uranium Solid "Dry Weight Corrected" Uranium-235 0.0193 0.00207 0.0145 93.1 2 SKJ 07/10/19 1109 1892841 2 ug/g Uranium-238 0.0414 2 1.15 0.0137 ug/g 93.1 Uranium-234 U ND 0.00207 0.0103 93.1 2 SKJ 07/10/19 1321 1892841 3 ug/g Nutrient Analysis EPA 350.1 Nitrogen, Ammonia "Dry Weight Corrected" Nitrogen, Ammonia 0.769 2.14 mg/kg 38.5 KLP1 07/05/19 0959 1892643 4 Titration and Ion Analysis SW9045D Corrosivity (pH<2or>14) "As Received" 0.010 0.100 SU RXB5 07/05/19 1717 1892518 The following Prep Methods were performed: Method Date Time Prep Batch Description Analyst EPA 350.2 Modified Prep EPA 350.1 Mod. Ammonia Nitrogen Prep KLP1 07/04/19 1510 1892642 SW846 3050B ICP-MS 3050BS PREP SXW1 07/03/19 0949 1892840 SW846 9056A SW846 9056A Total Anions in Soil JLD1 07/08/19 1158 1893929

The following Analytical Methods were performed:

Method	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	EPA 350.1 Modified
5	SW846 9045D

Notes:

Page 17 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-8 Project: WNUC00518 Sample ID: 483471008 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 18 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Analyst Comments

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-9 Sample ID: 483471009

Matrix: Soil

Collect Date: 01-JUL-19 11:35
Receive Date: 02-JUL-19
Collector: Client
Moisture: 13.1%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	' Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	e and Nitrate	"Dry Weight C	orrected"									
Fluoride	U	ND	0.391	1.15	mg/kg	10.0	1	LXA2	07/08/19	2352	1893930	1
Nitrate-N		2.18	0.380	1.15	mg/kg	10.0	1					
Metals Analysis-ICP-M	IS											
SW846 3050B/6020A	Uranium Soli	d "Dry Weight	Corrected"									
Uranium-238		20.4	0.0149	0.045	ug/g	97.8	2	SKJ	07/10/19	1111	1892841	2
Uranium-234	J	0.00881	0.00225	0.0113	ug/g	97.8	2	SKJ	07/10/19	1322	1892841	3
Uranium-235		0.905	0.0225	0.158	ug/g	97.8	20	SKJ	07/10/19	1134	1892841	4
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dr	y Weight Corre	cted"									
Nitrogen, Ammonia		81.3	3.36	9.34	mg/kg	32.5	5	KLP1	07/05/19	1023	1892643	5
Titration and Ion Analy	rsis											
SW9045D Corrosivity	(pH<2or>14)	"As Received"	'									
Corrosivity	Н	4.53	0.010	0.100	SU		1	RXB5	07/05/19	1718	1892518	6
The following Prep Me	thods were p	erformed:										
Method	Descriptio	n		Analyst	Date	ı	Tim	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	Iod. Ammonia Nitr	ogen Prep	KLP1	07/04/19		1510	18	92642			
SW846 3050B	ICP-MS 3050	OBS PREP		SXW1	07/03/19		0949	18	92840			
SW846 9056A	SW846 9056	A Total Anions in	Soil	JLD1	07/08/19		1158	18	93929			

The following Analytical Methods were performed:

Method	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	SW846 3050B/6020A
5	EPA 350.1 Modified
6	SW846 9045D

Notes:

Page 19 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-9 Project: WNUC00518 Sample ID: 483471009 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 20 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-10 Sample ID: 483471010

Matrix: Soil

Collect Date: 01-JUL-19 11:40
Receive Date: 02-JUL-19
Collector: Client
Moisture: 9.8%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	and Nitrate	'Dry Weight Corrected"										
Fluoride	J	0.658	0.366	1.08	mg/kg	9.71	1	LXA2	07/09/19	0022	1893930	1
Nitrate-N		3.23	0.355	1.08	mg/kg	9.71	1					
Metals Analysis-ICP-M	(S											
SW846 3050B/6020A U	Jranium Solid	d "Dry Weight Corrected	l"									
Uranium-238		6.46	0.014	0.0426	ug/g	96.0	2	SKJ	07/10/19	1115	1892841	2
Uranium-234	J	0.00238	0.00213	0.0106	ug/g	96.0	2	SKJ	07/10/19	1327	1892841	3
Uranium-235		0.240	0.0106	0.0745	ug/g	96.0	10	SKJ	07/10/19	1136	1892841	4
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	Weight Corrected"										
Nitrogen, Ammonia		38.2	0.941	2.61	mg/kg	47.2	1	KLP1	07/05/19	1001	1892643	5
Titration and Ion Analy	sis											
SW9045D Corrosivity ((pH<2or>14)	"As Received"										
Corrosivity	Н	4.63	0.010	0.100	SU		1	RXB5	07/05/19	1719	1892518	6
The following Prep Methods were performed:												
Method	Description	1		Analyst	Date	,	Time	Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	od. Ammonia Nitrogen Prep		KLP1	07/04/19		1510	18	92642			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	07/03/19		0949	18	92840			

JLD1

07/08/19

1158

Analyst Comments

1893929

The following Analytical Methods were performed:

SW846 9056A Total Anions in Soil

Method	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	SW846 3050B/6020A
5	EPA 350.1 Modified
6	SW846 9045D

Notes:

SW846 9056A

Page 21 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-10 Project: WNUC00518 Sample ID: 483471010 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 22 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

WNUC00518

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon Soil and Vegetation Analysis Project:

Client Sample ID: C-40-11 Sample ID:

Matrix: Soil

Collect Date: 01-JUL-19 11:44 02-JUL-19 Receive Date: Collector: Client Moisture: 8.82%

Project: 483471011 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	e and Nitrate	"Dry Weight Correc	ted"									
Fluoride		1.98	0.369	1.09	mg/kg	9.90	1	LXA2	07/09/19	0053	1893930	1
Nitrate-N		15.4	0.358	1.09	mg/kg	9.90	1					
Metals Analysis-ICP-M	IS											
SW846 3050B/6020A	Uranium Soli	d "Dry Weight Corre	ected"									
Uranium-235		0.0641	0.00213	0.0149	ug/g	96.9	2	SKJ	07/10/19	1117	1892841	2
Uranium-238		2.20	0.014	0.0425	ug/g	96.9	2					
Uranium-234	U	ND	0.00213	0.0106	ug/g	96.9	2	SKJ	07/10/19	1328	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	y Weight Corrected"										
Nitrogen, Ammonia		36.3	0.595	1.65	mg/kg	30.1	1	KLP1	07/05/19	1002	1892643	4
Titration and Ion Analy	sis											
SW9045D Corrosivity	(pH<2or>14)	"As Received"										
Corrosivity	Н	4.15	0.010	0.100	SU		1	RXB5	07/05/19	1720	1892518	5
The following Prep Me	thods were p	erformed:										
Method	Description	n		Analyst	Date	,	Tim	e Pr	ep Batch			
EPA 350.2 Modified Pren	FPA 350 1 M	Iod Ammonia Nitrogen I	ren .	KLP1	07/04/19		1510	18	92642			

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Modified Prep	EPA 350.1 Mod. Ammonia Nitrogen Prep	KLP1	07/04/19	1510	1892642
SW846 3050B	ICP-MS 3050BS PREP	SXW1	07/03/19	0949	1892840
SW846 9056A	SW846 9056A Total Anions in Soil	JLD1	07/08/19	1158	1893929

The following Analytical Methods were performed:

SW846 9045D

0	. J	
Method	Description	Analyst Comments
1	SW846 9056A	•
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	

Notes:

Page 23 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-11 Project: WNUC00518 Sample ID: 483471011 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 24 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Analyst Comments

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-12 Sample ID: 483471012

Matrix: Soil

Collect Date: 01-JUL-19 11:48
Receive Date: 02-JUL-19
Collector: Client
Moisture: 8.66%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	and Nitrate	"Dry Weight Corrected"										
Fluoride	U	ND	0.366	1.08	mg/kg	9.83	1	LXA2	07/09/19	0124	1893930	1
Nitrate-N		1.26	0.355	1.08	mg/kg	9.83	1					
Metals Analysis-ICP-M	S											
SW846 3050B/6020A U	Jranium Soli	d "Dry Weight Corrected	l"									
Uranium-235		0.0215	0.00216	0.0151	ug/g	98.8	2	SKJ	07/10/19	1118	1892841	2
Uranium-238		1.27	0.0143	0.0433	ug/g	98.8	2					
Uranium-234	U	ND	0.00216	0.0108	ug/g	98.8	2	SKJ	07/10/19	1330	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	Weight Corrected"										
Nitrogen, Ammonia		42.3	0.849	2.36	mg/kg	43.1	1	KLP1	07/05/19	1003	1892643	4
Titration and Ion Analy	sis											
SW9045D Corrosivity (pH<2or>14)	"As Received"										
Corrosivity	Н	4.79	0.010	0.100	SU		1	RXB5	07/05/19	1720	1892518	5
The following Prep Methods were performed:												
Method	Description	1		Analyst	Date	,	Time	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	od. Ammonia Nitrogen Prep		KLP1	07/04/19		1510	18	92642			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	07/03/19		0949	189	92840			
SW846 9056A	SW846 9056	A Total Anions in Soil		JLD1	07/08/19		1158	189	93929			

The following Analytical Methods were performed:

Method	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	EPA 350.1 Modified
5	SW846 9045D

Notes:

Page 25 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-12 Project: WNUC00518 Sample ID: 483471012 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 26 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Analyst Comments

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-13 Sample ID: 483471013

Matrix: Soil

Collect Date: 01-JUL-19 11:54
Receive Date: 02-JUL-19
Collector: Client
Moisture: 10.4%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	and Nitrate	"Dry Weight Correc	ted"									
Fluoride	U	ND	0.374	1.10	mg/kg	9.85	1	LXA2	07/09/19	0155	1893930	1
Nitrate-N		2.27	0.363	1.10	mg/kg	9.85	1					
Metals Analysis-ICP-M	IS .											
SW846 3050B/6020A U	Jranium Soli	d "Dry Weight Corr	ected"									
Uranium-235		0.019	0.00221	0.0155	ug/g	99.0	2	SKJ	07/10/19	1120	1892841	2
Uranium-238		1.46	0.0146	0.0442	ug/g	99.0	2					
Uranium-234	U	ND	0.00221	0.0111	ug/g	99.0	2	SKJ	07/10/19	1331	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	Weight Corrected"										
Nitrogen, Ammonia		44.9	0.985	2.74	mg/kg	49.0	1	KLP1	07/05/19	1008	1892643	4
Titration and Ion Analy	sis											
SW9045D Corrosivity ((pH<2or>14)	"As Received"										
Corrosivity	Н	4.66	0.010	0.100	SU		1	RXB5	07/05/19	1727	1892518	5
The following Prep Mer	thods were pe	erformed:										
Method	Description	n		Analyst	Date	,	Time	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	lod. Ammonia Nitrogen I	Prep	KLP1	07/04/19		1510	18	92642			
SW846 3050B	ICP-MS 3050	BS PREP	_	SXW1	07/03/19	(0949	18	92840			
SW846 9056A	SW846 9056	A Total Anions in Soil		JLD1	07/08/19		1158	18	93929			
TD1 C 11	137.1.1	c 1										

The following Analytical Methods were performed:

Method	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	EPA 350.1 Modified
5	SW846 9045D

Notes:

Page 27 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-13 Project: WNUC00518 Sample ID: 483471013 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 28 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Analyst Comments

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-14 Sample ID: 483471014

Matrix: Soil

Collect Date: 01-JUL-19 12:08
Receive Date: 02-JUL-19
Collector: Client
Moisture: 9.61%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	e and Nitrate '	'Dry Weight Corrected"										
Fluoride	J	1.06	0.370	1.09	mg/kg	9.83	1	LXA2	07/09/19	0226	1893930	1
Nitrate-N		2.43	0.359	1.09	mg/kg	9.83	1					
Metals Analysis-ICP-M	IS											
SW846 3050B/6020A 1	Uranium Solid	d "Dry Weight Corrected	"									
Uranium-238		6.63	0.0144	0.0436	ug/g	98.6	2	SKJ	07/10/19	1121	1892841	2
Uranium-234	U	ND	0.00218	0.0109	ug/g	98.6	2	SKJ	07/10/19	1332	1892841	3
Uranium-235		0.179	0.0109	0.0764	ug/g	98.6	10	SKJ	07/10/19	1137	1892841	4
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	Weight Corrected"										
Nitrogen, Ammonia		91.0	1.04	2.88	mg/kg	52.1	1	KLP1	07/05/19	1008	1892643	5
Titration and Ion Analy	rsis											
SW9045D Corrosivity	(pH<2or>14)	"As Received"										
Corrosivity	Н	4.74	0.010	0.100	SU		1	RXB5	07/05/19	1728	1892518	6
The following Prep Me	thods were pe	erformed:										
Method	Description	1		Analyst	Date	,	Time	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	od. Ammonia Nitrogen Prep		KLP1	07/04/19		1510	18	92642			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	07/03/19	(0949	18	92840			
SW846 9056A	SW846 9056A	A Total Anions in Soil		JLD1	07/08/19		1158	18	93929			

The following Analytical Methods were performed:

Method	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	SW846 3050B/6020A
5	EPA 350.1 Modified
6	SW846 9045D

Notes:

Page 29 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-14 Project: WNUC00518 Sample ID: 483471014 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 30 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-15 Sample ID: 483471015

Matrix: Soil

Moisture:

Collect Date: 01-JUL-19 12:13
Receive Date: 02-JUL-19
Collector: Client

12%

Project: WNUC00518 Client ID: WNUC007

Analyst Comments

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	and Nitrate '	'Dry Weight Corrected"										
Fluoride	J	0.495	0.387	1.14	mg/kg	10.0	1	LXA2	07/09/19	0257	1893930	1
Nitrate-N		2.69	0.375	1.14	mg/kg	10.0	1					
Metals Analysis-ICP-M	S											
SW846 3050B/6020A U	Jranium Solid	d "Dry Weight Corrected"	'									
Uranium-235		0.118	0.0021	0.0147	ug/g	92.4	2	SKJ	07/10/19	1123	1892841	2
Uranium-238		4.47	0.0139	0.042	ug/g	92.4	2					
Uranium-234	U	ND	0.0021	0.0105	ug/g	92.4	2	SKJ	07/10/19	1334	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, Ar	mmonia "Dry	Weight Corrected"										
Nitrogen, Ammonia		87.8	3.46	9.60	mg/kg	33.8	5	KLP1	07/05/19	1024	1892643	4
Titration and Ion Analys	sis											
SW9045D Corrosivity (pH<2or>14)	"As Received"										
Corrosivity	Н	4.60	0.010	0.100	SU		1	RXB5	07/05/19	1729	1892518	5
The following Prep Met	hods were pe	erformed:										
Method	Description	1		Analyst	Date	,	Гітє	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	od. Ammonia Nitrogen Prep		KLP1	07/04/19		1510	18	92642			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	07/03/19	(0949	189	92840			
SW846 9056A	SW846 9056A	A Total Anions in Soil		JLD1	07/08/19		1158	18	93929			

The following Analytical Methods were performed:

Method	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	EPA 350.1 Modified
5	SW846 9045D

Notes:

Page 31 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-15 Project: WNUC00518 Sample ID: 483471015 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 32 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Report Date: July 10, 2019

WNUC00518

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-16 Sample ID: 48347101

Matrix: Soil

Collect Date: 01-JUL-19 12:30
Receive Date: 02-JUL-19
Collector: Client
Moisture: 8.75%

Sample ID: 483471016 Client ID: WNUC007

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	' Analy	st Date	Time	e Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	e and Nitrate	"Dry Weight Corrected"										
Fluoride	J	0.957	0.371	1.09	mg/kg	9.95	1	LXA2	07/09/19	0328	1893930	1
Nitrate-N		2.22	0.360	1.09	mg/kg	9.95	1					
Metals Analysis-ICP-M	IS											
SW846 3050B/6020A 1	Uranium Soli	d "Dry Weight Corrected	<u>!"</u>									
Uranium-235		0.0439	0.00217	0.0152	ug/g	99.2	2	SKJ	07/10/19	1128	1892841	2
Uranium-238		2.87	0.0144	0.0435	ug/g	99.2	2					
Uranium-234	U	ND	0.00217	0.0109	ug/g	99.2	2	SKJ	07/10/19	1335	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dr	y Weight Corrected"										
Nitrogen, Ammonia		56.5	1.01	2.80	mg/kg	51.0	1	KLP1	07/05/19	1010	1892643	4
Titration and Ion Analy	vsis											
SW9045D Corrosivity	(pH<2or>14)	"As Received"										
Corrosivity	Н	4.65	0.010	0.100	SU		1	RXB5	07/05/19	1730	1892518	5
The following Prep Me	thods were p	erformed:										
Method	Descriptio	n		Analyst	Date		Tim	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	Iod. Ammonia Nitrogen Prep		KLP1	07/04/19		1510	18	92642			
SW846 3050B	ICP-MS 3050	OBS PREP		SXW1	07/03/19		0949	18	92840			

JLD1

07/08/19

1158

1893929

The following Analytical Methods were performed:

SW846 9045D

SW846 9056A Total Anions in Soil

Method	Description	Analyst Comments
1	SW846 9056A	
2	SW846 3050B/6020A	
3	SW846 3050B/6020A	
4	EPA 350.1 Modified	

Notes:

SW846 9056A

Page 33 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-16 Project: WNUC00518 Sample ID: 483471016 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 34 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-17 Sample ID: 483471017

Matrix: Soil

Collect Date: 01-JUL-19 12:36
Receive Date: 02-JUL-19
Collector: Client
Moisture: 13.4%

Project: WNUC00518 Client ID: WNUC007

Analyst Comments

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	' Analy	st Date	Time	e Batch	Method
Ion Chromatography												
SW846 9056A Fluorid	e and Nitrate	"Dry Weight Cor	rected"									
Fluoride	U	ND	0.391	1.15	mg/kg	9.95	1	LXA2	07/09/19	0500	1893930	1
Nitrate-N		2.58	0.379	1.15	mg/kg	9.95	1					
Metals Analysis-ICP-M	1S											
SW846 3050B/6020A	Uranium Soli	d "Dry Weight C	orrected"									
Uranium-235		0.0838	0.00225	0.0157	ug/g	97.3	2	SKJ	07/10/19	1130	1892841	2
Uranium-238		3.83	0.0148	0.0449	ug/g	97.3	2					
Uranium-234	U	ND	0.00225	0.0112	ug/g	97.3	2	SKJ	07/10/19	1337	1892841	3
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	y Weight Correct	ed"									
Nitrogen, Ammonia		88.6	0.896	2.49	mg/kg	43.1	1	KLP1	07/05/19	1011	1892643	4
Titration and Ion Analy	/sis											
SW9045D Corrosivity	(pH<2or>14)	"As Received"										
Corrosivity	Н	4.75	0.010	0.100	SU		1	RXB5	07/05/19	1730	1892518	5
The following Prep Me	thods were p	erformed:										
Method	Description	n		Analyst	Date		Tim	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	Iod. Ammonia Nitrog	en Prep	KLP1	07/04/19		1510	18	92642			
SW846 3050B	ICP-MS 3050	OBS PREP		SXW1	07/03/19		0949	18	92840			
SW846 9056A	SW846 9056	A Total Anions in So	1	JLD1	07/08/19		1158	18	93929			
The fellowing Applyti	aal Mathada	rrana manfanna di										

The following Analytical Methods were performed:

Method	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	EPA 350.1 Modified
5	SW846 9045D

Notes:

Page 35 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-17 Project: WNUC00518 Sample ID: 483471017 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 36 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Analyst Comments

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-18 Sample ID: 483471018

Matrix: Soil

Collect Date: 01-JUL-19 12:42
Receive Date: 02-JUL-19
Collector: Client
Moisture: 11.8%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	e Batch	Method
Ion Chromatography												
SW846 9056A Fluoride	e and Nitrate	"Dry Weight Co	orrected"									
Fluoride	J	1.10	0.376	1.11	mg/kg	9.76	1	LXA2	07/09/19	0531	1893930	1
Nitrate-N		2.69	0.365	1.11	mg/kg	9.76	1					
Metals Analysis-ICP-M	IS											
SW846 3050B/6020A 1	Uranium Soli	d "Dry Weight	Corrected"									
Uranium-238		7.14	0.0142	0.043	ug/g	94.9	2	SKJ	07/10/19	1131	1892841	2
Uranium-234	J	0.00258	0.00215	0.0108	ug/g	94.9	2	SKJ	07/10/19	1338	1892841	3
Uranium-235		0.248	0.0108	0.0753	ug/g	94.9	10	SKJ	07/10/19	1139	1892841	4
Nutrient Analysis												
EPA 350.1 Nitrogen, A	mmonia "Dry	Weight Correct	cted"									
Nitrogen, Ammonia		46.1	0.515	1.43	mg/kg	25.3	1	KLP1	07/05/19	1012	1892643	5
Titration and Ion Analy	sis											
SW9045D Corrosivity	(pH<2or>14)	"As Received"										
Corrosivity	Н	4.85	0.010	0.100	SU		1	RXB5	07/05/19	1731	1892518	6
The following Prep Me	thods were pe	erformed:										
Method	Description	n		Analyst	Date	,	Гim	e Pr	ep Batch			
EPA 350.2 Modified Prep	EPA 350.1 M	lod. Ammonia Nitro	ogen Prep	KLP1	07/04/19		1510	18	92642			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	07/03/19		0949	189	92840			
SW846 9056A	SW846 9056.	A Total Anions in S	Soil	JLD1	07/08/19		1158	18	93929			

The following Analytical Methods were performed:

Method	Description
1	SW846 9056A
2	SW846 3050B/6020A
3	SW846 3050B/6020A
4	SW846 3050B/6020A
5	EPA 350.1 Modified
6	SW846 9045D

Notes:

Page 37 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: July 10, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon
Project: Soil and Vegetation Analysis

Client Sample ID: C-40-18 Project: WNUC00518 Sample ID: 483471018 Client ID: WNUC007

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batch Method

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 38 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: July 10, 2019

Page 1 of 5

Westinghouse Electric Company, LLC

PO Drawer R

Columbia, South Carolina

Contact: Ms. Cynthia Logsdon

Workorder: 483471

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range Anlst	Date Time
Ion Chromatography Batch 1893930								
QC1204325458 483471001 DUP Fluoride		1.52 J	0.439	mg/kg	110 ^		(+/-1.10) LXA2	07/08/19 18:12
Nitrate-N		2.05	2.23	mg/kg	8.52 ^		(+/-1.10)	
QC1204325459 483471018 DUP Fluoride	J	1.10 J	1.12	mg/kg	1.76 ^		(+/-1.13)	07/09/19 06:02
Nitrate-N		2.69	2.51	mg/kg	7 ^		(+/-1.13)	
QC1204325457 LCS Fluoride	25.0		25.7	mg/kg		103	(90%-110%)	07/08/19 17:10
Nitrate-N	25.0		25.0	mg/kg		99.9	(90%-110%)	
QC1204325456 MB Fluoride		U	ND	mg/kg				07/08/19 16:40
Nitrate-N		U	ND	mg/kg				
QC1204325460 483471001 MS Fluoride	26.9	1.52	11.3	mg/kg		36.5*	(44%-130%)	07/08/19 18:43
Nitrate-N	26.9	2.05	29.3	mg/kg		102	(71%-117%)	
QC1204325461 483471018 MS Fluoride	28.1 J	1.10	9.42	mg/kg		29.7*	(44%-130%)	07/09/19 06:33
Nitrate-N	28.1	2.69	31.4	mg/kg		102	(71%-117%)	

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Page 2 of 5

07/10/19 12:50

Sample Qual QC **Parmname** NOM Units RPD% REC% Range Anlst Date Time Metals Analysis - ICPMS 1892841 Batch QC1204323120 483471001 DUP U ND U Uranium-234 ND SKJ 07/10/19 12:56 N/A ug/g J Uranium-235 0.00727 J 0.00872 ug/g 18.1 ^ (+/-0.0147)07/10/19 10:49 Uranium-238 0.763 1.02 28.6* (0%-20%)ug/g QC1204322969 LCS 0.0355 0.0352 07/10/19 10:46 Uranium-235 99.1 (80%-120%) ug/g Uranium-238 4.90 4.89 ug/g 100 (80%-120%)

0.0585

ug/g

114

(80% - 120%)

QC1204322971 483471001 MS Uranium-235	0.0376	J 0.00727	0.0457	ug/g	102	(75%-125%)	07/10/19 10:51
Uranium-238	5.18	0.763	5.91	ug/g	99.2	(75%-125%)	
QC1204322972 483471001 MS							

Uranium-234	0.0557 U	ND	0.0654	ug/g	117	(75%-125%)	07/10/19 12:57

QC1204322973 483471001 SDILT
Uranium-234 U ND U ND ug/L N/A 07/10/19 13:03

Page 40 of 77 SDG: 483471 Rev1

Workorder:

QC1204322970

QC1204322968

Uranium-234

LCS

MB

0.0515

483471

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 483471 Page 3 of 5 QC **Parmname NOM** Sample Qual Units RPD% REC% Range Anlst Date Time Metals Analysis - ICPMS 1892841 Batch Uranium-235 J 0.0343 U ND ug/L N/A (0%-10%)SKJ 07/10/19 10:54 Uranium-238 3.60 0.724 ug/L (0%-10%).6 **Nutrient Analysis** 1892643 QC1204322469 483471003 DUP Nitrogen, Ammonia 50.2 42.2 mg/kg 17.2 (0%-20%) KLP1 07/05/19 09:50 QC1204322470 483471002 DUP 37.6 Nitrogen, Ammonia 39.9 mg/kg 5.98 (0%-20%)07/05/19 09:47 QC1204322468 LCS Nitrogen, Ammonia 50.0 51.0 mg/kg 102 (90%-110%) 07/05/19 09:46 QC1204322467 MB J Nitrogen, Ammonia 2.08 mg/kg 07/05/19 09:45 QC1204322471 483471003 MS 50.2 103 54.2 97.4 (90%-110%) 07/05/19 09:55 Nitrogen, Ammonia mg/kg QC1204322472 483471002 MS 28.1 37.6 07/05/19 09:48 Nitrogen, Ammonia 61.0 mg/kg 83.4* (90%-110%) Batch 1893310 QC1204324049 483471001 DUP 28.8 (0%-20%) KLP1 07/05/19 10:21 Nitrogen, Ammonia 32.3 11.5 mg/kg QC1204324048 LCS Nitrogen, Ammonia 50.0 48.1 mg/kg 96.2 (90%-110%) 07/05/19 10:14 QC1204324047 MB U ND 07/05/19 10:20 Nitrogen, Ammonia mg/kg

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

((disorder: 4054/1										Pag	e 4 of 5
Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis Batch 1893310											
QC1204324050 483471001 MS Nitrogen, Ammonia	44.5	28.8		78.9	mg/kg		112*	(90%-110%)	KLP1	07/05/1	19 10:22
Titration and Ion Analysis Batch 1892518											
QC1204322204 483471001 DUP Corrosivity	Н	4.76	Н	4.75	SU	0.21		(0%-10%)	RXB5	07/05/1	19 17:10
QC1204322205 483471002 DUP Corrosivity	Н	4.75	Н	4.74	SU	0.211		(0%-10%)		07/05/1	19 17:11
QC1204322203 LCS Corrosivity	7.00			7.02	SU		100	(95%-105%)		07/05/1	19 17:08

Notes:

Workorder:

483471

The Qualifiers in this report are defined as follows:

- < Result is less than value reported
- > Result is greater than value reported
- B The target analyte was detected in the associated blank.
- E %difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- E General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
- FB Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
- H Analytical holding time was exceeded
- J Value is estimated
- N Metals--The Matrix spike sample recovery is not within specified control limits
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Page 42 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Page 5 of 5 Parmname **NOM** Sample Qual \mathbf{OC} Units RPD% REC% Range Anlst Date Time

- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- Z Paint Filter Test--Particulates passed through the filter, however no free liquids were observed.
- ٨ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- 5-day BOD--The 2:1 depletion requirement was not met for this sample d
- 5-day BOD--Test replicates show more than 30% difference between high and low values. The data is qualified per the method and can be used for e reporting purposes
- h Preparation or preservation holding time was exceeded

Workorder:

483471

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Page 43 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: C-40-1 Sample ID: 483471001

Matrix: Soil

Collect Date: 01-JUL-19 11:06 Receive Date: 02-JUL-19 Collector: Client

Moisture: 9.49%

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 -6.72 +/-7.7014.0 50.0 pCi/g CXS7 07/07/19 0511 1892527

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received" 91.4 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 44 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: C-40-2

Sample ID: 483471002

Matrix: Soil

Collect Date: 01-JUL-19 11:09
Receive Date: 02-JUL-19
Collector: Client
Moisture: 10.2%

Parameter Qualifier Result Uncertainty MDC RL Units PF DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 U -4.86 +/-7.83 14.0 50.0 pCi/g CXS7 07/07/19 0527 1892527 1

The following Analytical Methods were performed:

Method Description Analyst Comments

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits
Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received"

97.1 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 45 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: C-40-3 Sample ID: 483471003

Matrix: Soil

Collect Date: 01-JUL-19 11:12 Receive Date: 02-JUL-19

Collector: Client Moisture: 9.48%

Parameter Qualifier Result Uncertainty MDC RL Units PF DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 U -0.0748 +/-6.79 11.9 50.0 pCi/g CXS7 07/07/19 0544 1892527 1

The following Analytical Methods were performed:

Method Description Analyst Comments

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits
Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received"

92.3 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 46 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: C-40-4

Sample ID: 483471004

Matrix: Soil

Collect Date: 01-JUL-19 11:15 Receive Date: 02-JUL-19 Client

Collector: Moisture: 10.3%

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 pCi/g -1.87 +/-6.82 12.1 50.0 CXS7 07/07/19 0600 1892527

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received" 95.3 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 47 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

9.81%

Client Sample ID: C-40-5

Sample ID: 483471005

Matrix: Soil

Collect Date: 01-JUL-19 11:18 Receive Date: 02-JUL-19 Client Collector:

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Moisture:

Liquid Scint Tc99, Soil "As Received"

Technetium-99 1.07 +/-9.4016.3 50.0 pCi/g CXS7 07/07/19 0617 1892527

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer 98.9 (15%-125%)

Liquid Scint Tc99, Soil "As Received"

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 48 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: C-40-6

Sample ID: 483471006

Matrix: Soil

Collect Date: 01-JUL-19 11:26 Receive Date: 02-JUL-19 Client Collector:

Moisture: 14.8%

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 pCi/g -5.14 +/-9.26 16.5 50.0 CXS7 07/07/19 0633 1892527

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer 89.2 (15%-125%)

Liquid Scint Tc99, Soil "As Received"

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 49 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Project:

Client ID:

Certificate of Analysis

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: C-40-7

Sample ID: 483471007

Matrix: Soil

Collect Date: 01-JUL-19 11:29 Receive Date: 02-JUL-19 Client Collector:

11%

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Moisture:

Liquid Scint Tc99, Soil "As Received"

Technetium-99 pCi/g 2.84 +/-7.77 13.4 50.0 CXS7 07/07/19 0650 1892527

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received" 93.3 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 50 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

9.96%

Client Sample ID: C-40-8

Sample ID: 483471008

Matrix: Soil

Collect Date: 01-JUL-19 11:31 Receive Date: 02-JUL-19 Client Collector:

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Moisture:

Liquid Scint Tc99, Soil "As Received"

Technetium-99 pCi/g -6.71 +/-12.822.9 50.0 CXS7 07/07/19 0706 1892527

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer 93.7 (15%-125%)

Liquid Scint Tc99, Soil "As Received"

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 51 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: C-40-9

Sample ID: 483471009

Matrix: Soil

Collect Date: 01-JUL-19 11:35 02-JUL-19 Receive Date: Client Collector: Moisture: 13.1%

Parameter Q	Qualifier	Result Uncertainty	MDC	RL	Units	PF	DF Analyst Date	Time Batch Method
-------------	-----------	--------------------	-----	----	-------	----	-----------------	-------------------

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 pCi/g U -4.41 +/-12.722.5 50.0 CXS7 07/07/19 0723 1892527

The following Analytical Methods were performed:

Method Description Analyst Comments

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received" (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma). Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 52 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: C-40-10 Sample ID: 483471010

Matrix: Soil

Collect Date: 01-JUL-19 11:40 Receive Date: 02-JUL-19 Collector: Client

9.8%

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Moisture:

Liquid Scint Tc99, Soil "As Received"

Technetium-99 -1.22+/-9.59 16.8 50.0 pCi/g CXS7 07/07/19 0740 1892527

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer 98.3 (15%-125%)

Liquid Scint Tc99, Soil "As Received"

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 53 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: C-40-11 483471011

Sample ID: Matrix: Soil

Collect Date: 01-JUL-19 11:44 Receive Date: 02-JUL-19 Client Collector:

Moisture: 8.82%

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 pCi/g -1.36 +/-11.019.3 50.0 CXS7 07/07/19 0757 1892527

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer 97.9 (15%-125%)

Liquid Scint Tc99, Soil "As Received"

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 54 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

8.66%

Client Sample ID: C-40-12 Sample ID: 483471012

Matrix: Soil

Collect Date: 01-JUL-19 11:48 02-JUL-19 Receive Date: Client Collector:

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Moisture:

Liquid Scint Tc99, Soil "As Received"

Technetium-99 pCi/g -8.33 +/-11.6 20.9 50.0 CXS7 07/07/19 0813 1892527

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received" 94.7 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 55 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Project:

Client ID:

Certificate of Analysis

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: C-40-13 Sample ID: 483471013

Matrix: Soil

Collect Date: 01-JUL-19 11:54 Receive Date: 02-JUL-19 Client Collector:

Moisture: 10.4%

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 pCi/g -0.755 +/-8.62 15.1 50.0 CXS7 07/07/19 0830 1892527

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received" 96.3 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 56 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

9.61%

Client Sample ID: C-40-14 Sample ID: 483471014

Matrix: Soil

Collect Date: 01-JUL-19 12:08 Receive Date: 02-JUL-19 Client Collector:

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Moisture:

Liquid Scint Tc99, Soil "As Received"

Technetium-99 pCi/g -4.24 +/-8.52 15.2 50.0 CXS7 07/07/19 0847 1892527

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received" 87.7 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 57 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: C-40-15 Sample ID: 483471015

Matrix: Soil

Collect Date: 01-JUL-19 12:13
Receive Date: 02-JUL-19
Collector: Client

Moisture: 12%

Parameter Qualifier Result Unc	nty MDC RI	Units PF	DF Analyst Date	Time Batch Method
--------------------------------	------------	----------	-----------------	-------------------

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 U -0.755 +/-12.7 22.2 50.0 pCi/g CXS7 07/07/19 0904 1892527 1

The following Analytical Methods were performed:

Method Description Analyst Comments

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits
Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received"

93.2 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 58 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

8.75%

Client Sample ID: C-40-16

Sample ID: 483471016 Matrix: Soil

Collect Date: 01-JUL-19 12:30

Receive Date: 02-JUL-19 Client Collector:

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Moisture:

Liquid Scint Tc99, Soil "As Received"

Technetium-99 pCi/g 1.68 +/-12.621.9 50.0 CXS7 07/07/19 0920 1892527

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received" 95 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 59 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: C-40-17 Sample ID: 483471017

Matrix: Soil

Collect Date: 01-JUL-19 12:36 Receive Date: 02-JUL-19 Client Collector:

Moisture: 13.4%

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 pCi/g -3.16 +/-7.74 13.7 50.0 CXS7 07/07/19 0937 1892527

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer 92.2 (15%-125%)

Liquid Scint Tc99, Soil "As Received"

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 60 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Client ID:

Report Date: July 10, 2019

WNUC00518

WNUC007

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon

Project: Soil and Vegetation Analysis

Client Sample ID: C-40-18 Sample ID: 483471018

Matrix: Soil

Collect Date: 01-JUL-19 12:42 Receive Date: 02-JUL-19

Client Collector: Moisture: 11.8%

Qualifier RL PF Parameter Result Uncertainty **MDC** Units DF Analyst Date Time Batch Method

Rad Liquid Scintillation Analysis

Liquid Scint Tc99, Soil "As Received"

Technetium-99 20.0 pCi/g 4.26 +/-11.6 50.0 CXS7 07/07/19 0954 1892527

The following Analytical Methods were performed:

Method Description **Analyst Comments**

DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery Test Result Nominal Recovery% Acceptable Limits Technetium-99m Tracer Liquid Scint Tc99, Soil "As Received" 85.5 (15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 61 of 77 SDG: 483471 Rev1

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: July 10, 2019

Westinghouse Electric Company, LLC

PO Drawer R

Columbia, South Carolina Ms. Cynthia Logsdon

Workorder: 483471

Contact:

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range Anlst	Date Time
Rad Liquid Scintillation Batch 1892527 —									
QC1204322218 483471001 DUP									
Technetium-99	U	-6.72	U	-2.34	pCi/g	N/A		N/A CXS7	07/07/19 10:27
	Uncertainty	+/-7.70		+/-9.86					
QC1204322219 LCS				100	G1.4				
Technetium-99	221			198	pCi/g		89.5	(75%-125%)	07/07/19 10:43
	Uncertainty			+/-12.4					
QC1204322217 MB				5.26	G: /				07/07/10 10 10
Technetium-99	*** · · · ·		U	-5.36	pCi/g				07/07/19 10:10
	Uncertainty			+/-6.64					

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M M if above MDC and less than LLD
- M REMP Result > MDC/CL and < RDL
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification

Page 62 of 77 SDG: 483471 Rev1

Page 1 of 2

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Page 2 of 2 OC **Parmname** Units RPD% Date Time

Sample Qual **NOM** REC% Range Anlst

- UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- ٨ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

Workorder:

483471

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Page 63 of 77 SDG: 483471 Rev1

Technical Case Narrative Westinghouse Electric Co, LLC SDG #: 483471

Metals

<u>Product:</u> Determination of Metals by ICP-MS <u>Analytical Method:</u> SW846 3050B/6020A <u>Analytical Procedure:</u> GL-MA-E-014 REV# 33

Analytical Batch: 1892841

Preparation Method: SW846 3050B

Preparation Procedure: GL-MA-E-009 REV# 28

Preparation Batch: 1892840

The following samples were analyzed using the above methods and analytical procedure(s).

483471001 C-40-1 483471002 C-40-2 483471003 C-40-3 483471004 C-40-4 483471005 C-40-5 483471007 C-40-6 483471008 C-40-8 483471010 C-40-9 483471011 C-40-10 483471012 C-40-12 483471013 C-40-13 483471014 C-40-14 483471015 C-40-15 483471016 C-40-16 483471017 C-40-17 483471018 C-40-18 1204322968 Method Blank (MB)ICP-MS 1204322970 Laboratory Control Sample (LCS) 1204322973 483471001(C-40-1L) Serial Dilution (SD) 1204322971 483471001(C-40-1D) Sample Duplicate (DUP) 1204322972 483471001(C-40-1S) Matrix Spike (MS) 1204322972 483471001(C-40-1S) Matrix Spike (MS)	GEL Sample ID#	Client Sample Identification
483471003 C-40-3 483471004 C-40-5 483471005 C-40-6 483471007 C-40-7 483471009 C-40-9 483471010 C-40-10 483471011 C-40-11 483471012 C-40-12 483471013 C-40-13 483471015 C-40-15 483471016 C-40-16 483471017 C-40-17 483471018 C-40-18 1204322968 Method Blank (MB)ICP-MS 1204322970 Laboratory Control Sample (LCS) 1204322971 483471001(C-40-1D) Sample Duplicate (DUP) 1204322971 48347101(C-40-1S) Matrix Spike (MS)		_
483471004 C-40-4 483471005 C-40-5 483471006 C-40-6 483471007 C-40-7 483471008 C-40-9 483471010 C-40-10 483471011 C-40-11 483471012 C-40-12 483471013 C-40-13 483471015 C-40-15 483471016 C-40-16 483471017 C-40-18 1204322968 Method Blank (MB)ICP-MS 1204322970 Laboratory Control Sample (LCS) 1204322971 483471001(C-40-1D) Sample Duplicate (DUP) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	483471002	C-40-2
483471005 C-40-5 483471006 C-40-6 483471007 C-40-7 483471008 C-40-8 483471010 C-40-9 483471011 C-40-10 483471012 C-40-12 483471013 C-40-13 483471014 C-40-14 483471015 C-40-15 483471016 C-40-16 483471018 C-40-18 1204322968 Method Blank (MB)ICP-MS 1204322969 Laboratory Control Sample (LCS) 1204322970 Laboratory Control Sample (LCS) 1204322973 483471001(C-40-1L) Serial Dilution (SD) 1204322971 483471001(C-40-1D) Sample Duplicate (DUP) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	483471003	C-40-3
483471006	483471004	C-40-4
483471007 C-40-7 483471008 C-40-8 483471009 C-40-9 483471011 C-40-11 483471012 C-40-12 483471013 C-40-13 483471015 C-40-15 483471016 C-40-16 483471017 C-40-17 483471018 C-40-18 1204322968 Method Blank (MB)ICP-MS 1204322970 Laboratory Control Sample (LCS) 1204322973 483471001(C-40-1L) Serial Dilution (SD) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	483471005	C-40-5
483471008	483471006	C-40-6
483471009 C-40-9 483471010 C-40-10 483471011 C-40-11 483471012 C-40-12 483471013 C-40-13 483471014 C-40-14 483471015 C-40-15 483471016 C-40-16 483471018 C-40-18 1204322968 Method Blank (MB)ICP-MS 1204322969 Laboratory Control Sample (LCS) 1204322970 Laboratory Control Sample (LCS) 1204322973 483471001(C-40-1L) Serial Dilution (SD) 1204323120 483471001(C-40-1D) Sample Duplicate (DUP) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	483471007	C-40-7
483471010	483471008	C-40-8
483471011	483471009	C-40-9
483471012 C-40-12 483471013 C-40-13 483471014 C-40-14 483471015 C-40-15 483471016 C-40-16 483471017 C-40-17 483471018 C-40-18 1204322968 Method Blank (MB)ICP-MS 1204322969 Laboratory Control Sample (LCS) 1204322970 Laboratory Control Sample (LCS) 1204322973 483471001(C-40-1L) Serial Dilution (SD) 1204322971 483471001(C-40-1D) Sample Duplicate (DUP) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	483471010	C-40-10
483471013 C-40-13 483471014 C-40-14 483471015 C-40-15 483471016 C-40-16 483471017 C-40-17 483471018 C-40-18 1204322968 Method Blank (MB)ICP-MS 1204322969 Laboratory Control Sample (LCS) 1204322970 Laboratory Control Sample (LCS) 1204322973 483471001(C-40-1L) Serial Dilution (SD) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	483471011	C-40-11
483471014 C-40-14 483471015 C-40-15 483471016 C-40-16 483471017 C-40-17 483471018 C-40-18 1204322968 Method Blank (MB)ICP-MS 1204322969 Laboratory Control Sample (LCS) 1204322970 Laboratory Control Sample (LCS) 1204322973 483471001(C-40-1L) Serial Dilution (SD) 1204322971 483471001(C-40-1D) Sample Duplicate (DUP) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	483471012	C-40-12
483471015 C-40-15 483471016 C-40-16 483471017 C-40-17 483471018 C-40-18 1204322968 Method Blank (MB)ICP-MS 1204322969 Laboratory Control Sample (LCS) 1204322970 Laboratory Control Sample (LCS) 1204322973 483471001(C-40-1L) Serial Dilution (SD) 1204322971 483471001(C-40-1D) Sample Duplicate (DUP) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	483471013	C-40-13
483471016 C-40-16 483471017 C-40-17 483471018 C-40-18 1204322968 Method Blank (MB)ICP-MS 1204322969 Laboratory Control Sample (LCS) 1204322970 Laboratory Control Sample (LCS) 1204322973 483471001(C-40-1L) Serial Dilution (SD) 1204323120 483471001(C-40-1D) Sample Duplicate (DUP) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	483471014	C-40-14
483471017 C-40-17 483471018 C-40-18 1204322968 Method Blank (MB)ICP-MS 1204322969 Laboratory Control Sample (LCS) 1204322970 Laboratory Control Sample (LCS) 1204322973 483471001(C-40-1L) Serial Dilution (SD) 1204323120 483471001(C-40-1D) Sample Duplicate (DUP) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	483471015	C-40-15
483471018 C-40-18 1204322968 Method Blank (MB)ICP-MS 1204322969 Laboratory Control Sample (LCS) 1204322970 Laboratory Control Sample (LCS) 1204322973 483471001(C-40-1L) Serial Dilution (SD) 1204323120 483471001(C-40-1D) Sample Duplicate (DUP) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	483471016	C-40-16
1204322968 Method Blank (MB)ICP-MS 1204322969 Laboratory Control Sample (LCS) 1204322970 Laboratory Control Sample (LCS) 1204322973 483471001(C-40-1L) Serial Dilution (SD) 1204323120 483471001(C-40-1D) Sample Duplicate (DUP) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	483471017	C-40-17
1204322969 Laboratory Control Sample (LCS) 1204322970 Laboratory Control Sample (LCS) 1204322973 483471001(C-40-1L) Serial Dilution (SD) 1204323120 483471001(C-40-1D) Sample Duplicate (DUP) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	483471018	C-40-18
1204322970 Laboratory Control Sample (LCS) 1204322973 483471001(C-40-1L) Serial Dilution (SD) 1204323120 483471001(C-40-1D) Sample Duplicate (DUP) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	1204322968	Method Blank (MB) ICP-MS
1204322973 483471001(C-40-1L) Serial Dilution (SD) 1204323120 483471001(C-40-1D) Sample Duplicate (DUP) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	1204322969	Laboratory Control Sample (LCS)
1204323120 483471001(C-40-1D) Sample Duplicate (DUP) 1204322971 483471001(C-40-1S) Matrix Spike (MS)	1204322970	Laboratory Control Sample (LCS)
1204322971 483471001(C-40-1S) Matrix Spike (MS)	1204322973	483471001(C-40-1L) Serial Dilution (SD)
· · · · · · · · · · · · · · · · · · ·	1204323120	483471001(C-40-1D) Sample Duplicate (DUP)
1204322972 483471001(C-40-1S) Matrix Spike (MS)	1204322971	483471001(C-40-1S) Matrix Spike (MS)
	1204322972	483471001(C-40-1S) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

Page 64 of 77 SDG: 483471 Rev1

ICSA/ICSAB Statement

For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Quality Control (QC) Information

Duplicate Relative Percent Difference (RPD) Statement

The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required reporting limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to evaluate the DUP results. Not all the applicable analyte RPD values were within the acceptance criteria.

Sample	Analyte	Value
1204323120 (C-40-1DUP)	Uranium-238	28.6* (0%-20%)

Technical Information

Preparation/Analytical Method Verification

Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions

Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range. Samples 483471009 (C-40-9), 483471010 (C-40-10), 483471014 (C-40-14) and 483471018 (C-40-18) were diluted to ensure that the analyte concentrations were within the linear calibration range of the instrument. The ICPMS solid samples in this SDG were diluted the standard two times.

A		483471								
Analyte	001	002	003	004	005	006	007	008	009	010
Uranium-234	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X
Uranium-235	2X	2X	2X	2X	2X	2X	2X	2X	20X	10X
Uranium-238	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X

A = 1=-t =	483471									
Analyte	011	012	013	014	015	016	017	018		
Uranium-234	2X	2X	2X	2X	2X	2X	2X	2X		
Uranium-235	2X	2X	2X	10X	2X	2X	2X	10X		
Uranium-238	2X	2X	2X	2X	2X	2X	2X	2X		

General Chemistry

Product: Ion Chromatography

Page 65 of 77 SDG: 483471 Rev1

Analytical Method: SW846 9056A

Analytical Procedure: GL-GC-E-086 REV# 26 Analytical Batches: 1893930 and 1893929

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
483471001	C-40-1
483471002	C-40-2
483471003	C-40-3
483471004	C-40-4
483471005	C-40-5
483471006	C-40-6
483471007	C-40-7
483471008	C-40-8
483471009	C-40-9
483471010	C-40-10
483471011	C-40-11
483471012	C-40-12
483471013	C-40-13
483471014	C-40-14
483471015	C-40-15
483471016	C-40-16
483471017	C-40-17
483471018	C-40-18
1204325456	Method Blank (MB)
1204325457	Laboratory Control Sample (LCS)
1204325458	483471001(C-40-1) Sample Duplicate (DUP)
1204325459	483471018(C-40-18) Sample Duplicate (DUP)
1204325460	483471001(C-40-1) Matrix Spike (MS)
1204325461	483471018(C-40-18) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Fluoride	1204325460 (C-40-1MS)	36.5* (44%-130%)
	1204325461 (C-40-18MS)	29.7* (44%-130%)

Product: Ammonia Nitrogen

Preparation Method: EPA 350.1 Modified **Preparation Procedure:** GL-GC-E-106 REV# 10

Preparation Batch: 1892643

Preparation Method: EPA 350.2 Modified Prep **Preparation Procedure:** GL-GC-E-072 REV# 17

Preparation Batch: 1892642

The following samples were analyzed using the above methods and analytical procedure(s).

Client Sample Identification
C-40-2
C-40-3
C-40-4
C-40-5
C-40-6
C-40-7
C-40-8
C-40-9
C-40-10
C-40-11
C-40-12
C-40-13
C-40-14
C-40-15
C-40-16
C-40-17
C-40-18
Method Blank (MB)
Laboratory Control Sample (LCS)
483471003(C-40-3) Sample Duplicate (DUP)
483471002(C-40-2) Sample Duplicate (DUP)
483471003(C-40-3) Matrix Spike (MS)
483471002(C-40-2) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Nitrogen, Ammonia	1204322472 (C-40-2MS)	83.4* (90%-110%)

Technical Information

Sample Dilutions

The following samples 483471009 (C-40-9) and 483471015 (C-40-15) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Amakuta	483471			
Analyte	009	015		
Nitrogen, Ammonia	5X	5X		

Product: Ammonia Nitrogen

<u>Preparation Method:</u> EPA 350.1 Modified <u>Preparation Procedure:</u> GL-GC-E-106 REV# 10

Preparation Batch: 1893310

Preparation Method: EPA 350.2 Modified Prep **Preparation Procedure:** GL-GC-E-072 REV# 17

Preparation Batch: 1893309

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
483471001	C-40-1
1204324047	Method Blank (MB)
1204324048	Laboratory Control Sample (LCS)
1204324049	483471001(C-40-1) Sample Duplicate (DUP)
1204324050	483471001(C-40-1) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Nitrogen, Ammonia	1204324050 (C-40-1MS)	112* (90%-110%)

Page 68 of 77 SDG: 483471 Rev1

Technical Information

Sample Re-analysis

Sample1204324047 (MB) was re-analyzed due to (its) proximity to an overrange sample. The results from the reanalysis are reported.

Product: pH

Analytical Method: SW846 9045D

Analytical Procedure: GL-GC-E-008 REV# 23

Analytical Batch: 1892518

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
483471001	C-40-1
483471002	C-40-2
483471003	C-40-3
483471004	C-40-4
483471005	C-40-5
483471006	C-40-6
483471007	C-40-7
483471008	C-40-8
483471009	C-40-9
483471010	C-40-10
483471011	C-40-11
483471012	C-40-12
483471013	C-40-13
483471014	C-40-14
483471015	C-40-15
483471016	C-40-16
483471017	C-40-17
483471018	C-40-18
1204322203	Laboratory Control Sample (LCS)
1204322204	483471001(C-40-1) Sample Duplicate (DUP)
1204322205	483471002(C-40-2) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Holding Times

Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
1204322204 (C-40-1DUP)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19

Page 69 of 77 SDG: 483471 Rev1

1204322205 (C-40-2DUP)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471001 (C-40-1)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471002 (C-40-2)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471003 (C-40-3)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471004 (C-40-4)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471005 (C-40-5)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471006 (C-40-6)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471007 (C-40-7)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471008 (C-40-8)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471009 (C-40-9)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471010 (C-40-10)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471011 (C-40-11)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471012 (C-40-12)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471013 (C-40-13)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471014 (C-40-14)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471015 (C-40-15)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471016 (C-40-16)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471017 (C-40-17)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19
483471018 (C-40-18)	Corrosivity	Received 02-JUL-19, out of holding 01-JUL-19

Radiochemistry

Product: Dry Weight

Analytical Method: ASTM D 2216 (Modified) Analytical Procedure: GL-OA-E-020 REV# 13

Analytical Batch: 1892592

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
483471001	C-40-1
483471002	C-40-2
483471003	C-40-3
483471004	C-40-4
483471005	C-40-5
483471006	C-40-6
483471007	C-40-7
483471008	C-40-8
483471009	C-40-9
483471010	C-40-10
483471011	C-40-11
483471012	C-40-12
483471013	C-40-13

Page 70 of 77 SDG: 483471 Rev1

483471014 C-40-14	
483471015 C-40-15	
483471016 C-40-16	
483471017 C-40-17	
483471018 C-40-18	
1204322383 483471001(C-40-1) Sample Duplicate (DI	JP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: Liquid Scint Tc99, Soil

Analytical Method: DOE EML HASL-300, Tc-02-RC Modified

Analytical Procedure: GL-RAD-A-059 REV# 5

Analytical Batch: 1892527

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
483471001	C-40-1
483471002	C-40-2
483471003	C-40-3
483471004	C-40-4
483471005	C-40-5
483471006	C-40-6
483471007	C-40-7
483471008	C-40-8
483471009	C-40-9
483471010	C-40-10
483471011	C-40-11
483471012	C-40-12
483471013	C-40-13
483471014	C-40-14
483471015	C-40-15
483471016	C-40-16
483471017	C-40-17
483471018	C-40-18
1204322217	Method Blank (MB)
1204322218	483471001(C-40-1) Sample Duplicate (DUP)
1204322219	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration,

continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Page 72 of 77 SDG: 483471 Rev1

(T)				74011	المراقبة في	¥ 10 %	Ç S	Curchally and Amalytical Description		, C	4		GEL La	GEL Laboratories, LLC	υ	
Dject #: SSAOU Soil Sampling Work Plan		**See w		Lcom fo	r GEL's (Sample,	Accep	**See www.gel.com for GEL's Sample Acceptance SOP**	***		an)		2040 Sa	2040 Savage Road		
(ð.	()	*****	5.5	ī	****								Phone: (Phone: (843) 556-8171		
745037	GEL Work Order Number: 48 54	umber:	なる	Ž	www.co.co.co.co.co.co.co.co.co.co.co.co.co.								Fax: (84	Fax: (843) 766-1178		
ent Name: Westinghouse Electric Company LLC	5)	Phone #: 803.647.3171	3.647.317					Sample A	nalysis l	Seques	ted (S)	(Fill in	the numb	er of containe	Sample Analysis Requested (5) (Fill in the number of containers for each test)	Ţ
ect/Site Name: Columbia Fuel Fabrication Facility	llity	Fax #: 803.695.3964	695.396	4		ed of	ļ					<u> </u>			< Preservative Type (6)	1
Adress: 5801 Bluff Road, Hopkins, SC 29061						duod2 qmes bisnoo		λq) υ				-				7
	Send Results: logsdocj@westinghouse.com	@westinghous	se.com			Pote	Τ	nuiner	66-	sinon	opirde	H rate	2171		Comments Note: extra sample is	
Sample ID * For composites - indicate start and stop date time	*Date Collected (mm-dd-yy)	d *Time Collected (Military) (thum)	OC Code (1	QC Field Code (2)	Sample Matrix (4)	Padioactive	TSCA Regul	u oiqotosi subivibni		nmA			21.1.7		required for sample specific QC	
C-40-1	7/1/2019	1106	D	z	SO			×	X	Х	X	X				,
C-40-2	7/1/2019	1109	5	z	SO		_	×	×	×	×	×				
C-40-3	7/1/2019	1112	Ü	z	SO			×	×	×	×	×				
C-40-4	7/1/2019	1115	Ö	z	SO		_	×	×	×	×	×				
C-40-5	7/1/2019	1118	Ö	z	SO		-	×	×	×	×	×				
C-40-6	7/1/2019	1126	g	z	SO			×	×	×	×	×				
C-40-7	7/1/2019	1129	Ö	z	SO			Х	×	×	×	×				
C-40-8	7/1/2019	1131	ŋ	z	SO			X	X	×	×	×				
																1

TAT Requested: Normal: X Specify: ASAP	ASAP			Circle	Circle Deliverable:
(Subject to Surcharge)		Fax Results: Yes	Yes / No	C of A / QC Summary / Lev	C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards	o these samples? If	so, please list the h.	iazards		Sample Collection Time Zone
					Eastern Pacific
****5 STRAIGHT day turnaround****					Central Other
					Mountain
Chain of Custe	Chain of Custody Signatures			Sample Shipping a	Sample Shipping and Delivery Details
Relinquished By (Signed) Date Time	Received by (signed)	Date Time		GEL PM: Hope Taylor	
1 Randy Crews (CO2007) 1630	1/50 Du	15 Dun 7/2/19	1030	Method of Shipment:	Date Shipped: N/A
71	7			Airbill #:	
33	3			Airbill #:	

1.) Chain of Custody Number = Client Determined

Custody Seal Intact?
YES NO
Cooler Temp:

For Lab Receiving Use Only

^{2.)} QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite

^{3.)} Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.

^{4.)} Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Water, W=Water, WL=Mise Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Wate, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal 5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 6010B 7470A - 1).

^{6.)} Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank
WHITE = LABORATORY
YELLOW = FILE
PINK = CLIENT

GEL Laboratories, LLC	2040 Savage Road Charleston, SC 20407	Phone: (843) 556-8171	Fax: (843) 766-1178	Sample Analysis Requested (5) (Fill in the number of containers for each test)	< Preservative Type (6)	(Comments Note: extra sample is		X	×	×	X	X	X	X	
				(Fill i			Н		×	×	×	×	×	×	×	
فسطح	ı			ted (5)			opirde	oul4	×	×	×	×	×	×	×	
Lesi	!			ednes			sinon	пшА	×	×	×	×	×	×	X	
ustody and Analytical Request	**d			Analysis R			66-		Х	×	×	×	×	×	×	
vtica	ance SO			Sample 4		ı (pλ	nuiner otosi li SM-)	u sotopic ubivibni ICP.	×	×	×	×	×	×	×	
To the second	ccept				sus	nistao) er of c	dmun latoT								
ld Au	ample A				əq ə	Should Iqmas bisnos	pated	Radioactive TSCA Regul								
dv ar	GEL's S							Sample Matrix ⁽⁴⁾	SO							
usto	.com for							Field Filtered ⁽³⁾	z	z	z	z	z	z	z	
of	vw.gel			647.3171	95.396		com.	Code (3)	Ö	G	9	Ð	Ð	Ð	9	
	See www.gel.com for GEL's Sample Acceptance SOP	ber:		Phone #: 803.647.3171	Fax #: 803.695.3964		estinghouse	*Time Collected (Military) (hhmm)	1135	1140	1144	1148	1154	1208	1213	
GEL Chain of C		GEL Work Order Number:					Send Results: logsdocj@westinghouse.com	*Date Collected (mm-dd-yy)	7/1/2019	7/1/2019	7/1/2019	7/1/2019	7/1/2019	7/1/2019	7/1/2019	9
Peter: 2 of 3	Project #: SSAOU Soil Sampling Work Plan GEL Ouote #:		PQ/Number: 4500745037	Client Name: Westinghouse Electric Company LLC	Opject/Site Name: Columbia Fuel Fabrication Facility	Abelress: 5801 Bluff Road, Hopkins, SC 29061	Send Result	Sample ID * For composites - indicate start and stop date time	C-40-9	C-40-10	C-40-11	C-40-12	C-40-13	C-40-14	C-40-15	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \

TAT Requested: Normal: Rush:X_ Specify: _ASAP	rASAP_		Circle	Circle Deliverable:
(Subject to Surcharge)		Fax Results: Yes / No	C of A / QC Summary / Leve	C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards	to these samples? I	f so, please list the hazards		Sample Collection Time Zone
				Eastern Pacific
****5 STRAIGHT day turnaround****				Central Other
				Mountain
Chain of Cust	Chain of Custody Signatures		Sample Shipping a	Sample Shipping and Delivery Details
Relinquished By (Signed) Date Time	Received by (signed)	Date Time	GEI DM: Hone Taylor	
\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\		1 1	OLL IN. HOLE INTO	
1 Randy Crews (CA) 1/2/2019 (O \$ '0	1 Ray Dure	712/19 1030	Method of Shipment:	Date Shipped: N/A
2	2		Airbill #:	
3	3		Airbill #:	
1.) Chain of Custody Number = Client Determined				

2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite

3.) Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.

4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Water, WEWater, ML=Mise Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal

6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

WHITE = LABORATORY

VELLLOW = FILE

PINK = CLIENT 5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 6010B 7470A - 1).

For Lab Receiving Use Only Custody Seal Intact? YES NO Cooler Temp:

of 5 of 5		GEL Chain of			MV 3	bul A	5	Custody and Analytical Request	A Pa	Co			GEL 1	aborator	GEL Laboratories, LLC		
ject #: SSAOU Soil Sampling Work Plan Q Quote #:		**See W		.com fo	r GEL's	Sample	Accep	**See www.gel.com for GEL's Sample Acceptance SOP**	***)			2040 Charle	2040 Savage Road Charleston, SC 29407	oad 29407		
	GEL Work Order Number	ımber.											Phone	Phone: (843) 556-8171	56-8171		
Number: 4500745037	N I I I I I I I I I I I I I I I I I I I	minoci.											Fax: (Fax: (843) 766-1178	-1178		
ent Name: Westinghouse Electric Company LLC)C	Phone #: 803.647.31	.647.317	_				Sample A	nalysis B	ednes	ed ^(S) (Fill in	the nun	ber of c	ontainer	Sample Analysis Requested ⁽⁵⁾ (Fill in the number of containers for each test)	
ect/Site Name: Columbia Fuel Fabrication Facility	cility	Fax #: 803.695.3964	595.396	d		əq əş										< Preservative Type (6)	(9
Bress: 5801 Bluff Road, Hopkins, SC 29061						dwes poogs	bisnos nistno:	obe [,] u (pλ									
मीected by: Randy Crews Sei	Send Results: logsdocj@westinghouse.com	westinghous	e.com				I	nuiner stosi le (SM-	66-	sinon	oride 11	H rate				Comments Note: extra sample	is.
Sample ID * For composites - indicate start and stop date time	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	OC Code ⁰	QC Field Code (2) Filtered (3)	Sample Matrix (4)	evitogoibgA	TSCA Regul	u sotopic u individua ICP.	эΤ	ımA						required for sample specific QC	ව
C-40-17	7/1/2019	1236	ŋ	z	SO			×	×	×	×	X					
C-40-18	7/1/2019	1242	5	z	SO			X	×	×	×	× ×					
									·					***************************************			
								Достигания по	7		***************************************	-	1]

TAT December of Messes December V Commission	4640					
(Subject to Surcharge)	_ASAF_	Fax Results:	Yes / No	O.	Cof A / OC Summary / Level 1 / Level 2 / Level 4 / Level 4	2. 2012 / Level 2 / Level 4
***************************************				***************************************	Col it / Comming) Lovel 1 / Lov	CLZ / LCVCI J / LCVCI 4
Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards	to these samples? L	so, please list to	he hazards			Sample Collection Time Zone
						Eastern Pacific
****5 STRAIGHT day turnaround****						Central Other
					: !	Mountain
Chain of Custo	Chain of Custody Signatures				Sample Shipping and Delivery Details	ry Details
Relinquished By (Signed) Date Time	Received by (signed)	Date	Time	GEL PM: Hope Taylor	lor	
1 Randy Cress & Chel 7/2/2019 1030	1 May Bran	7/21/9	1038	Method of Shipment:	Date Shipped: N/A	ed: N/A
2				Airbill #:		
3	<u>~</u>			Airbill #:		

1.) Chain of Custody Number = Client Determined

2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite

3.) Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.

4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Water, W=Water, ML=Mise Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal 5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 6010B 7470A - 1).

6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = Leave field blank

WHITE = LABORATORY

YELLOW = FILE

PINK = CLIENT

Custody Seal Intact? YES NO Cooler Temp:

For Lab Receiving Use Only

SAMPLE RECEIPT & REVIEW FORM

Client: WNUC	SDC	G/AR/COC/Work Order: 484471
Received By: STACY BOONE	- 1	te Received: 2 - JULY - 19
Carrier and Tracking Number		Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other
Suspected Hazard Information	€ •1t	Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
A)Shipped as a DOT Hazardous?	Haz	zard Class Shipped: UN#: JN2910, Is the Radioactive Shipment Survey Compliant? Yes No
B) Did the client designate the samples are to be		OC notation or radioactive stickers on containers equal client designation
received as radioactive? C) Did the RSO classify the samples as	Ma	aximum Net Counts Observed* (Observed Counts - Area Background Counts):CPM / mR/Hr
radioactive? D) Did the client designate samples are hazardous?		DC notation or hazard labels on containers equal client designation.
E) Did the RSO identify possible hazards?	1 IFT	D or E is yes, select Hazards below.
Sample Receipt Criteria	ź ź	Delyman One.
		Comments/Qualifiers (Required for Non-Conforming Items) Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
Chain of custody documents included with shipment?		Circle Applicable: Client contacted and provided COC
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	-	Preservation Method: Wet Ice Ice Packs Dry ice None Other: - all temperatures are recorded in Celsius TEMP: IC+15 C
Daily check performed and passed on IR temperature gun?		Temperature Device Serial #: TRI-Q Secondary Temperature Device Serial # (If Applicable):
5 Sample containers intact and sealed?		Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?		Sample ID's and Containers Affected: If Preservation added, Lotif:
7 Do any samples require Volatile Analysis?		If Yes, are Encores or Soil Kits present for solids? Yes No NA (If yes, take to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes No NA (If unknown, select No) Are liquid VOA vials free of headspace? Yes No NA Sample ID's and containers affected:
8 Samples received within holding time?		ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?		ID's and containers affected:
10 Date & time on COC match date & time on bottles?		Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
Number of containers received match number indicated on COC?		Circle Applicable: No container count on COC Other (describe)
12 Are sample containers identifiable as GEL provided?		
COC form is properly signed in relinquished/received sections? Comments (Use Continuation Form if needed):		Circle Applicable: Not relinquished Other (describe)
PM (or PMA) re	view: In	Date T M Page of GL-CHL-SR-001 Rev 6

List of current GEL Certifications as of 10 July 2019

State	Certification
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122019-3
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-19-15
Utah NELAP	SC000122019–28
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
,, admington	2,00











PO Box 30712 Charleston, SC 29417 2040 Savage Road Charleston, SC 29407 P 843.556.8171 F 843.766.1178

gel.com

August 05, 2019

Ms. Cynthia Logsdon Westinghouse Electric Company, LLC PO Drawer R Columbia, South Carolina 29205

Re: ENV-CONSENTA Work Order: 486245

Dear Ms. Logsdon:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 31, 2019. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4778.

Sincerely,

Taylor Cannon for Hope Taylor Project Manager

Purchase Order: 4500778461

Enclosures



2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis Report for

WNUC009 Westinghouse Electric Co, LLC Client SDG: 486245 GEL Work Order: 486245

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Hope Taylor.

	78(10G)	
Reviewed by		

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Project:

08/01/19

0955

Client ID:

Certificate of Analysis

Report Date: August 5, 2019

WNUC01519

1902270

WNUC009

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon Project: ENV-CONSENTA

Client Sample ID: C-40-R1 Sample ID: 486245001

Matrix: Soil

Collect Date: 30-JUL-19 08:15
Receive Date: 31-JUL-19
Collector: Client
Moisture: 8.87%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Ana	alyst Date	Time	e Batch	Method
Metals Analysis-ICl	P-MS											
SW846 3050B/6020	B "Dry Weight (Corrected"										
Uranium-235	J	4.61	2.11	14.8	ug/kg	96.3	2	SKJ	08/02/19	0841	1902271	1
Uranium-238		667	14.0	42.3	ug/kg	96.3	2					
Uranium-234	U	ND	2.11	10.6	ug/kg	96.3	2	SKJ	08/02/19	0920	1902271	2
The following Prep	Methods were pe	erformed:										
Method	Description	1		Analyst	Date		Tim	e	Prep Batch			

The following Analytical Methods were performed:

 Method
 Description
 Analyst Comments

 1
 SW846 3050B/6020B

 2
 SW846 3050B/6020B

SXW1

Notes:

SW846 3050B

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

ICP-MS 3050BS PREP

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Project:

Report Date: August 5, 2019

WNUC01519

Westinghouse Electric Company, LLC Company:

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon Project: **ENV-CONSENTA**

Client Sample ID: C-40-R2 Sample ID: 486245002

Matrix:

Collect Date: 30-JUL-19 08:18 31-JUL-19 Receive Date: Collector: Client Moisture: 10.7%

Client ID: WNUC009 Soil

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Ana	lyst Date	Time	e Batch	Method
Metals Analysis-ICP-	MS											
SW846 3050B/6020B	B "Dry Weight (Corrected"										
Uranium-235	J	4.93	2.18	15.3	ug/kg	97.5	2	SKJ	08/02/19	0848	1902271	1
Uranium-238		659	14.4	43.7	ug/kg	97.5	2					
Uranium-234	U	ND	2.18	10.9	ug/kg	97.5	2	SKJ	08/02/19	0926	1902271	2
The following Prep M	lethods were pe	erformed:										
Method	Description	1		Analyst	Date		Time	e I	Prep Batch			
SW846 3050B	ICP-MS 3050	BS PREP		SXW1	08/01/19		0955	1	902270			

The following Analytical Methods were performed:

Method Description **Analyst Comments** SW846 3050B/6020B SW846 3050B/6020B

Notes:

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity **RL**: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: August 5, 2019

Company: Westinghouse Electric Company, LLC

Address: PO Drawer R

Columbia, South Carolina 29205

Contact: Ms. Cynthia Logsdon Project: ENV-CONSENTA

Client Sample ID: C-40-R3 Sample ID: 486245003

Matrix: Soil

Collect Date: 30-JUL-19 08:21
Receive Date: 31-JUL-19
Collector: Client
Moisture: 11.8%

Project: WNUC01519 Client ID: WNUC009

1902270

0955

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	An	alyst Date	Time	Batch	Method
Metals Analysis-ICP-I	MS											
SW846 3050B/6020B	"Dry Weight	Corrected"										
Uranium-235	J	4.02	2.16	15.1	ug/kg	95.2	2	SK.	J 08/02/19	0850	1902271	1
Uranium-238		562	14.3	43.2	ug/kg	95.2	2					
Uranium-234	U	ND	2.16	10.8	ug/kg	95.2	2	SK.	J 08/02/19	0927	1902271	2
The following Prep M	ethods were pe	erformed:										
Method	Description	n		Analyst	Date		Time	e	Prep Batch			

The following Analytical Methods were performed:

 Method
 Description
 Analyst Comments

 1
 SW846 3050B/6020B

 2
 SW846 3050B/6020B

SXW1

08/01/19

Notes:

SW846 3050B

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

ICP-MS 3050BS PREP

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: August 5, 2019

Page 1 of 2

Westinghouse Electric Company, LLC

PO Drawer R

Columbia, South Carolina

Contact: Ms. Cynthia Logsdon

Workorder: 486245

Parmname			NON	VI	Sample	Qual	QC	Units	RPD%	REC%	Range A	Anlst	Date	Time
Metals Analysis - IC														
Batch 190	2271													
QC1204345602 Uranium-235	LCS		35.8				31.6	ug/kg		88.2	(80%-120%)	SKJ	08/02/1	9 08:39
Uranium-238			4930				4560	ug/kg		92.3	(80%-120%)			
QC1204345606 Uranium-234	LCS		54.2				64.2	ug/kg		118	(80%-120%)		08/02/1	9 09:19
QC1204345601 Uranium-234	MB					U	ND	ug/kg					08/02/1	9 09:17
Uranium-235						U	ND	ug/kg					08/02/1	9 08:38
Uranium-238						U	ND	ug/kg						
QC1204345603 Uranium-235	486245001	MS	39.5	J	4.61		38.6	ug/kg		86.2	(75%-125%)		08/02/1	9 08:42
Uranium-238			5450		667		5340	ug/kg		85.7	(75%-125%)			
QC1204345607 Uranium-234	486245001	MS	59.4	U	ND		68.6	ug/kg		115	(75%-125%)		08/02/1	9 09:22
QC1204345604 Uranium-235	486245001	MSD	39.0	J	4.61		43.2	ug/kg	11.1	99	(0%-20%)		08/02/1	9 08:44
Uranium-238			5370		667		5810	ug/kg	8.46	95.7	(0%-20%)			
QC1204345608 Uranium-234	486245001	MSD	59.3	U	ND		61.2	ug/kg	11.4	103	(0%-20%)		08/02/1	9 09:23

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 486245 Page 2 of 2 Parmname **NOM** Sample Qual QC Units RPD% REC% Range Anlst Date Time Metals Analysis - ICPMS 1902271 Batch OC1204345605 486245001 SDILT U U ND Uranium-234 ND 08/02/19 09:25 ug/L N/A (0%-20%)SKJ Uranium-235 J 0.0218 U ND ug/L N/A (0%-20%)08/02/19 08:47 3.15 0.611 Uranium-238 ug/L (0%-20%)3.17

Notes:

The Qualifiers in this report are defined as follows:

- < Result is less than value reported
- > Result is greater than value reported
- E %difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- FB Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
- H Analytical holding time was exceeded
- J Value is estimated
- N Metals--The Matrix spike sample recovery is not within specified control limits
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

- ^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
- * Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Technical Case Narrative Westinghouse Electric Co, LLC SDG #: 486245

Metals

<u>Product:</u> Determination of Metals by ICP-MS <u>Analytical Method:</u> SW846 3050B/6020B <u>Analytical Procedure:</u> GL-MA-E-014 REV# 33

Analytical Batch: 1902271

Preparation Method: SW846 3050B

Preparation Procedure: GL-MA-E-009 REV# 28

Preparation Batch: 1902270

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
486245001	C-40-R1
486245002	C-40-R2
486245003	C-40-R3
1204345601	Method Blank (MB)ICP-MS
1204345602	Laboratory Control Sample (LCS)
1204345606	Laboratory Control Sample (LCS)
1204345605	486245001(C-40-R1L) Serial Dilution (SD)
1204345603	486245001(C-40-R1S) Matrix Spike (MS)
1204345607	486245001(C-40-R1S) Matrix Spike (MS)
1204345604	486245001(C-40-R1SD) Matrix Spike Duplicate (MSD)
1204345608	486245001(C-40-R1SD) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

ICSA/ICSAB Statement

For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Technical Information

Preparation/Analytical Method Verification

Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions

Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range. The ICPMS solid samples in this SDG were diluted the standard two times.

Analyte	4	8624	5
Analyte	001	002	003
Uranium-234	2X	2X	2X
Uranium-235	2X	2X	2X
Uranium-238	2X	2X	2X

Radiochemistry

Product: Dry Weight

Analytical Method: ASTM D 2216 (Modified) Analytical Procedure: GL-OA-E-020 REV# 13

Analytical Batch: 1902369

The following samples were analyzed using the above methods and analytical procedure(s).

Client Sample Identification
C-40-R1
C-40-R2
C-40-R3
486245001(C-40-R1) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL Laboratories, LLC	2040 Savage Road	Charleston, SC 29407	Phone: (843) 556-8171	Fax: (843) 766-1178	(Fill in the number of containers for each test)	< Preservative Type (6)		Comments Note: extra sample is	required for sample specific QC							Circle Deliverable:	Sample Collection Time Zone Eastern Pacific
· · · · · · · · · · · · · · · · · · ·	Custody and Analytical Kequest	Toce www.get.com for OEL's bample Acceptance bolt			Sample Analysis Requested (5) (Fill is	le be: ered:	λq) ι	er of co	dionetive An numb Solopic un Multiplication Multiplication	ST oT		X	×				
, , , , , , , , , , , , , , , , , , ,	instody and	COIII IOI OEL S SAI	ン だ の だ の た の た	くてる					Field Sample Filtered (3) Matrix (4)		N SO	OS N	OS N			Vac /	ızards
		www.gcl.	72	プル	Phone #: 803.647.3171	Fax #: 803.695.3964		ouse.com	QC Code (3)		Ð	G	g			Fax Paenlier	please list
(226 .	umber:		Phone #:	Fax #: 8		westingh	<u> </u>	(hhmus)	0815	0818	0821			27	les? If so,
7	3		GEL Work Order Number:					Send Results: logsdocj@westinghouse.com	*Date Collected	(67	7/30/2019	7/30/2019	7/30/2019			ASAP	o these samp
age: 1 of 1	iect #: SSAOU Soil Sampling Work Plan	EL Quote #:	Oc Number (i).	#:4500778461 Ln 2 ENV-LEGCYWSTE	Hent Name: Westinghouse Electric Company LLC	oject/Site Name: Columbia Fuel Fabrication Facility	dress: 5801 Bluff Road, Hopkins, SC 29061	ollected by: Randy Crews Send Result	Sample ID	* For composites - matcale start and stop date time	C-40-R1	C-40-R2	C-40-R3			TAT Requested: Normal: Rush: X Specify: ASAP	emarks: Are there any known hazards applicable to these samples? If so, please l

Circle Deliverable: C of A / OC Summary / Level 1 / Level 2 / Level 4	Sample Collection Time Zone	Eastern Pacific	Central Other	Mountain	Sample Shipping and Delivery Details			Date Shipped: N/A			
CofA						GEL PM: Hope Taylor	in day in the	Method of Shipment;	Airbill#:	Airbill#:	
Š									\	18 IL Airbill#:	
Yes / No	list the hazards					Time	-	830		T. T.	
Fax Results:	so, please list ti					Date		7/31/2019	D. 11.12	17 14 (N)	
5	o these samples? If.				Chain of Custody Signatures	Received by (signed)		1 Secure Location	2 × MI	3. 1. 18 S	
n: X Specify:	s applicable t		*		Chain of Cust	Fime	(<i>(03</i> 8	1115	77.2	; }-
TAT Requested: Normal: Rush: X Specify: ASAP (Subject to Surcharge)	ny known hazard.		turnaround****		_	Date	_	2 1/31/2019	1/31/2019	7.51.13	Tient Determined
TAT Requeste	Remarks: Are there any known hazards applicable to these samples? If so, please		****5 STRAIGHT day turnaround****			Relinquished By (Signed)		1 Randy Crews 1 And 1/31/2019 1038	2 Secure Location	3 47/11	1.) Chân (Custody Number = Client Determin

2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite 3.) Field Filtered: For liquid matrices, indicate with a - V - for yes the sample was field filtered or - N - for sample was not field filtered.

For Lab Receiving Use Only

Custody Seal Intact? YES NO Cooler Temp:

^{4.)} Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Water, WW=Water, ML=Mise Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Soild Waste, O=Oil, F=Filter, P=Wipe, U=Urine, P=Focal, N=Nasal

^{5.)} Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 6010B 7470A - 1).

⁶⁾ Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank
WHITE = LABORATORY
YELLOW = FILE
PINK = CLIENT



SAMPLE RECEIPT & REVIEW FORM

Client: MMC	SDG/AR/COC/Work Order: 486245							
Received By: ZKW	Date Received: 7/3/1/9							
Carrier and Tracking Number	FedEx Express FedEx Ground UPS Field Services Courier Other							
Suspected Hazard Information	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.							
A)Shipped as a DOT Hazardous?	Hazard Class Shipped: UN#: J£UN2910, Is the Radioactive Shipment Survey Compliant? YesNo							
B) Did the client designate the samples are to be received as radioactive?	COC notation or radioactive stickers on containers equal client designation.							
C) Did the RSO classify the samples as radioactive?	Maximum Net Counts Observed* (Observed Counts - Area Background Counts):CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3							
D) Did the client designate samples are hazardous?	COC notation or hazard labels on containers equal client designation.							
E) Did the RSO identify possible hazards?	If D or E is yes, select Hazards below. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:							
Sample Receipt Criteria	2 Comments/Qualifiers (Required for Non-Conforming Items)							
1 Shipping containers received intact and sealed?	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)							
Chain of custody documents included with shipment?	Circle Applicable: Client contacted and provided COC COC created upon receipt Preservation Method: Wet Ice Ice Packs Dry ice None Other:							
3 Samples requiring cold preservation within $(0 \le 6 \text{ deg. C})$?*	*all temperatures are recorded in Celsius TEMP:							
Daily check performed and passed on IR temperature gun?	Temperature Device Serial #:IR3-18 Secondary Temperature Device Serial # (If Applicable):							
5 Sample containers intact and sealed?	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)							
6 Samples requiring chemical preservation at proper pH?	Sample ID's and Containers Affected: If Preservation added, Lot#:							
7 Do any samples require Volatile Analysis?	If Yes, are Encores or Soil Kits present for solids? Yes No NA (If yes, take to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes No NA (If unknown, select No) Are liquid VOA vials free of headspace? Yes No NA Sample ID's and containers affected:							
8 Samples received within holding time?	ID's and tests affected:							
9 Sample ID's on COC match ID's on bottles?	ID's and containers affected:							
Date & time on COC match date & time on bottles?	Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)							
Number of containers received match number indicated on COC?	Circle Applicable: No container count on COC Other (describe)							
Are sample containers identifiable as GEL provided? COC form is properly signed in	Circle Applicable: Not relinquished Other (describe)							
relinquished/received sections?								
Comments (Use Continuation Form if needed):	w: Initials							
PM (or PMA) revie	w: Initials Date S							

Page 11 of 12 SDG: 486245

List of current GEL Certifications as of 05 August 2019

State	Certification
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122020-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-19-15
Utah NELAP	SC000122019-28
Vermont	VT87156
Virginia NELAP	460202
Washington	C780