

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

SCDHEC, BLWM Kim Kuhn 2600 Bull Street Columbia, SC 29201 Direct tel: 803.647.1920 Direct fax: 803.695.3964 e-mail: joynerdp@westinghouse.com Your ref: Our ref: LTR-RAC-20-59

July 8, 2020

Subject: June 2020 CA Progress Report

Ms. Kuhn:

In accordance with Item 19 of Consent Agreement (CA) 19-02-HW, this progress report is being submitted to you, including the following requested information:

- (a) a brief description of the actions which Westinghouse has taken toward achieving compliance with the Consent Agreement during the previous month;
- (b) results of sampling and tests, in tabular summary format received by Westinghouse during the reporting period;
- (c) a brief description of all actions which are scheduled for the next month to achieve compliance with the Consent Agreement, and other information relating to the progress of the work as deemed necessary or requested by the Department; and
- (d) information regarding the percentage of work completed and any delays encountered or anticipated that may affect the approved schedule for implementation of the terms of the Consent Agreement, and a description of efforts made to mitigate delays or avoid anticipated delays.

In response to the above requirements, the following is being reported to the Department since the last progress report on **June 15, 2020**:

- (a) Actions during the previous month:
   Westinghouse began implementation of the Final Remedial Investigation (RI) Work Plan on 6/10/19. To comply with Item 4 of the CA, the following actions were completed this month.
  - Submitted the East Lagoon Closure Plan in LTR-RAC-20-57 dated June 30, 2020
  - Continued preparing the report for the Tc-99 Source Investigation Work Plan Results Phase I and Phase II
  - Completed the following activities to support the Southern Storage Area (SSA) Operable Unit (OU) Work Plan:

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- Removed and packaged for off-site shipment as low-level radioactive waste (LLRW)
   3 intermodal containers from the Southern Storage Area (C-41, C-56, C-60)
  - Conducted radiological soil surface surveys under all removed containers. The surface surveys did not indicate the need to remove soil.
  - Collected soil samples underneath the containers on June 29, 2020. The sampling included bias VOC samples underneath C-56 and C-60 where previous contamination was documented within the intermodal containers.
- Continued wet combustible material (WCM) drum removal from 3 intermodal containers (C-64, C-19, and C-54) that have been on hold. Drums potentially containing perchloroethylene were segregated and stored.
  - Intermodal container C-64 was safely emptied of its contents on 6/17/2020.
    - Health physics radiological surveys of the pallets and the sealand flooring indicated no environmental impact.
  - Intermodal container C-19 was safely emptied of its contents on 6/26/2020.
    - Health physics radiological surveys of the pallets and the sealand flooring indicated no environmental impact.
  - Intermodal container C-54, was safely emptied of its contents on 7/1/2020.
    - Health physics surveys of the pallets indicated no impact to the environment. A subsequent survey of the sealand flooring indicated a small area of impact towards the back, measuring approximately 1-foot in diameter. The impact was quantified at 1,000 dpm/100cm<sup>2</sup> for alpha contamination.
- Seven (7) of the original eleven (11) intermodal containers with drums potentially containing perchloroethylene have been emptied since April 14, 2020.
- (b) Results of sampling and tests:
  - Tabulated results of Hydrofluoric Acid Spiking Station #1 (HFSS#1) Soil Sampling conducted May 4-6, 2020 are included as **Attachment A**. The associated laboratory reports are included as **Attachment B**.
- (c) Brief description of all actions which are scheduled for the next month:
  - In accordance with **Item 4** of the CA, Westinghouse will continue to implement the Work Plan to include the following actions:
    - o Submit *Final* Interim Remedial Investigation Data Summary Report
    - Submit the Hydrofluoric Acid Spiking Station #1 (HFSS#1) Soil Sampling Report and associated Technical Basis Document
    - Submit an assessment report of the Tc-99 Source Investigation Work Plan Results -Phase I and Phase II
    - o Host a webinar to discuss and propose the scope for the RI Phase II Work Plan
    - Continue WCM drum removal from the 4 remaining intermodal containers; segregate and store drums potentially containing perchloroethylene
    - Submit tabulated data from the Southern Storage Area Soil Sampling conducted on June 29, 2020 for intermodal containers C-41, C-56, C-60
- (d) Percentage of work completed and any delays encountered or anticipated:

• Assessment activities identified in the Final Remedial Investigation Work Plan and associated addendums have been completed, with a summary report submitted.

Respectfully,

Diana P. Joyner Principal Environmental Engineer Westinghouse Electric Company, CFFF 803.497.7062 (m)

Cc: N. Parr, Environmental Manager J. Ferguson, EH&S Manager J. Grant, AECOM Project Manager ENOVIA Records

## Attachment A

Hydrofluoric Acid Spiking Station #1 (HFSS#1) Soil Sampling - Tabulated

# Table 1Westinghouse Columbia Fuel Fabrication FacilityHF Spiking Station #1Soil Analytical Results

			Analyte	рН	Fluoride	Nitrate	Technetium-99	Uranium-233/234	Uranium-235/236	Uranium-238
			Unit	SU	mg/kg	mg/kg	pCi/g	pCi/g	pCi/g	pCi/g
	Sample									
Sample ID	Depth	Depth BSS	Sample Date							
HF1-B1-(1-2)	1 - 2 ft	1 - 2 ft	5/4/2020	4.81	28.3	180	0.447 U	13.2	0.828	3.22
HF1-B1-(2-4)	2 - 4 ft	2 - 4 ft	5/4/2020	4.02	706	707	0.88 U	8,310	465	1,620
HF1-B1-(4-6)	4 - 6 ft	4 - 6 ft	5/4/2020	3.88	1500	1240	0.0772 U	10,100	436	1,680
HF1-B1-(6-8)	6 - 8 ft	6 - 8 ft	5/4/2020	4.03	936	971	0.871 U	4,500	252	802
HF1-B1-(8-10)	8 - 10 ft	8 - 10 ft	5/4/2020	4.26	96.4	303	0.656 U	1,440	79.4	263
HF1-B2-(1-2)	1 - 2 ft	1 - 2 ft	5/5/2020	6.38	1.28	76.5	0	4.65	0.455	1.39
HF1-B2-(2-4)	2 - 4 ft	2 - 4 ft	5/5/2020	5.16	0.623 J	90.8	0	0.847	0.107 U	0.785
HF1-B2-(4-6)	4 - 6 ft	4 - 6 ft	5/5/2020	6.05	1.09	94	0	1.5	0.0943 U	0.955
HF1-B2-(6-8)	6 - 8 ft	6 - 8 ft	5/5/2020	5.98	1.1	45.9	0.00658 U	0.926	0.0131 U	0.218
HF1-B2-(8-10)	8 - 10 ft	8 - 10 ft	5/5/2020	6.17	0.8 J	23.4	0	1.52	0.0407 U	0.421
HF1-B3-(1-2)	1 - 2 ft	1 - 2 ft	5/5/2020	4.82	6.24	285	0	3.52	0.0795 U	1.13
HF1-B3-(2-4)	2 - 4 ft	2 - 4 ft	5/5/2020	4.08	683	589	0	3,510	159	582
HF1-B3-(4-6)	4 - 6 ft	4 - 6 ft	5/5/2020	3.96	1020	1290	0	5,600	264	948
HF1-B3-(6-8)	6 - 8 ft	6 - 8 ft	5/5/2020	4.11	546	700	0	2,790	171	632
HF1-B3-(8-10)	8 - 10 ft	8 - 10 ft	5/5/2020	4.25	343	398	0	2,600	139	636
HF1-B4-(1-2)	1 - 2 ft	1 - 2 ft	5/6/2020	5.46	65.8	69.3	0	563	29	110
HF1-B4-(2-4)	2 - 4 ft	2 - 4 ft	5/6/2020	3.97	335	70.4	0.171 U	511	22.1	105
HF1-B4-(4-5.33)	4 - 5.33 ft	4 - 5.33 ft	5/6/2020	3.29	359	82.5	2.6 U	700	31.9	139
HF1-B5-(1-2)	1 - 2 ft	1 - 2 ft	5/6/2020	5.07	1.55	232	0	9.36	0.396	2.56
HF1-B5-(2-4)	2 - 4 ft	2 - 4 ft	5/6/2020	4.39	135	288	0	1,520	82.8	246
HF1-B5-(4-6)	4 - 6 ft	4 - 6 ft	5/6/2020	4.28	21.7	440	0	1,250	50.9	224
HF1-B5-(6-8)	6 - 8 ft	6 - 8 ft	5/6/2020	5.67	1.11	150	0	9.67	0.587	1.61
HF1-B5-(8-10)	8 - 10 ft	8 - 10 ft	5/6/2020	4.35	0.879 J	54.3	0	2.65	0.294	1.02
HF1-B6-(0-2)	0 - 2 ft	0-1.90 ft	5/6/2020	8.09	NA	NA	NA	NA	NA	NA
HF1-B6-(2-4)	2 - 4 ft	1.90-3.79 ft	5/6/2020	6.35	5.67	14.5	0	403	19.3	78.5
HF1-B6-(4-5.67)	4 - 5.67 ft	3.79-5.37 ft	5/6/2020	6.22	43.8	38	0	226	9.66	41.6
HF1-B7-(0-2)	0 - 2 ft	0-1.88 ft	5/6/2020	4.72	40.4	127	0	2,140	93.5	313
HF1-B7-(2-4)	2 - 4 ft	1.88-3.75 ft	5/6/2020	4.41	158	178	3.15 U	2,020	92	355
HF1-B7-(4-5.42)	4 - 5.42 ft	3.75-5.08 ft	5/6/2020	5.21	121	83	0.627 U	799	46.5	158
HF1-B7-REFUSAL	5.42 - 5.42 ft	5.08 ft	5/6/2020	4.58	NA	NA	NA	NA	NA	NA
	Remedial A	ction Screening	g Level		3,100	130,000	88,400	3,310	39	179

Notes:

SU - standard units mg/kg - milligram per kilogram ft - feet

U - not detected above the method detection concentration

Shaded cells exceed the remedial action screening level

pCi/g - picocuries per gram BSS - below soil surface

## Hydrofluoric Acid Spiking Station #1 (HFSS#1) Soil Sampling - GEL Analytical Results

GEL Analytical Results Sampling conducted: May 4, 2020 GEL Work Order: 510581 Report Date: May 28, 2020

GEL Analytical Results Sampling conducted: May 5, 2020 GEL Work Order: 510757 Report Date: June 1, 2020

GEL Analytical Results Sampling conducted: May 6, 2020 GEL Work Order: 510807 Report Date: June 4, 2020



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

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May 28, 2020

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

Re: Soil and Vegetation Analysis Work Order: 510581

Dear Ms. Logsdon:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on May 05, 2020. 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. 4707.

Sincerely,

Katelyn Shary

Katelyn Gray Project Manager

Purchase Order: 4500799254 Enclosures



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## Certificate of Analysis Report for

WNUC008 Westinghouse Electric Co, LLC (4500775170)

Client SDG: 510581 GEL Work Order: 510581

## 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
- 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, Katelyn Gray.

KatelynShay

Reviewed by

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# **Certificate of Analysis**

						aly 515			R	eport Dat	e:	May 28	, 2020
	Company : Address :		stinghouse Electric ( Drawer R	Company, LLC									
			umbia, South Caroli	na 29205									
	Contact: Project:		. Cynthia Logsdon l and Vegetation Ana	alveic									
	•		1-B1-(1-2)	a1y 515		Dre	oject:		WNILI	C00821			
	Client Sample ID: Sample ID:		г-вт-(1-2) 581001				ent ID		WNU				
	Matrix:	Soi				CII		•	WINU	C008			
	Collect Date:		MAY-20 13:13										
	Receive Date:		MAT-20 13.13 MAY-20										
	Collector:	Clie											
	Moisture:	7.4											
	Moisture.	7.40	J <i>7</i> 0										
Parameter	Qual	ifier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chroma	atography												
SW846 905	56A Fluoride and N	itrate	"Dry Weight Correc	ted"									
Fluoride			28.3	0.366	1.08	mg/kg	9.95		JLD1	05/05/20		1994861	1
Nitrate-N	17 4 1 1		180	1.77	5.38	mg/kg	9.95	5	JLD1	05/06/20	0110	1994861	2
	nd Ion Analysis	1.0											
SW9045D Corrosivity	Corrosivity (pH<20	r>14) H	"As Received" 4.81	0.0100	0.100	SU		1	DVD5	05/07/20	1446	1004725	3
•	in a Dava Mathada			0.0100	0.100	30		1	карэ	03/07/20	1440	1994/33	5
Method	ing Prep Methods w	-			A	Date	,	<b>T</b> '	Dr	ep Batch			
SW846 9056A		riptio	n A Total Anions in Soil		Analyst CJ2	05/05/20		Time 1814		94849			
	ving Analytical Met				CJZ	05/05/20		1014	17	)+0+)			
	0 1		1				A 1 .						
Method	Desci SW840	-				F	Analys	t Coi	nment	S			
2	SW840												
3	SW840												
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 Quantitatio

on Limit

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# **Certificate of Analysis**

						a1y 515			R	eport Dat	te:	May 28	, 2020
	Company : Address :		stinghouse Electric ( Drawer R	Company, LLC									
	Contact:	Ms.	umbia, South Caroli Cynthia Logsdon										
	Project:	Soi	and Vegetation Ana	alysis									
	Client Sample ID:	HF	I-B1-(2-4)			Pro	oject:		WNU	C00821			
	Sample ID:	510	581002			Cli	ent ID	:	WNU	C008			
	Matrix:	Soil	l										
	Collect Date:	04-]	MAY-20 13:43										
	Receive Date:	05-1	MAY-20										
	Collector:	Clie	ent										
	Moisture:	7.57	7%										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	e Batch	Method
Ion Chrom	atography												
SW846 903	56A Fluoride and Ni	trate	"Dry Weight Correc	ted"									
Fluoride			706	7.38	21.7	mg/kg	10.0	20	JLD1	05/06/20	0243	1994861	1
Nitrate-N			707	7.16	21.7	mg/kg	10.0	20					
	nd Ion Analysis												
SW9045D	Corrosivity (pH<20												
Corrosivity		Η	4.02	0.0100	0.100	SU		1	RXB5	05/07/20	1448	1994735	2
	ing Prep Methods w	-											
Method	Desc	1			Analyst	Date		Time		ep Batch			
SW846 9056	A SW84	5 9056.	A Total Anions in Soil		CJ2	05/05/20		1814	19	94849			
The follow	ving Analytical Meth	ods v	vere performed:										
Method	Descr					A	Analys	t Cor	nments	5			
1	SW846												
2	SW846	9045I	)										
Notes:													
Column be	eaders are defined as	follo	ws.										
	on Easter	10110		Tritical Larval									

DF: Dilution FactorLc/DL: Detection LimitPFMDA: Minimum Detectable ActivityRLMDC: Minimum Detectable ConcentrationSQ

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# **Certificate of Analysis**

						<u>ary 515</u>			R	eport Dat	te:	May 28	, 2020
	Company : Address :		stinghouse Electr Drawer R	ic Company, LL	С								
	Contact:		umbia, South Car Cynthia Logsdor										
	Project:		and Vegetation										
	Client Sample ID:	HF	I-B1-(4-6)			Pro	oject:		WNU	C00821			
	Sample ID:		581003				ient ID	:	WNU	C008			
	Matrix:	Soil	l										
	Collect Date:	04-]	MAY-20 14:58										
	Receive Date:		MAY-20										
	Collector:	Clie											
	Moisture:	11.8											
	Wioldture.	11.	570										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	e Batch	Method
Ion Chroma	atography												
SW846 905	56A Fluoride and Ni	trate	"Dry Weight Cor	rected"									
Fluoride			1500	19.1	56.1	mg/kg			JLD1	05/06/20	0314	1994861	1
Nitrate-N			1240	18.5	56.1	mg/kg	9.90	50					
	nd Ion Analysis												
	Corrosivity (pH<2or												
Corrosivity		Н	3.88	0.0100	0.100	SU		1	RXB5	05/07/20	1449	1994735	2
	ing Prep Methods w												
Method	Desci				Analyst	Date		Time		ep Batch			
SW846 9056A	A SW840	9056	A Total Anions in Soi	1	CJ2	05/05/20		1814	19	94849			
The follow	ving Analytical Meth	ods v	were performed:										
Method	Descr	ption	l			I	Analys	t Cor	nment	s			
1	SW846												
2	SW846	9045I	)										
Notes:													
Column he	aders are defined as	follo	ws:										
DE: Diluti	on Factor			Critical Laval									

DF: Dilution FactorLc/IDL: Detection LimitPF:MDA: Minimum Detectable ActivityRL:MDC: Minimum Detectable ConcentrationSQL

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			-			a1y 515			R	eport Da	te:	May 28	, 2020
	Company : Address :		stinghouse Electric ( Drawer R	Company, LLC									
			umbia, South Caroli	na 29205									
	Contact: Project:		. Cynthia Logsdon l and Vegetation Ana	alysis									
	Client Sample ID:	HF	1-B1-(6-8)			Pro	oject:		WNU	C00821			
	Sample ID:	510	581004			Cli	ent ID	:	WNU	C008			
	Matrix:	Soil	1										
	Collect Date:	04-]	MAY-20 16:10										
	Receive Date:	05-1	MAY-20										
	Collector:	Clie											
	Moisture:	11.6											
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	vst Date	Time	e Batch	Method
Ion Chroma	atography												
		trate	"Dry Weight Correct	ted"									
Fluoride			936	9.45	27.8	mg/kg	9.83	25	JLD1	05/06/20	0345	1994861	1
Nitrate-N			971	9.17	27.8	mg/kg	9.83	25					
Titration ar	nd Ion Analysis												
	Corrosivity (pH<20)	:>14)	"As Received"										
Corrosivity		Н	4.03	0.0100	0.100	SU		1	RXB5	05/07/20	1450	1994735	2
The follow	ing Prep Methods w	ere po	erformed:										
Method	Desci	iptio	n		Analyst	Date	,	Time	e Pr	ep Batch			
SW846 9056A	A SW84	6 9056.	A Total Anions in Soil		CJ2	05/05/20		1814	19	94849			
The follow	ving Analytical Meth	ods v	were performed:										
Method	Descr	ption	1			A	Analys	t Coi	nment	s	-		
1	SW846												
2	SW846	9045I	)										
Notes:													
Column he	aders are defined as	follo	ws:										
	-			~									

DF: Dilution FactorLc/LCDL: Detection LimitPF: PrMDA: Minimum Detectable ActivityRL: ReMDC: Minimum Detectable ConcentrationSQL: S

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						a1y 515			R	eport Dat	te:	May 28	, 2020
	Company : Address :		stinghouse Electric Drawer R	Company, LLC	2							·	
	Contact: Project:	Ms.	umbia, South Caro Cynthia Logsdon and Vegetation Au										
	Client Sample ID: Sample ID: Matrix:		I-B1-(8-10) 581005				oject: ient ID		WNU WNU	C00821 C008			
	Collect Date: Receive Date: Collector: Moisture:												
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	e Batch	Metho
Ion Chroma	• • •												
	66A Fluoride and Ni	trate											
Fluoride Nitrate-N			96.4 303	3.90 3.79	11.5 11.5	mg/kg mg/kg	10.0 10.0		JLD1	05/06/20	0415	1994861	1
	d Ion Analysis		505	5.17	11.5	mg/kg	10.0	10					
	Corrosivity (pH<20	r>14)	"As Received"										
Corrosivity	comosing (pri -20	H	4.26	0.0100	0.100	SU		1	RXB5	05/07/20	1451	1994735	2
The follow:	ing Prep Methods w	ere p	erformed:										
Method	Desc	-			Analyst	Date		Time	Pr	ep Batch			
SW846 9056A	A SW84	5 9056	A Total Anions in Soil		CJ2	05/05/20		1814	19	94849			
The follow	ing Analytical Meth	nods v	vere performed:										
Method	Descr	iption				A	Analys	t Cor	nments	5			
1	SW846												
2	SW846	9045I	)										
Notes:													
	aders are defined as	follo		Critical Laval									

DF: Dilution FactorLDL: Detection LimitPMDA: Minimum Detectable ActivityRMDC: Minimum Detectable ConcentrationS

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# **Certificate of Analysis**

					runca	te of Al	11a1y515							
	Company : Address :		stinghous Drawer R	e Electric Con	npany, LLC	C				R	eport Dat	te:	May 28	, 2020
	Contact: Project:	Ms.	Cynthia	outh Carolina Logsdon etation Analys										
	Client Sample ID:	HF	-B1-(1-2	.)			Pr	oject:		WNU	C00821			
	Sample ID:		581001	/				lient Il		WNU				
	Matrix:	Soil												
	Collect Date:	04-]	MAY-20	13:13										
	Receive Date:	05-1	MAY-20											
	Collector:	Clie	ent											
	Moisture:	7.46	5%											
Parameter	Quali	ifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Rad Alpha	Spec Analysis													
-	U, Soil/Veg "Dry W	/eight	Correcte	d"										
Uranium-233/		0	13.2		0.221	0.500	pCi/g			HAKB	05/09/20	1307	1994680	1
Uranium-235/	236		0.828		0.186	0.500	pCi/g							
Uranium-238	Saintillation Analy		3.22	+/-0.486	0.111	0.500	pCi/g							
-	Scintillation Analy at Tc99, Soil "As Re		<i>a</i> "											
Technetium-9		U	u 0.447	+/-1.94	3.34	5.00	pCi/g			JJ3	05/10/20	0542	1994733	2
	ing Prep Methods w				0.01		r 8			000		00.12		_
Method	0 1	ription				Analyst	Date		Time	Pr	ep Batch			
Dry Soil Prep		1	GL-RAD-	A-021		CXC1	05/05/20	)	1018		94664			
The follow	ving Analytical Metl	hods v	vere perfo	ormed:										
Method	Descr	iption						Analy	st Cor	nments	3			
1	DOE E	EML HA	ASL-300, U	-02-RC Modified										
2	DOE E	EML HA	ASL-300, T	c-02-RC Modified	l									
Surrogate/7	Tracer Recovery	Test					Result	Nomi	nal	Recov	very%	Accep	table L	imits
Uranium-232 Technetium-9				Veg "Dry Weight Soil "As Received							81.9 97.3		5%-125%) 5%-125%)	
<b>Notes:</b> Counting U	Incertainty is calcula	ated a	t the 95%	confidence le	vel (1.96-s	igma).								
Column he DF: Dilutio DL: Detect		s follo	ws:	Lc/LC: Crit PF: Prep Fa										

D1: Detection LimitD2: Detection LimitDL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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# **Certificate of Analysis**

				Ce	runca	te of Al	1419818							
	Company : Address :		stinghouse E Drawer R	lectric Com	pany, LLO	C				R	eport Dat	e:	May 28	, 2020
	Contact:	Ms	umbia, Sout . Cynthia Lo	gsdon										
	Project:	Soi	l and Vegeta	tion Analysi	S									
	Client Sample II	D: HF	1-B1-(2-4)				P	roject:		WNU	C00821			
	Sample ID:	510	581002				С	lient II	D:	WNU	C008			
	Matrix:	Soi	1											
	Collect Date:	04-	MAY-20 13	43										
	Receive Date:	05-	MAY-20											
	Collector:	Clie												
	Moisture:	7.5												
	Wolsture.	7.5	/ /0											
Parameter	Qu	alifier	Result U	ncertainty	MDC	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Rad Alpha	Spec Analysis			•										
-	U, Soil/Veg "Dry	Weight	Corrected"											
Uranium-233		weigin	8310	+/-213	11.4	0.500	pCi/g			HAKB	05/11/20	1159	1995912	. 1
Uranium-235			465	+/-56.2	5.28	0.500	pCi/g			in nub	05/11/20	1107	1775712	1
Uranium-238			1620	+/-94.3	8.12	0.500	pCi/g							
Rad Liquid	Scintillation Ana	lysis												
Liquid Scir	nt Tc99, Soil "As I	Receive	ed"											
Technetium-9	9	U	0.880	+/-2.19	3.75	5.00	pCi/g			JJ3	05/10/20	0603	1994733	2
The follow	ing Prep Methods	were p	erformed:											
Method	De	scriptio	n			Analyst	Date		Time	Pr	ep Batch			
Dry Soil Prep			GL-RAD-A-0	21		CXC1	05/05/20	)	1018		94664			
The follow	ving Analytical Me	ethods v	were perform	ned:										
Method		cription						Analy	st Cor	nment	8			
1			ASL-300, U-02	-RC Modified							~			
2	DOE	E EML H	ASL-300, Tc-02	2-RC Modified										
Surrogate/	Fracer Recovery	Test					Result	Nomi	nal	Reco	very%	Accep	otable L	imits
Uranium-232	Tracer	Alphas	pec U, Soil/Veg	"Dry Weight C	Corrected"						62	(15	5%-125%)	)
Technetium-9	9m Tracer	Liquid	Scint Tc99, Soi	l "As Received"	,						94.5	(15	5%-125%)	)
<b>Notes:</b> Counting U	Incertainty is calcu	ulated a	it the 95% co	nfidence lev	el (1.96-s	igma).								
Column he	eaders are defined	as follo	ws:											
DF: Diluti				Lc/LC: Critic	cal Level									
DL: Detec	tion Limit		]	PF: Prep Fac	tor									

D1: Detection LimitD2: Detection LimitDL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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# **Certificate of Analysis**

				Ce	runca	te of Al	1a1y515							
	Company : Address :		stinghouse Drawer R	Electric Com	pany, LLC	2				R	eport Dat	te:	May 28	, 2020
	Contact: Project:	Ms.	. Cynthia L	uth Carolina 2 ogsdon tation Analysi										
	Client Sample II Sample ID: Matrix: Collect Date: Receive Date: Collector:	D: HF 510 Soi 04- 05- Clie	1-B1-(4-6) 1581003 1 MAY-20 1 MAY-20 ent					roject: lient II		WNU WNU	C00821 C008			
Parameter	Moisture:	11.8 alifier		Uncertainty	MDC	RL	Units	PF	DF	Analy	vst Date	Time	Batch	Method
	Spec Analysis		Result	Oncertainty	MDC	RL	Onto	11		7 mary	St Date		Daten	memou
-	U, Soil/Veg "Dry	Weight	Corrected											
Uranium-233/			10100	+/-239	9.20	0.500	pCi/g			HAKB	05/11/20	1159	1995912	1
Uranium-235/			436	+/-55.3	7.65	0.500	pCi/g							
Uranium-238			1680	+/-97.6	8.76	0.500	pCi/g							
-	Scintillation Ana	•												
1	nt Tc99, Soil "As I			. ( 2.00	2.62	5.00	0.1			110	05/10/20	0.625	1004722	2
Technetium-9		U	0.0772	+/-2.09	3.63	5.00	pCi/g			JJ3	05/10/20	0625	1994/33	2
Method	ring Prep Methods	1				A 1 /	Date		<b>T</b> .	De	an Datah			
Dry Soil Prep		Soil Prer	n o GL-RAD-A-	021		Analyst CXC1	05/05/20	)	Time 1018		ep Batch 94664			
• •		-				CACI	03/03/20	)	1018	19	94004			
-	ving Analytical Me		1	med:				A 1						
Method		cription		2-RC Modified				Analy	vst Cor	nment	S			
2				02-RC Modified										
Surrogate/	Fracer Recovery	Test					Result	Nomi	inal	Reco	very%	Accer	table L	imits
Uranium-232 Technetium-9				eg "Dry Weight C oil "As Received"							67.1 95.8		5%-125%) 5%-125%)	
<b>Notes:</b> Counting U	Jncertainty is calcu	ulated a	t the 95% o	confidence lev	el (1.96-s	igma).								
Column he	eaders are defined	as follo	ws:											
DF: Diluti	on Factor			Lc/LC: Critic										
DL: Detec	tion Limit			PF: Prep Fac	tor									

DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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# **Certificate of Analysis**

				Ce	runca	te of Al	11a1ysis							
	Company : Address :		stinghouse Drawer R	Electric Com	pany, LLC	C				R	eport Da	te:	May 28	, 2020
	Contact: Project:	Ms.	Cynthia Lo	th Carolina 2 ogsdon ation Analysi										
	Client Sample I Sample ID: Matrix: Collect Date: Receive Date: Collector: Moisture:	D: HF 510 Soil 04-1	1-B1-(6-8) 581004 1 MAY-20 16 MAY-20 ent					roject: lient I		WNU WNU	C00821 C008			
Parameter		alifier		Jncertainty	MDC	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
	Spec Analysis				112 0	10	C IIIIIS		21		50 2 440		Buton	
-	U, Soil/Veg "Dry	Weight	Corrected"											
Uranium-233/		0	4500	+/-119	4.20	0.500	pCi/g			HAKB	05/07/20	2115	1994680	1
Uranium-235/			252	+/-31.3	4.22	0.500	1 0							
Uranium-238			802	+/-50.2	3.97	0.500	pCi/g							
-	Scintillation Ana	•												
	nt Tc99, Soil "As			1005			<i>c</i> .,				0.5.11.0.12.0		100 1500	
Technetium-9		U	0.871	+/-2.06	3.53	5.00	pCi/g			JJ3	05/10/20	0647	1994733	2
	ring Prep Methods	-					D				D 1			
Method		escription		221		Analyst	Date	0	Time		ep Batch			
Dry Soil Prep	-	-	GL-RAD-A-			CXC1	05/05/20	)	1018	19	94664			
-	ving Analytical M			med:										
Method		scription						Analy	st Cor	nment	8			
1 2				2-RC Modified 2-RC Modified										
Surrogate/	Fracer Recovery	Test					Result	Nomi	inal	Recov	very%	Accer	otable Li	imits
Uranium-232 Technetium-9				g "Dry Weight C il "As Received"							15 96.1		5%-125%) 5%-125%)	
<b>Notes:</b> Counting U	Jncertainty is calc	ulated a	t the 95% c	onfidence lev	el (1.96-s	igma).								
Column he	eaders are defined	as follo	ws:											
DF: Diluti				Lc/LC: Critic	cal Level									
DL: Detec	tion Limit			PF: Prep Fac	tor									

D1: Detection LimitDF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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# **Certificate of Analysis**

				Ce	runca	te of Al	1a1y515							
	Company : Address :		stinghouse Drawer R	Electric Com	pany, LLO	2				R	eport Da	te:	May 28	, 2020
	Contact: Project:	Ms.	. Cynthia L	uth Carolina 2 .ogsdon tation Analysi										
	Client Sample ID Sample ID: Matrix: Collect Date: Receive Date: Collector: Moisture:	510 Soil 04-]	581005 l MAY-20 1 MAY-20 ent					roject: lient II		WNU WNU	C00821 C008			
Parameter		lifier		Uncertainty	MDC	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
	Spec Analysis		itesuit	encontainty		ne -	emu			1 mary	St Dute		Duten	
-	U, Soil/Veg "Dry V	Veight	Corrected	"										
Uranium-233		8	1440	+/-43.8	1.98	0.500	pCi/g			HAKB	05/07/20	2115	1994680	1
Uranium-235			79.4	+/-11.5	1.79	0.500	pCi/g							
Uranium-238			263	+/-18.7	1.69	0.500	pCi/g							
-	Scintillation Analy													
	nt Tc99, Soil "As R			10.10			<i></i>				0.5.11.0.12.0		100 1500	
Technetium-9		U	0.656	+/-2.13	3.65	5.00	pCi/g			JJ3	05/10/20	0708	1994733	2
	ring Prep Methods v						<b>D</b> (				D 1			
Method		cription		021		Analyst	Date	0	Time		ep Batch			
Dry Soil Prep	-	-	GL-RAD-A			CXC1	05/05/20	)	1018	19	94664			
-	ving Analytical Met		-	rmed:										
Method		ription						Analy	st Cor	nment	8			
1 2				02-RC Modified -02-RC Modified										
Surrogate/	Fracer Recovery	Test					Result	Nomi	nal	Recov	very%	Accer	otable L	imits
Uranium-232		Alphas	pec U, Soil/V	eg "Dry Weight C	Corrected"						31.5	-	5%-125%)	
Technetium-9	99m Tracer	Liquid	Scint Tc99, S	oil "As Received"	'						92.7	(15	5%-125%)	J
<b>Notes:</b> Counting U	Uncertainty is calcul	lated a	t the 95%	confidence lev	el (1.96-s	igma).								
Column he	eaders are defined a	s follo	ws:											
DF: Diluti				Lc/LC: Critic	cal Level									
DL: Detec	tion Limit			PF: Prep Fac	tor									

D1: Diration FactorD2: Detection LimitD5: Prep FactorDL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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# **QC Summary**

Report Date: May 28, 2020

Page 1 of 2

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

Workorder: 510581

**Contact:** 

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range Anlst	Date Time
Ion Chromatography Batch 1994861								
QC1204556272 510581001 DUP Fluoride		28.3	37.9	mg/kg	29.1		(0%-109%) JLD1	05/05/20 23:07
Nitrate-N		180	238	mg/kg	28		(0%-104%)	05/06/20 01:41
QC1204556271 LCS Fluoride	25.3		24.1	mg/kg		95.6	(90%-110%)	05/05/20 22:36
Nitrate-N	25.3		24.8	mg/kg		98.2	(90%-110%)	
QC1204556270 MB Fluoride		U	ND	mg/kg				05/05/20 22:05
Nitrate-N		U	ND	mg/kg				
QC1204556273 510581001 MS Fluoride	26.9	28.3	40.8	mg/kg		46.8*	(75%-125%)	05/05/20 23:38
Nitrate-N	26.9	180	221	mg/kg		N/A	(75%-125%)	05/06/20 02:12
Titration and Ion Analysis Batch 1994735								
QC1204556044 510581001 DUP Corrosivity	Н	4.81 Н	5.15	SU	6.83		(0%-10%) RXB5	05/07/20 14:47
QC1204556042 LCS Corrosivity	7.00		7.00	SU		100	(95%-105%)	05/07/20 14:42

#### Notes:

The Qualifiers in this report are defined as follows:

< Result is less than value reported

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## **QC Summary**

armnar	me NOM Sample Qual QC Units RPD% REC% Range	Anlst	Date	Time
>	Result is greater than value reported			
В	The target analyte was detected in the associated blank.			
Е	General ChemistryConcentration of the target analyte exceeds the instrument calibration range			
Н	Analytical holding time was exceeded			
J	See case narrative for an explanation			
J	Value is estimated			
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.			
	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 repurposes. Sample results are rejected	egulatory	<sup>r</sup> complia	ince
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.			
	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier			
	Paint Filter TestParticulates 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 Radiochemis	stry.		
d	5-day BODThe 2:1 depletion requirement was not met for this sample	5		
e	5-day BODTest replicates show more than 30% difference between high and low values. The data is qualified per the method a reporting purposes Preparation or preservation holding time was exceeded	nd can be	e used for	r

^ 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.

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# **QC Summary**

Report Date: May 28, 2020

Page 1 of 3

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

Workorder: 510581

**Contact:** 

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range Anlst	Date Time
Rad Alpha Spec Batch 1994680 ———									
QC1204555898 510581001 DUP Uranium-233/234	Uncertainty	13.2 +/-0.986		12.1 +/-1.02	pCi/g	9.25		(0%-20%) HAKB	05/07/20 20:55
Uranium-235/236	Uncertainty	0.828 +/-0.286		0.575 +/-0.253	pCi/g	36.1*		(0%-20%)	
Uranium-238	Uncertainty	3.22 +/-0.486		2.27 +/-0.450	pCi/g	34.6*		(0%-20%)	
QC1204555899 LCS Uranium-233/234	Uncertainty			12.2 +/-0.829	pCi/g				05/07/20 20:55
Uranium-235/236	Uncertainty			0.933 +/-0.257	pCi/g				
Uranium-238	12.9 Uncertainty			12.0 +/-0.821	pCi/g		93.5	(75%-125%)	
QC1204555897 MB Uranium-233/234	Uncertainty			0.428 +/-0.164	pCi/g				05/09/20 13:07
Uranium-235/236	Uncertainty			0.0679 +/-0.0763	pCi/g				
Uranium-238	Uncertainty		U .	0.0889 +/-0.0914	pCi/g				
Batch 1995912									
QC1204558442 510581002 DUP Uranium-233/234	Uncertainty	8310 +/-213		8000 +/-253	pCi/g	3.74		(0%-20%) HAKB	05/11/20 11:59
Uranium-235/236	Uncertainty	465 +/-56.2		379 +/-61.4	pCi/g	20.5*		(0%-20%)	
Uranium-238	Uncertainty	1620 +/-94.3		1420 +/-107	pCi/g	13.5		(0%-20%)	

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## **QC Summary**

Workorder: 510581										Pag	e 2 of 3
Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Alpha SpecBatch1995912											
QC1204558443 LCS Uranium-233/234				162	pCi/g				HAKB	05/11/2	20 11:59
	Uncertainty			+/-27.6	1 - 6						
Uranium-235/236				17.4	pCi/g						
	Uncertainty			+/-10.6							
Uranium-238	160			168	pCi/g		105	(75%-125%)			
	Uncertainty			+/-28.1							
QC1204558441 MB Uranium-233/234			U	-1.59	pCi/g					05/11/2	20 11:59
	Uncertainty			+/-2.31							
Uranium-235/236			U	-0.163	pCi/g						
	Uncertainty			+/-2.70							
Uranium-238	T In a set of instan		U	0.176 +/-3.14	pCi/g						
	Uncertainty			+/-3.14							
Rad Liquid ScintillationBatch1994733											
QC1204556036 510581001 DUP Technetium-99	U	0.447	U	0.433	nC:/a	NT / A		NT/	A 112	05/10/2	0 07.52
Technetium-99	Uncertainty	+/-1.94	0	+/-2.00	pCi/g	N/A		N/2	4 JJ2	05/10/2	007:52
QC1204556037 LCS											
Technetium-99	57.1			49.8	pCi/g		87.1	(75%-125%)		05/10/2	20 08:14
	Uncertainty			+/-3.28							
QC1204556035 MB Technetium-99			U	2.16	pCi/g					05/10/2	20 07:30
roomouum-//	Uncertainty		c	+/-2.07	hcu g					05/10/2	.0 07.50

#### 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

510501

Werleender

- < 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 See case narrative for an explanation

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## **QC** Summary

lue is estimated alyte present. Reported value may be l alyte present. Reported value may be l f above MDC and less than LLD MP Result > MDC/CL and < RDL D or %Recovery limits do not apply.	0									
alyte present. Reported value may be l f above MDC and less than LLD MP Result > MDC/CL and < RDL D or %Recovery limits do not apply.	0									
f above MDC and less than LLD MP Result > MDC/CL and < RDL D or %Recovery limits do not apply.	biased low. Actual	value is e	xpected to b	e higher.						
MP Result > MDC/CL and < RDL D or %Recovery limits do not apply.										
D or %Recovery limits do not apply.										
aasa narratiya										
case narranve										
alyte concentration is not detected abo	ve the detection lin	nit								
nsult Case Narrative, Data Summary p	ackage, or Project	Manager	concerning	this qualifi	er					
e or more quality control criteria have	not been met. Refe	r to the ap	oplicable na	rrative or I	DER.					
nple results are rejected										
alyte was analyzed for, but not detecte	d above the MDL,	MDA, M	DC or LOD							
mma SpectroscopyUncertain identifi	cation									
mma SpectroscopyUncertain identifi	cation									
t considered detected. The associated	number is the repor	ted conce	ntration, wh	ich may be	e inaccurate	due to a low	bias.			
nsult Case Narrative, Data Summary p	ackage, or Project	Manager	concerning	this qualifi	er					
er specific qualifiers were required to	properly define the	e results. (	Consult case	narrative.						
D of sample and duplicate evaluated u	sing +/-RL. Conce	entrations	are <5X the	RL. Qual	ifier Not Ap	plicable for I	Radiochemi	istry.		
paration or preservation holding time	was exceeded									
	e or more quality control criteria have nple results are rejected alyte was analyzed for, but not detecte mma SpectroscopyUncertain identifie mma SpectroscopyUncertain identifie t considered detected. The associated r nsult Case Narrative, Data Summary p ner specific qualifiers were required to D of sample and duplicate evaluated u paration or preservation holding time v es that spike recovery limits do not app ve Percent Difference (RPD) obtained	e or more quality control criteria have not been met. Refe nple results are rejected alyte was analyzed for, but not detected above the MDL, mma SpectroscopyUncertain identification mma SpectroscopyUncertain identification t considered detected. The associated number is the repor nsult Case Narrative, Data Summary package, or Project her specific qualifiers were required to properly define the D of sample and duplicate evaluated using +/-RL. Conce paration or preservation holding time was exceeded es that spike recovery limits do not apply when sample co	e or more quality control criteria have not been met. Refer to the ap nple results are rejected alyte was analyzed for, but not detected above the MDL, MDA, M mma SpectroscopyUncertain identification mma SpectroscopyUncertain identification t considered detected. The associated number is the reported conce nsult Case Narrative, Data Summary package, or Project Manager her specific qualifiers were required to properly define the results. O D of sample and duplicate evaluated using +/-RL. Concentrations paration or preservation holding time was exceeded es that spike recovery limits do not apply when sample concentration ve Percent Difference (RPD) obtained from the sample duplicate (	e or more quality control criteria have not been met. Refer to the applicable nation of the second s	e or more quality control criteria have not been met. Refer to the applicable narrative or E nple results are rejected alyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD. mma SpectroscopyUncertain identification mma SpectroscopyUncertain identification t considered detected. The associated number is the reported concentration, which may be nsult Case Narrative, Data Summary package, or Project Manager concerning this qualifier her specific qualifiers were required to properly define the results. Consult case narrative. D of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qual paration or preservation holding time was exceeded es that spike recovery limits do not apply when sample concentration exceeds spike conc.	alyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD. mma SpectroscopyUncertain identification mma SpectroscopyUncertain identification t considered detected. The associated number is the reported concentration, which may be inaccurate of nsult Case Narrative, Data Summary package, or Project Manager concerning this qualifier her specific qualifiers were required to properly define the results. Consult case narrative. D of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not App paration or preservation holding time was exceeded es that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of	e or more quality control criteria have not been met. Refer to the applicable narrative or DER. nple results are rejected alyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD. mma SpectroscopyUncertain identification mma SpectroscopyUncertain identification t considered detected. The associated number is the reported concentration, which may be inaccurate due to a low nsult Case Narrative, Data Summary package, or Project Manager concerning this qualifier her specific qualifiers were required to properly define the results. Consult case narrative. D of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for I paration or preservation holding time was exceeded es that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more	e or more quality control criteria have not been met. Refer to the applicable narrative or DER. nple results are rejected alyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD. mma SpectroscopyUncertain identification mma SpectroscopyUncertain identification t considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias. nsult Case Narrative, Data Summary package, or Project Manager concerning this qualifier her specific qualifiers were required to properly define the results. Consult case narrative. D of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochem paration or preservation holding time was exceeded	e or more quality control criteria have not been met. Refer to the applicable narrative or DER. nple results are rejected alyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD. mma SpectroscopyUncertain identification mma SpectroscopyUncertain identification t considered detected. 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The associated number is the reported concentration, which may be inaccurate due to a low bias. nsult Case Narrative, Data Summary package, or Project Manager concerning this qualifier her specific qualifiers were required to properly define the results. Consult case narrative. D of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry. paration or preservation holding time was exceeded es that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

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 #: 510581

## **General Chemistry**

Product: Ion Chromatography Analytical Method: SW846 9056A Analytical Procedure: GL-GC-E-086 REV# 27 Analytical Batches: 1994861 and 1994849

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

<u>GEL Sample ID#</u>	Client Sample Identification
510581001	HF1-B1-(1-2)
510581002	HF1-B1-(2-4)
510581003	HF1-B1-(4-6)
510581004	HF1-B1-(6-8)
510581005	HF1-B1-(8-10)
1204556270	Method Blank (MB)
1204556271	Laboratory Control Sample (LCS)
1204556272	510581001(HF1-B1-(1-2)) Sample Duplicate (DUP)
1204556273	510581001(HF1-B1-(1-2)) 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
Fluoride	1204556273 (HF1-B1-(1-2)MS)	46.8* (75%-125%)

## **Technical Information**

## **Sample Dilutions**

The following samples 1204556272 (HF1-B1-(1-2)DUP), 1204556273 (HF1-B1-(1-2)MS), 510581001 (HF1-B1-(1-2)), 510581002 (HF1-B1-(2-4)), 510581003 (HF1-B1-(4-6)), 510581004 (HF1-B1-(6-8)) and 510581005 (HF1-B1-(8-10)) 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.

A		510581						
Analyte	001	002	003	004	005			
Fluoride	1X	20X	50X	25X	10X			
Nitrate	5X	20X	50X	25X	10X			

Product: pH Analytical Method: SW846 9045D Analytical Procedure: GL-GC-E-008 REV# 24 Analytical Batch: 1994735

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

<u>GEL Sample ID#</u>	Client Sample Identification
510581001	HF1-B1-(1-2)
510581002	HF1-B1-(2-4)
510581003	HF1-B1-(4-6)
510581004	HF1-B1-(6-8)
510581005	HF1-B1-(8-10)
1204556042	Laboratory Control Sample (LCS)
1204556044	510581001(HF1-B1-(1-2)) 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
1204556044 (HF1-B1-(1-2)DUP)		Received 05-MAY-20, out of holding 04-MAY-20
510581001 (HF1-B1-(1-2))		Received 05-MAY-20, out of holding 04-MAY-20
510581002 (HF1-B1-(2-4))		Received 05-MAY-20, out of holding 04-MAY-20
510581003 (HF1-B1-(4-6))		Received 05-MAY-20, out of holding 04-MAY-20
510581004 (HF1-B1-(6-8))		Received 05-MAY-20, out of holding 04-MAY-20
510581005 (HF1-B1-(8-10))		Received 05-MAY-20, out of holding 04-MAY-20

## **Radiochemistry**

<u>Product:</u> Alphaspec U, Soil/Veg <u>Analytical Method:</u> DOE EML HASL-300, U-02-RC Modified <u>Analytical Procedure:</u> GL-RAD-A-011 REV# 27 <u>Analytical Batch:</u> 1994680

<u>Preparation Method:</u> Dry Soil Prep <u>Preparation Procedure:</u> GL-RAD-A-021 REV# 23 <u>Preparation Batch:</u> 1994664

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

<u>GEL Sample ID#</u>	Client Sample Identification
510581001	HF1-B1-(1-2)
510581004	HF1-B1-(6-8)
510581005	HF1-B1-(8-10)
1204555897	Method Blank (MB)
1204555898	510581001(HF1-B1-(1-2)) Sample Duplicate (DUP)
1204555899	Laboratory Control Sample (LCS)

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**

## **Method Blank Criteria**

The blank result (See Below) is greater than the MDC but less than the required detection limit.

Sample	Analyte	Value
1204555897 (MB)	Uranium-233/234	Result: 0.428 pCi/g > MDA: 0.138 pCi/g <= RDL: 0.500 pCi/g
	Uranium-235/236	Result: 0.0679 pCi/g > MDA: 0.0509 pCi/g <= RDL: 0.500 pCi/g

## Duplication Criteria between QC Sample and Duplicate Sample

The Sample and the Duplicate, (See Below), did not meet the relative percent difference requirement; however, they do meet the relative error ratio requirement with the value listed below.

Sample	Analyte	Value
1204555898 (HF1-B1-(1-2)DUP)	Uranium-235/236	RPD 36.1* (0.00%-20.00%) RER 1.24 (0-3)
	Uranium-238	RPD 34.6* (0.00%-20.00%) RER 2.31 (0-3)

## **Technical Information**

#### Recounts

Samples 1204555897 (MB) and 510581001 (HF1-B1-(1-2)) were recounted due to high MDCs. The recounts are reported.

**Product:** Alphaspec U, Soil/Veg <u>Analytical Method:</u> DOE EML HASL-300, U-02-RC Modified <u>Analytical Procedure:</u> GL-RAD-A-011 REV# 27 <u>Analytical Batch:</u> 1995912

<u>Preparation Method:</u> Dry Soil Prep <u>Preparation Procedure:</u> GL-RAD-A-021 REV# 23 <u>Preparation Batch:</u> 1994664

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

<u>GEL Sample ID#</u>	Client Sample Identification
510581002	HF1-B1-(2-4)
510581003	HF1-B1-(4-6)
1204558441	Method Blank (MB)
1204558442	510581002(HF1-B1-(2-4)) Sample Duplicate (DUP)
1204558443	Laboratory Control Sample (LCS)

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**

#### Duplication Criteria between QC Sample and Duplicate Sample

The Sample and the Duplicate, (See Below), did not meet the relative percent difference requirement; however, they do meet the relative error ratio requirement with the value listed below.

Sample	Analyte	Value
1204558442 (HF1-B1-(2-4)DUP)	Uranium-235/236	RPD 20.5* (0.00%-20.00%) RER 1.05 (0-3)

#### **RDL Met**

The blank (See Below) did not meet the detection limit due to keeping the blank volume consistent with the other sample aliquots.

Sample	Analyte	Value
1204558441 (MB)	Uranium-233/234	Result -1.59 < MDA 7.84 > RDL 0.5 pCi/g
	Uranium-235/236	Result -0.163 < MDA 5.72 > RDL 0.5 pCi/g
	Uranium-238	Result 0.176 < MDA 6.81 > RDL 0.5 pCi/g

#### **Technical Information**

#### Sample Re-prep/Re-analysis

Samples were reprepped due to low carrier/tracer yield. The re-analysis is being reported.

**Product: Dry Weight Preparation Method:** ASTM D 2216 (Modified) **Preparation Procedure:** GL-OA-E-020 REV# 13 **Preparation Batch:** 1994664

**Preparation Method:** Dry Soil Prep **Preparation Procedure:** GL-RAD-A-021 REV# 23 **Preparation Batch:** 1994664

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

<u>GEL Sample ID#</u>	Client Sample Identification
510581001	HF1-B1-(1-2)
510581002	HF1-B1-(2-4)
510581003	HF1-B1-(4-6)
510581004	HF1-B1-(6-8)
510581005	HF1-B1-(8-10)
1204555869	510581001(HF1-B1-(1-2)) 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.

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: 1994733

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

GEL Sample ID#	<b><u>Client Sample Identification</u></b>
510581001	HF1-B1-(1-2)
510581002	HF1-B1-(2-4)
510581003	HF1-B1-(4-6)
510581004	HF1-B1-(6-8)
510581005	HF1-B1-(8-10)
1204556035	Method Blank (MB)

1204556036	510581001(HF1-B1-(1-2)) Sample Duplicate (DUP)
1204556037	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: <u>1</u> of <u>1</u>				_	d.	-	-								0	EL Lai	porator	GEL Laboratories, LLC		
GFI Onote #-		5			abol	rato	aboratories LL	LLC							5	040 Sa	2040 Savage Road	bad		
COC Number <sup>(1)</sup> .	2019		Chair Chair	of Cu	Istody	and A	encom Cuentry Hadiochemistry Hadioboassay   Specialty Analytics Chain of Custody and Analytical Request	al Req	uest	lity Ana	llytics					harlest hone: (	Charleston, SC 29407 Phone: (843) 556-817	Charleston, SC 29407 Phone: (843) 556-8171		
PO Number: 4500778461, ENV-CONSENTA	GEL Work Order Number:	mber:			GEL P	roject <b>N</b>	<b>GEL Project Manager:</b>								Ë	ax: (84	Fax: (843) 766-1178	1178		
Client Name: Westinghouse		Pho	Phone # 803.49'	497.7062	2			Sa	mple	Anal	ysis R	teque	Sample Analysis Requested (5)		in the	a num	ber of c	ontainers	(Fill in the number of containers for each test)	2
Project/Site Name: Project # HF Spiking Station #1 Soil Sampling	Soil Sampling	Fax #	#				Should this		s										< Preservative Type (6)	()
Address: 5801 Bluff Road, Hopkins, SC 29061							sample be considered:	le be ered:	tainer			Ju		(əəd	-	-	-			
Collected By: R. Crews R. Lows	Send Results To: joynerdp@westinghouse	nerdp@w	estingho	Ise.com			JI)	rds	nos 10 .	ŀ	əbir	conte	əte	s eqdp	66				Comments Note: extra sample is	, v
Sample ID * For composites - indicate start and stop date time	*Date Collected me (mm-dd-yy)		*Time Collected (Military) (hhmm) C	QC Code (2) Fi	Field Filtered <sup>(3)</sup> 1	Sample Matrix <sup>(4)</sup>	Radioactive yes, please sur isotopic info.)	ro nwonM (7) Ranna or	Total number	Iq	Fluor	moisture	niiN	s) U siqotosl	9-оТ				required for sample specific QC	
HF1-B1-(1-2)	5/4/2020		1313		N/A	so			1-1	×	×	×	×	×	×		-			
HF1-B1-(2-4)	5/4/2020	-	1343		N/A	so			-	×	×	×	×	×	×		-			
HF1-B1-(4-6)	5/4/2020		1458		N/A	SO			-	×	×	×	×	×	×	-		≈	Please note that MDC for Tc- 99 should be 1 nCi/o	Tc-
HF1-B1-(6-8)	5/4/2020		1610		N/A	so			-	×	×	×	×	×	×	-				
HF1-B1-(8-10)	5/4/2020		1702		N/A	so			-	×	×	×	×	×	×	-				
	Chain of Custody Signatures	ures						TAT	TAT Requested:	ested:		Normal:	X	Rush:		N I	Specify:		(Subject to Surcharge)	Γ.
Date		Received by (signed)	Date		Time			Fax Results: [ ] Yes	lts: [	] Yes	0N[]	No								
1 Randy Crews FURUN 5/5/2020 064	43 1 Ray Bates	les I Sal		515/2020	50	8:43	n N	Select Deliverable: [ ] C of A Additional Remarks:	liveral Il Rem	arks:	] C of		[ ] QC Summary	amma		[ ] level 1		[] Level 2	[]Level 3 []Level 4	
3	3 6			-				For Lab Receiving Use Only: Custody Seal Intact? [ ] Yes	Receiv	ing U	se On	ly: Cı	stody.	Seal In	tact?	[ ] Ye.	s [] No		Cooler Temp: L °C	
> For sample shipping and delivery details, see Sample Receipt & Review form (SRR.)	nple Receipt & Review	form (SRI	3				Sample Collection Time Zone: [X] Eastern	ollection	Time	Zone	X	Easter	1.00	[ ] Pacific	6 - 1	[] Central	1	] Mountai	[] Mountain [] Other:	
<ol> <li>Chain of Custody Number = Client Determined</li> <li>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</li> </ol>	Duplicate, EB = Equipment	3lank, MS =	Matrix Spik	e Sample,	MSD = M	fatrix Spik	e Duplicate	Sample, G	= Grab,	C = Co	mposite									
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	s the sample was field filtered	or - N - for st	mple was n	ot field filt	ered.															
4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, WU=Water, ML=Mise Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Frilter, P=Wipe, U=Urine, F=Fecal, N=Nasal	-Surface Water, WW=Waste	Water, W=W	ater, ML=N	fise Liquic	I, SO=Soi	l, SD=Sed	iment, SL=5	sludge, SS=	Solid W	aste, O	=Oil, F	=Filter,	P=Wipe	U=Uni	ıe, F=Fo	ccal, N=	Nasal			
<ol> <li>J. 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).</li> <li>[6] Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxyde, SA = Sulfuric Acid, AA = Accordic Acid, HX = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium (Hydroxyde, SA = Sulfuric Acid, AA = Accordic Acid, HX = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium (Hydroxyde, SA = Sulfuric Acid, AA = Accordic Acid, HX = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium (Hydroxyde, SA = Sulfuric Acid, AA = Accordic Acid, HX = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium (Hydroxyde, SA = Sulfuric Acid, AA = Accordic Acid, HX = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium (Hydroxyde, SA = Sulfuric Acid, AA = Accordic Acid, HX = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium (Hydroxyde, SA = Sulfuric Acid, AA = Accordic Acid, HX = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium (Hydroxyde, SA = Sulfuric Acid, AA = Accordic Acid, HX = Hydroxyde, SA = Sulfuric Acid, AA = Accordic Acid, AC = Sulfuric Acid, AA = Sulfuric Acid, AA = Accordic Acid, AA = Accordic Acid, AC = Sulfuric Acid, AC = Sulfuric Acid, AA = Accordic Acid, AA = Accordic Acid, AC = Sulfuric Acid, AC = Sulfuri</li></ol>	8260B, 6010B/7470A) and r SH = Sodium Hydroxide. SA	umber of con = Sulfurie A	tainers prov	ided for ea	ach (i.e. 8. eid HX =	260B - 3, ( Hevane S	5010B/7470 TT = Sodium	A - 1). A Thioculfar	o If no 1		ai min	- babba	lance G	Id bloo						
7) KNOWN OR POSSIBLE HAZARDS	Characteristic Hazards		Listed Waste	aste				Other		100010		nanne	ICAVE III			8	Plea	se provide	Please provide any additional details	
RCRA Metals As = Arsenic Hg= Mercury Ba = Barium Se= Selenium	FL = Flammable/Ignitable CO = Corrosive RE = Reactive		LW= Listed Waste (F.K.P and U-listed wastes.) Waste code(s):	ed Waste 4 U-listed e(s):	e d waste	<i>(</i> 's	•	OT= Other / Unknown (i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.) Description:	er / Un Vlow µ Ith has	know hH, as ards,	n bestos etc.)	s, bery	lium, i	rritan	s, othe	2r	belo conc of si	w regardin, erns. (i.e.: e collected	below regarding handling and/or disposal concerns. (i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)	sal se )
Cd = Cadmium Ag= Silver Cr = Chromium MR= Misc. RCRA metals Page 24 of 26 SDG: 510581	TSCA Regulated PCB = Polychlorinated	Π						1								1.1				

<b>GEL</b> Laboratories LLC			~		
Client: WNVC		K	1	SAMPLE RECEIPT & REVIEW FORM	
Received By:				ate Received: 5/5/20	
Carrier and Tracking Number				Gircle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other	
Suspected Hazard Information	Yes	No	*lf	Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investig	ation.
A)Shipped as a DOT Hazardous?		V	Ha	zard Class Shipped: UN#: JN2910, Is the Radioactive Shipment Survey Compliant? Yes No	
B) Did the client designate the samples are to be received as radioactive?		/	100	C notation or radioactive stickers on containers equal client designation.	
C) Did the RSO classify the samples as radioactive?		1	Ma Cla	ximum Net Counts Observed* (Observed Counts - Area Background Counts):CPM / mR/Hr	
D) Did the client designate samples are hazardous?		$\langle$	1223	C notation or hazard labels on containers equal client designation.	
E) Did the RSO identify possible hazards?		/	If D PC	0 or E is yes, select Hazards below. B's Flammable Foreign Soil RCRA Asbestos Beryllium Other:	
Sample Receipt Criteria	Ycs	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)	
1 Shipping containers received intact and sealed?	$\langle$	ないない		Circle Applicable: Seals broken Damaged container Leaking container Other (describe)	10.00
2 Chain of custody documents included with shipment?	$\bigvee$	and the second s		Circle Applicable: Client contacted and provided COC COC created upon receipt	~
3 Samples requiring cold preservation within $(0 \le 6 \text{ deg. C})$ ?*	$\checkmark$	ALC: NO		Preservation Method: Wet Ice Packs Dry ice None Other: rechem- *all temperatures are recorded in Celsius TEMP: 50/5~.1	81
4 Daily check performed and passed on IR temperature gun?				Temperature Device Serial #:K4 ~_L6' 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?	$\backslash$			Sample ID's and Containers Affected:	
7 Do any samples require Volatile Analysis?			$\checkmark$	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?	7			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?	Λ			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?		10100		Circle Applicable: No container count on COC Other (describe)	_
12 Are sample containers identifiable as GEL provided?	Π				÷
13 COC form is properly signed in relinquished/received sections?	/			Circle Applicable: Not relinquished Other (describe)	_
Comments (Use Continuation Form if needed):					Page <u>25 of 26 SDG: 5105</u> 81
PM (or PMA)	) revi	ew: [	nitia	Is Date 5 1 20 Page of GL-CHL-SR-001 Rev 6	Page

i.

State	Certification
Alaska	17-018
Alaska Drinking Water	SC00012
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
Massachusetts PFAS Approv	Letter
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	2019–165
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-20-17
Utah NELAP	SC000122020-32
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
wasnington	C/80

## List of current GEL Certifications as of 28 May 2020



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 01, 2020

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

Re: Soil and Vegetation Analysis Work Order: 510757

Dear Ms. Logsdon:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on May 06, 2020. 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. 4707.

Sincerely,

KatelynShary

Katelyn Gray Project Manager

Purchase Order: 4500799254 Enclosures



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## Certificate of Analysis Report for

WNUC008 Westinghouse Electric Co, LLC (4500775170)

Client SDG: 510757 GEL Work Order: 510757

#### 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 See case narrative for an explanation
- 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, Katelyn Gray.

Katelyn Dray

Reviewed by

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# **Certificate of Analysis**

			2			ary 515			Re	eport Dat	e:	June 1,	2020
	Company : Address :		stinghouse Electric C Drawer R	Company, LLC									
		Col	umbia, South Carolir	na 29205									
	Contact:		Cynthia Logsdon										
	Project:	Soil	and Vegetation Ana	ılysis									
	Client Sample ID:	HF	I-B2-(1-2)			Pro	oject:		WNU	200821			
	Sample ID:	510	757001			Cli	ent ID	:	WNU	2008			
	Matrix:	Soil											
	Collect Date:	05-1	MAY-20 09:12										
	Receive Date:	06-1	MAY-20										
	Collector:	Clie	ent										
	Moisture:	8.89	9%										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chroma	atography												
	• • •	trate	"Dry Weight Correct	ed"									
Fluoride			1.28	0.376	1.11	mg/kg	10.1	1	LXA2	05/07/20	0024	1995237	1
Nitrate-N			76.5	0.730	2.21	mg/kg	10.1	2	LXA2	05/07/20	1557	1995237	2
	d Ion Analysis												
	Corrosivity (pH<20)												
Corrosivity		Н	6.38	0.0100	0.100	SU		1	RXB5	05/07/20	1453	1994735	3
	ing Prep Methods w	ere pe	erformed:										
Method	Desc				Analyst	Date		Time		ep Batch			
SW846 9056A	A SW84	5 9056.	A Total Anions in Soil		CJ2	05/06/20		1859	199	5236			
The follow	ing Analytical Meth	ods v	vere performed:										
Method	Descr	iption				A	Analys	t Coi	nments				
1	SW846												
2	SW846												
3	SW846	9045I	)										
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

Page 3 of 39 SDG: 510757

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## **Certificate of Analysis**

		Westinghouse Electric Company, LLC PO Drawer R							Report Date:			June 1, 2020		
	Company : Address :													
		Col	umbia, South Carolir	na 29205										
	Contact:		Cynthia Logsdon											
	Project:	Soil	and Vegetation Ana	lysis										
	Client Sample ID:	HF1-B2-(2-4)				Project:			WNUC00821					
	Sample ID:	510	757002		Cli	Client ID:			WNUC008					
	Matrix:	Soil												
	Collect Date:	05-1	MAY-20 09:40											
	Receive Date:	06-1	MAY-20											
	Collector:	Clie	ent											
	Moisture:	7.14	1%											
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	e Batch	Method	
Ion Chroma	atography										-			
SW846 905	56A Fluoride and Ni	trate	"Dry Weight Correct	ed"										
Fluoride		J	0.623	0.365	1.07	mg/kg	9.98	1		05/07/20				
Nitrate-N			90.8	1.77	5.37	mg/kg	9.98	5	LXA2	05/07/20	1730	1995237	2	
	nd Ion Analysis													
	Corrosivity (pH<20)				0.100					0.5/0.5/0.0		100 1505		
Corrosivity		Н	5.16	0.0100	0.100	SU		1	RXB5	05/07/20	1456	1994735	3	
	ing Prep Methods w	-								<b>D</b> 1				
Method	2000		ription 6 9056A Total Anions in Soil		Analyst	Date	Time		-					
SW846 9056A					CJ2	05/06/20		1859	199	95236				
	ving Analytical Meth		1											
-	Method Descri							t Coi	nments	5				
1	SW846													
2 3	SW846 SW846													
	5 10 -00	204JL	·											
Notes:														

Column headers are defined as follows: Lc/LC: Critical Level DF: Dilution Factor PF: Prep Factor **DL:** Detection Limit MDA: Minimum Detectable Activity RL: Reporting Limit MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

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## **Certificate of Analysis**

			-			a1y515			Re	eport Dat	e:	June 1,	2020
	Company : Address :		stinghouse Electric ( Drawer R	Company, LLC	2								
	Address :	PO	Drawer R										
		Col	umbia, South Caroli	na 29205									
	Contact:		Cynthia Logsdon										
	Project:	Soi	l and Vegetation Ana	alysis									
	Client Sample ID:		1-B2-(4-6)				oject:			C00821			
	Sample ID:	510	757003			Cli	ent ID		WNU	C008			
	Matrix:	Soil	l										
	Collect Date:	05-1	MAY-20 10:43										
	Receive Date:	06-1	MAY-20										
	Collector:	Clie	ent										
	Moisture:	8.79	9%										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chroma	atography												
	• • •	trate	"Dry Weight Correct	ted"									
Fluoride		U	ND	0.372	1.09	mg/kg	9.98	1		05/07/20		1995237	1
Nitrate-N			94.0	1.80	5.47	mg/kg	9.98	5	LXA2	05/07/20	1800	1995237	2
	nd Ion Analysis												
	Corrosivity (pH<20)			0.0100	0.100	CI I		1	DVD 5	05/07/20	1457	1004725	2
Corrosivity		Н	6.05	0.0100	0.100	SU		1	RXB5	05/07/20	1457	1994735	3
-	ing Prep Methods w	-				Data			D	D . ( . 1			
Method SW846 9056A	Descr		n A Total Anions in Soil		Analyst CJ2	Date 05/06/20		<u>Fime</u> 1859		ep Batch			
					CJ2	05/06/20		1859	195	5230			
	ving Analytical Meth		•										
Method	Descri					A	Analyst	Coi	mments	5			
1 2	SW846 SW846												
2 3	SW846												
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	on SQL: Sample Quantitation Limit

Page 5 of 39 SDG: 510757

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## **Certificate of Analysis**

						al y 515			R	eport Dat	te:	June 1,	2020
	Company : Address :		stinghouse Electric ( Drawer R	Company, LLC						1		,	
			umbia, South Caroli	ina 29205									
	Contact:		Cynthia Logsdon										
	Project:	Soil	and Vegetation An	alysis									
	Client Sample ID:	HF1	-B2-(6-8)			Pro	oject:		WNU	C00821			
	Sample ID:	510	757004			Cli	ent ID	:	WNU	C008			
	Matrix:	Soil											
	Collect Date:	05-1	MAY-20 11:30										
	Receive Date:		MAY-20										
	Collector:	Clie											
	Moisture:	9.81											
	Woisture.	9.01	. /0										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chrom	atography												
SW846 903	56A Fluoride and Ni	trate '	'Dry Weight Correc	ted"									
Fluoride		U	ND	0.375	1.10	mg/kg	9.95	1	LXA2	05/07/20	0400	1995237	1
Nitrate-N			45.9	0.364	1.10	mg/kg	9.95	1					
	nd Ion Analysis												
	Corrosivity (pH<20)	:>14)	"As Received"										
Corrosivity		Н	5.98	0.0100	0.100	SU		1	RXB5	05/07/20	1459	1994735	2
The follow	ing Prep Methods w	ere pe	erformed:										
Method	Desci	iption	1		Analyst	Date	r	Time	e Pro	ep Batch			
SW846 90564	A SW840	5 9056 <i>i</i>	A Total Anions in Soil		CJ2	05/06/20		1859	199	95236			
The follow	ving Analytical Meth	ods v	vere performed:										
Method	Descr	ption				A	Analyst	Cor	nments	8	-		
1	SW846	9056A	1										
2	SW846	9045E	)										
Notes:													
	eaders are defined as	follo											
DF Diluti	on Factor		L c/L C·	Critical Level									

DF: Dilution FactorLc/LDL: Detection LimitPF: Dilution FactorMDA: Minimum Detectable ActivityRL:MDC: Minimum Detectable ConcentrationSQL

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## **Certificate of Analysis**

						a1y 515			R	eport Da	te:	June 1,	2020
	Company : Address :		stinghouse Electric ( Drawer R	Company, LLC	2					• • • • • • •			_0_0
	Contact: Project:	Ms.	umbia, South Caroli Cynthia Logsdon and Vegetation An										
	Client Sample ID: Sample ID: Matrix:		I-B2-(8-10) 757005				oject: ient ID	:	WNU WNU	C00821 C008			
	Collect Date: Receive Date: Collector: Moisture:												
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	e Batch	Method
Ion Chrom													
	56A Fluoride and Ni	trate '											
Fluoride Nitrate-N		J	0.800 23.4	0.388 0.377	1.14 1.14	mg/kg	9.93 9.93		LXA2	05/07/20	0431	1995237	1
	nd Ion Analysis		23.4	0.377	1.14	mg/kg	9.95	1					
	Corrosivity (pH<20)	r~14)	"As Passivad"										
Corrosivity	Conosivity (pri<20	H	6.17	0.0100	0.100	SU		1	RXB5	05/07/20	1500	1994735	2
•	ing Prep Methods w	ere ne											
Method	* *	ription			Analyst	Date	,	Time	- Pr	ep Batch			
SW846 9056			A Total Anions in Soil		CJ2	05/06/20		1859		95236			
The follow	ving Analytical Meth	10ds v	vere performed:										
Method	Descr					Å	Analyst	Cor	nments	3			
1	SW846						marje			, ,			
2	SW846	9045E	)										
Notes:													
<u>Column he</u>	eaders are defined as	follo	ws:										
DE: Diluti	on Factor			Critical Laval									

DF: Dilution FactorLc/DL: Detection LimitPF:MDA: Minimum Detectable ActivityRLMDC: Minimum Detectable ConcentrationSQ

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## **Certificate of Analysis**

			-			a1y 515			Rep	ort Dat	e:	June 1,	2020
	Company : Address :		stinghouse Electric C Drawer R	Company, LLC									
		Col	umbia, South Carolii	na 29205									
	Contact:	Ms.	Cynthia Logsdon										
	Project:	Soi	l and Vegetation Ana	alysis									
	Client Sample ID:	HF	1-B3-(1-2)			Pro	oject:		WNUC	00821			
	Sample ID:	510	757006			Cli	ent ID	:	WNUC(	008			
	Matrix:	Soi	l										
	Collect Date:	05-	MAY-20 14:13										
	Receive Date:	06-	MAY-20										
	Collector:	Clie	ent										
	Moisture:	7.09	9%										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chroma	atography												
SW846 905	56A Fluoride and Ni	trate	"Dry Weight Correct	ted"									
Fluoride			6.24	0.370	1.09	mg/kg	10.1		LXA2 0			1996294	1
Nitrate-N			285	3.59	10.9	mg/kg	10.1	10	LXA2 0	5/14/20	2347	1996294	2
	nd Ion Analysis												
	Corrosivity (pH<20)				0.100							100 1505	
Corrosivity		Н	4.82	0.0100	0.100	SU		1	RXB5 0	5/07/20	1502	1994735	3
	ing Prep Methods w	-											
Method	Desci				Analyst	Date		Time	-	Batch			
SW846 9056A			A Total Anions in Soil		CJ2	05/14/20		2018	19962	293			
	ing Analytical Meth	ods v	were performed:										
Method	Descr					A	Analys	t Coi	mments				
1	SW846												
2	SW846												
3	SW846	90451	)										
Notes:													

Column headers are defined as follows: Lc/LC: Critical Level DF: Dilution Factor PF: Prep Factor **DL:** Detection Limit MDA: Minimum Detectable Activity RL: Reporting Limit MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

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## **Certificate of Analysis**

			-			al y 515			R	eport Dat	te:	June 1,	2020
	Company : Address :		stinghouse Electric ( Drawer R	Company, LLC						-			
		Col	umbia, South Caroli	na 29205									
	Contact:	Ms.	Cynthia Logsdon										
	Project:	Soi	and Vegetation Ana	alysis									
	Client Sample ID:	HF	I-B3-(2-4)			Pro	oject:		WNU	C00821			
	Sample ID:	510	757007			Cli	ent ID		WNU	C008			
	Matrix:	Soil	l										
	Collect Date:	05-	MAY-20 14:44										
	Receive Date:		MAY-20										
	Collector:	Clie											
	Moisture:	8.99											
	woisture.	0.9	/0										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chrom	atography												
SW846 905	56A Fluoride and Ni	trate	"Dry Weight Correct	ted"									
Fluoride			683	18.7	55.0	mg/kg	10.0	50	LXA2	05/15/20	0229	1996294	1
Nitrate-N			589	18.2	55.0	mg/kg	10.0	50					
Titration ar	nd Ion Analysis												
	Corrosivity (pH<20)	>14)	"As Received"										
Corrosivity		Н	4.08	0.0100	0.100	SU		1	RXB5	05/07/20	1501	1994735	2
The follow	ing Prep Methods w	ere po	erformed:										
Method	Desci	iptio	n		Analyst	Date	r.	Гіте	Pro	ep Batch			
SW846 90564	A SW846	i 9056.	A Total Anions in Soil		CJ2	05/14/20	-	2018	199	96293			
The follow	ving Analytical Meth	ods v	vere performed:										
Method	Descri	ption	l			A	Analyst	Cor	nments	5	-		
1	SW846	9056A	A				-						
2	SW846	9045I	)										
Notes:													
Column he	eaders are defined as	follo	ws:										
DF. Diluti	on Factor		Lc/LC· (	Critical Level									

DF: Dilution FactorLc/DL: Detection LimitPF:MDA: Minimum Detectable ActivityRLMDC: Minimum Detectable ConcentrationSQ

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## **Certificate of Analysis**

Method     Description     Analyst     Date     Time     Prep Batch       SW846 9056A     SW846 9056A Total Anions in Soil     CJ2     05/14/20     2018     1996293       The following Analytical Methods were performed:							<u>aiy 515</u>			R	eport Dat	te:	June 1,	2020
Contact:       Ms. Cynthia Logsdon         Project:       Soil and Vegetation Analysis         Client Sample ID:       HF1-B3-(4-6)         Sample ID:       510757008         Matrix:       Soil         Collect Date:       05-MAY-20         Collector:       Client         Moisture:       13.9%         Parameter       Qualifier         Result       DL         Receive Date:       06-MAY-20         Collector:       Client         Moisture:       13.9%             Parameter       Qualifier         Result       DL       RL       Units       PF       DF       Analyst       Date       Time Batch       Metho         Ion Chromatography       SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"       Fluoride       1020       19.9       58.7       mg/kg       10.1       50       LXA2       05/15/20       0417       1996294       1         Nitrate-N       1290       19.4       58.7       mg/kg       10.1       50       LXA2       05/15/20       0417       1996294       1         Titration and Ion Analysis       State-State       State-State       State-State       2       <					c Company, LL	С								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			Ms.	Cynthia Logsdon										
Receive Date: $06-MAY-20$ Collector:Collector:Client Moisture:13.9%ParameterQualifierResultDLRLUnitsPFDFAnalystDateTimeBatchMethodIon Chromatography SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"DLRLUnitsPFDFAnalystDateTimeBatchMethodIn Chromatography SW846 9056A Fluoride and Nitrate "Dry Weight Corrected"19.958.7mg/kg10.150LXA205/15/2004.1719962941Nitrate-N129019.458.7mg/kg10.150LXA205/15/2004.1719962941SW9045D Corrosivity (pH<2or>14) "As Received" Corrosivity (pH<2or>14) "As Received"CorrosivityH3.960.01000.100SU1RXB505/07/20150219947352The following Prep Methods were performed:Image: SW846 9056ASW846 9056ASW846 9056A2201819962931The following Analytical Methods were performed:Image: SW846 9056AImage: SW846 9056A2111MethodDescriptionAnalystDateTimePrep BatchImage: SW846 9056A1SW846 9056ASW846 9056ASW846 9056ASW846 9056ASW846 9056ASW846 9056A2SW846 9056ASW846 9056ASW846 9056ASW846 9056ASW846 9056A2SW846 9056ASW846 9056ASW846 9056ASW846 9056AS		Sample ID: Matrix:	510 Soi	757008 I				0						
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$		Receive Date: Collector:	06- Clie	MAY-20 ent										
SW846 9056A Fluoride and Nitrate "Dry Weight Corrected" FluorideFluoride102019.958.7mg/kg10.150LXA205/15/20041719962941Nitrate-N129019.458.7mg/kg10.150LXA205/15/20041719962941Nitrate-N129019.458.7mg/kg10.150LXA205/15/20041719962941Nitrate-N129019.458.7mg/kg10.150LXA205/15/20041719962941Titration and Ion AnalysisSW8045D Corrosivity (pH<2or>H3.960.01000.100SU1RXB505/07/20150219947352The following Prep Methods were performed:1996293WethodDescriptionAnalystDateTimePrep Batch </td <td></td> <td></td> <td>fier</td> <td>Result</td> <td>DL</td> <td>RL</td> <td>Units</td> <td>PF</td> <td>DF</td> <td>Analy</td> <td>st Date</td> <td>Time</td> <td>Batch</td> <td>Method</td>			fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Fluoride102019.958.7mg/kg10.150LXA205/15/20041719962941Nitrate-N129019.458.7mg/kg10.150LXA205/15/20041719962941Titration and Ion AnalysisSW9045D Corrosivity (pH<2or>14) "As Received"0.01000.100SU1RXB505/07/20150219947352The following Prep Methods were performed:MethodDescriptionAnalystDateTimePrep BatchSW846 9056ASW846 9056A Total Anions in SoilCJ205/14/2020181996293The following Analytical Methods were performed:MethodDescriptionAnalyst Comments1SW846 9056A2SW846 9056A2SW846 9056A2SW846 9056A2SW846 9056A2SW846 9056A2SW846 9056A2SW846 9056A2SW846 9056ASW846 9056A2SW846 9056A3Substantion4Substantion4Substantion5Substantion5Substantion5Substantion5Substantion<		• • •												
Nitrate-N129019.458.7 $mg/kg$ 10.150Titration and Ion AnalysisSW9045D Corrosivity (pH<2or>Nitrate-NAs Received"Corrosivity (pH<2or>Nitrate-N3.960.01000.100SU1RXB505/07/20150219947352The following Prep Methods were performed:MethodDescriptionAnalystDateTimePrep BatchSW846 9056ASW846 9056ATotal Anions in SoilCJ205/14/2020181996293The following Analytical Methods were performed:MethodDescriptionAnalyst Comments1SW846 9056ASW846 9056A2SW846 9056A2SW846 9056ASW846 9045DSW846 9045DSW846 9045DNotes:Column headers are defined as follows:		56A Fluoride and Ni	trate					10.1			054500	0.445	100.000.0	
Titration and Ion Analysis       SW9045D Corrosivity (pH<2or>14) "As Received"         Corrosivity       H       3.96       0.0100       SU       1       RXB5       05/07/20       1502       1994735       2         The following Prep Methods were performed:										LXA2	05/15/20	0417	1996294	1
SW9045D Corrosivity (pH<2or>       PI       3.96       0.0100       0.100       SU       1       RXB5       05/07/20       1502       1994735       2         The following Prep Methods were performed:         Method       Description       Analyst       Date       Time       Prep Batch       Prep Batch		nd Ion Analysis		1290	17.1	50.7	mg/ng	10.1	50					
Corrosivity       H       3.96       0.0100       0.100       SU       1       RXB5       05/07/20       1502       1994735       2         The following Prep Methods were performed:       Method       Description       Analyst       Date       Time       Prep Batch       7 <th7< th=""> <th7< th="">       7</th7<></th7<>		•	·>14)	"As Received"										
Method       Description       Analyst       Date       Time       Prep Batch         SW846 9056A       SW846 9056A Total Anions in Soil       CJ2       05/14/20       2018       1996293         The following Analytical Methods were performed:		······			0.0100	0.100	SU		1	RXB5	05/07/20	1502	1994735	2
SW846 9056A     SW846 9056A Total Anions in Soil     CJ2     05/14/20     2018     1996293       The following Analytical Methods were performed:     Method     Description     Analyst Comments       1     SW846 9056A     SW846 9056A     SW846 9056A       2     SW846 9045D     SW846 9045D	The follow	ing Prep Methods w	ere p	erformed:										
Method       Description       Analyst Comments         1       SW846 9056A       SW846 9045D         2       SW846 9045D       SW846 9045D         Notes:       Column headers are defined as follows:	Method	Desci	iptio	n		Analyst	Date		Time	e Pr	ep Batch			
Method     Description     Analyst Comments       1     SW846 9056A       2     SW846 9045D       Notes:       Column headers are defined as follows:	SW846 90564	A SW840	5 9056	A Total Anions in Soil		CJ2	05/14/20		2018	199	96293			
1       SW846 9056A         2       SW846 9045D         Notes:       Column headers are defined as follows:	The follow	ving Analytical Meth	ods v	were performed:										
2 SW846 9045D Notes: Column headers are defined as follows:	Method	Descr	ption	1			A	Analys	t Cor	nments	5			
Notes: Column headers are defined as follows:														
Column headers are defined as follows:	2	SW846	9045I	)										
	Notes:													
DE: Dilution Easter I o/I C: Critical I aval			follo											

DF: Dilution FactorLc.DL: Detection LimitPFMDA: Minimum Detectable ActivityRLMDC: Minimum Detectable ConcentrationSQ

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## **Certificate of Analysis**

					u or An	ary 515			ъ			<b>T</b> 1	2020
	~			~	~				R	eport Dat	te:	June 1,	2020
	Company : Address :		stinghouse Electric Drawer R	Company, LLO	0								
	Address :	PU	Drawer K										
		Col	umbia, South Carol	ina 29205									
	Contact:	Ms.	Cynthia Logsdon										
	Project:	Soil	and Vegetation Ar	alysis									
	Client Sample ID:	HF	I-B3-(6-8)			Pro	ject:		WNU	C00821			
	Sample ID:	510	757009			Cli	ent ID	:	WNU	C008			
	Matrix:	Soil											
	Collect Date:	05-]	MAY-20 16:20										
	Receive Date:		MAY-20										
	Collector:	Clie											
	Moisture:	12.3											
	woisture.	12	<i>, , , , , , , , , ,</i>										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	e Batch	Method
Ion Chrom	atography												
SW846 903	56A Fluoride and Ni	trate	"Dry Weight Correc	cted"									
Fluoride			546	9.79	28.8	mg/kg	10.1	25	LXA2	05/15/20	0511	1996294	1
Nitrate-N			700	9.50	28.8	mg/kg	10.1	25					
	nd Ion Analysis												
	Corrosivity (pH<20)												
Corrosivity		Н	4.11	0.0100	0.100	SU		1	RXB5	05/07/20	1504	1994735	2
	ing Prep Methods w	ere pe	erformed:										
Method	Desci				Analyst	Date		Time		ep Batch			
SW846 90564	A SW846	9056	A Total Anions in Soil		CJ2	05/14/20		2018	19	96293			
The follow	ving Analytical Meth	ods v	vere performed:										
Method	Descri	ption				A	Analys	t Cor	nments	8			
1	SW846	9056A	Δ										
2	SW846	90451	)										
Notes:													
1 Web.													
Column be	eaders are defined as	follo	WC.										
DF: Diluti		10110		Critical Level									

DF: Dilution FactorLc.DL: Detection LimitPFMDA: Minimum Detectable ActivityRLMDC: Minimum Detectable ConcentrationSQ

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# **Certificate of Analysis**

						a1y 515			R	eport Dat	te:	June 1,	2020
	Company : Address :		stinghouse Electric ( Drawer R	Company, LLC	C								
		Col	umbia, South Caroli	na 29205									
	Contact:		Cynthia Logsdon										
	Project:	Soil	l and Vegetation An	alysis									
	Client Sample ID:	HF	1-B3-(8-10)			Pro	oject:		WNU	C00821			
	Sample ID:	510	757010			Cli	ent ID	:	WNU	C008			
	Matrix:	Soil	l										
	Collect Date:	05-1	MAY-20 17:22										
	Receive Date:	06-1	MAY-20										
	Collector:	Clie	ent										
	Moisture:	12.6											
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chroma	atography												
SW846 905	56A Fluoride and Ni	trate	"Dry Weight Correc	ted"									
Fluoride			343	3.91	11.5	mg/kg			LXA2	05/15/20	0605	1996294	1
Nitrate-N			398	3.80	11.5	mg/kg	10.1	10					
	nd Ion Analysis												
	Corrosivity (pH<20)				0.100					0.5 /0.5 /0.0		100 1505	
Corrosivity		Н	4.25	0.0100	0.100	SU		1	RXB5	05/07/20	1505	1994735	2
	ing Prep Methods w												
Method	Desci				Analyst	Date		Time		ep Batch			
SW846 9056A	A SW846	9056.	A Total Anions in Soil		CJ2	05/14/20		2018	199	96293			
The follow	ving Analytical Meth	ods v	were performed:										
Method	Descri					A	Analys	t Cor	nments	8			
1	SW846												
2	SW846	9045I	)										
Notes:													
Column he	aders are defined as	follo	ws:										
DE: Diluti	on Factor			Critical Level									

DF: Dilution FactorLc/LC: CritDL: Detection LimitPF: Prep FaMDA: Minimum Detectable ActivityRL: ReportMDC: Minimum Detectable ConcentrationSQL: Samp

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## **Certificate of Analysis**

				Ce	runca	te of Al	1a1y818							
	Company : Address :		stinghous Drawer R	e Electric Comj	pany, LLO	C				R	eport Dat	ie:	June 1,	2020
					0205									
	Contact:		Cynthia	outh Carolina 2	9205									
	Project:			etation Analysis	\$									
	Client Sample ID:		0	v	3		Dr	oject:		WNU	C00821			
	Sample ID:		757001	)				lient II		WNU				
	Matrix:	Soil					C		υ.	WINU	C008			
	Collect Date:		MAY-20	09.12										
	Receive Date:		MAY-20	07.12										
	Collector:	Clie												
	Moisture:	8.89												
	Wolsture.	0.02	//0											
Parameter	Quali	fier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Rad Alpha	Spec Analysis													
Alphaspec	U, Soil/Veg "Dry W	eight	Corrected	d"										
Uranium-233/			4.65		0.316	0.500	pCi/g			BXA4	05/09/20	0839	1995261	1
Uranium-235/ Uranium-238	236		0.455 1.39		0.201 0.228	0.500 0.500	pCi/g pCi/g							
	Scintillation Analy	sis	1.59	+/-0.409	0.228	0.500	pei/g							
-	nt Tc99, Soil "As Re		d"											
Technetium-9		U	-1.41	+/-1.95	3.51	5.00	pCi/g			JJ3	05/12/20	0610	1995247	2
The follow	ing Prep Methods w	ere pe	erformed:											
Method		riptio				Analyst	Date		Time	Pr	ep Batch			
Dry Soil Prep	Dry So	oil Prep	GL-RAD-A	A-021		CXB7	05/06/20		1726	19	95223			
The follow	ving Analytical Meth	10ds v	vere perfo	ormed:										
Method	Descr	iption						Analy	st Cor	nments	S			
1				-02-RC Modified										
2		ML H	ASL-300, To	c-02-RC Modified										
	Fracer Recovery	Test					Result	Nomi	nal	Recov		-	otable L	
Uranium-232 Technetium-9				Veg "Dry Weight C Soil "As Received"							99.6 99.5		5%-125%) 5%-125%)	
		Jiquiu	Jenn 1079, 1								,,	(15	, 10-12370,	,
<b>Notes:</b> Counting U	Incertainty is calcula	ated a	t the 95%	confidence lev	el (1.96-s	igma).								
	aders are defined as	follo	ws:											
DF: Dilution				Lc/LC: Critic										
DL: Detect	tion Limit			PF: Prep Fac	tor									

DL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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## **Certificate of Analysis**

				Cel	unca	le of A	11a1 y 515			Б			T *	2020
	Company : Address :		stinghouse Drawer R	e Electric Com	pany, LLC	C				K	eport Dat	e:	June 1,	2020
		Col	umbia. Sc	outh Carolina 2	9205									
	Contact:		Cynthia l		/205									
	Project:			etation Analysis	5									
	Client Sample		-B2-(2-4)	•			P	roject:		WNU	C00821			
	Sample ID:		757002					lient II	D:	WNU				
	Matrix:	Soil												
	Collect Date:	05-1	MAY-20	09:40										
	Receive Date:		MAY-20											
	Collector:	Clie	ent											
	Moisture:	7.14	%											
Dementer		)	Desselt	I la conto in to:	MDC	DI	T.L.:4a	DE		A a 1-	at Data	T:	D . ( . 1	Mathad
Parameter		Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Anary	vst Date	Time	Batch	Method
-	Spec Analysis	<b>XX</b> 7 • 1 /	<b>C</b>	111										
Alphaspec Uranium-233/	U, Soil/Veg "D	ry Weight	Corrected 0.847	1" +/-0.345	0.285	0.500	pCi/g			DVA4	05/09/20	0830	1005261	1
Uranium-235/		U	0.107	+/-0.154	0.285	0.500	pCi/g			DAA4	03/09/20	0839	1995201	1
Uranium-238			0.785	+/-0.321	0.206	0.500	pCi/g							
Rad Liquid	Scintillation A	nalysis												
	nt Tc99, Soil "A	s Receive												
Technetium-9		U	-0.842	+/-2.14	3.79	5.00	pCi/g			JJ3	05/12/20	0626	1995247	2
	ing Prep Metho													
Method		Description				Analyst	Date		Time		ep Batch			
Dry Soil Prep		Dry Soil Prep				CXB7	05/06/20	)	1726	19	95223			
-	ing Analytical		-	rmed:										
Method		escription		00 D G L U G L				Analy	st Cor	nment	S			
1 2				02-RC Modified										
			ASL-300, IC	-02-KC Modified			D a surl4	N		<b>D</b>			4 . h 1 . T	
Uranium-232	Tracer Recovery		LI SoilA	/eg "Dry Weight C	omeeted"		Result	Nomi	nai	Reco	very% 87	1	table L: %-125%)	
Technetium-9				Soil "As Received"	orrected						87 97.6		%-125%) %-125%)	
Notes:	Incertainty is ca	-			el (1.96-s	igma).						(	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Ũ	aders are define on Factor tion Limit			Lc/LC: Critic PF: Prep Fact	al Level	- *								

D1: Diration FactorD2: Detection LimitD5: Prep FactorDL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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## **Certificate of Analysis**

				Ce	runca	te of Al	1a1y515							
	Company : Address :		stinghouse Drawer R	Electric Com	pany, LLO	2				R	eport Da	te:	June 1,	2020
	ridarobb .	-												
	Comtooti			th Carolina 2	9205									
	Contact: Project:		Cynthia Lo	ogsoon ation Analysis	e									
	Client Sample ID		I-B2-(4-6)	ation 7 marysis			p	roject:		WNU	C00821			
	Sample ID:		757003					lient II		WNU				
	Matrix:	Soil					C	inent n	0.		0000			
	Collect Date:		MAY-20 10	)•43										
	Receive Date:		MAY-20											
	Collector:	Clie												
	Moisture:	8.79												
			<b>D</b> 1 1	<b>.</b>			<b>TT I</b>							
Parameter		lifier	Result U	Uncertainty	MDC	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
-	Spec Analysis		~											
	U, Soil/Veg "Dry V	Veight			0.241	0.500	<b>C</b> :/			DIVAA	05/00/20	0020	10050(1	
Uranium-233/ Uranium-235/		U	1.50 0.0943	+/-0.493 +/-0.162	0.341 0.141	0.500 0.500	pCi/g pCi/g			BXA4	05/09/20	0839	1995261	1
Uranium-238	250	U	0.955	+/-0.391	0.251	0.500	pCi/g							
Rad Liquid	Scintillation Analy	ysis					1 0							
Liquid Scir	nt Tc99, Soil "As R	eceive	d"											
Technetium-9	9	U	-2.60	+/-1.99	3.66	5.00	pCi/g			JJ3	05/12/20	0643	1995247	2
The follow	ing Prep Methods v	vere pe	erformed:											
Method	Desc	cription	1			Analyst	Date		Time	Pr	ep Batch			
Dry Soil Prep	Dry S	Soil Prep	GL-RAD-A-	021		CXB7	05/06/20	)	1726	19	95223			
The follow	ving Analytical Met	thods w	vere perform	med:										
Method		ription						Analy	st Cor	nment	S			
1				2-RC Modified										
2		EML HA	ASL-300, Tc-(	2-RC Modified										
	Fracer Recovery	Test					Result	Nomi	nal				otable L	
Uranium-232				g "Dry Weight C							90.6		5%-125%)	
Technetium-9	9m Tracer	Liquid	Scint Te99, Sc	il "As Received"							97.2	(1:	5%-125%)	)
Notes: Counting U	Incertainty is calcul	lated a	t the 95% c	onfidence lev	el (1.96-s	igma).								
Column he	eaders are defined a	s follo	ws:											
DF: Diluti			<u> </u>	Lc/LC: Critic	cal Level									
DL: Detec	tion Limit			PF: Prep Fac	tor									

D1: Diration FactorD2: Detection LimitD5: Prep FactorDL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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## **Certificate of Analysis**

				Cel	runca	te of Al	larysis			-	-			
	Company : Address :		tinghouse E Drawer R	Electric Comp	pany, LLC	C				Re	eport Dat	e:	June 1,	2020
	Contact: Project:	Ms.	Cynthia Lo	h Carolina 2 gsdon tion Analysis										
	Client Sample ID:		-B2-(6-8)				Pr	oject:		WNU	C00821			
	Sample ID:		27004					ient II		WNU				
	Matrix:	Soil	57001				CI				0000			
	Collect Date:		AY-2011	·30										
	Receive Date:		/AY-20	.50										
	Collector:	Clier												
	Moisture:	9.81	%											
Parameter	Quali	fier	Result U	Incertainty	MDC	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Rad Alpha	Spec Analysis													
-	U, Soil/Veg "Dry W	eight (	Corrected"											
Uranium-233/		0	0.926	+/-0.396	0.327	0.500	pCi/g			BXA4	05/09/20	0839	1995261	1
Uranium-235/	236	U	0.0131	+/-0.137	0.286	0.500	pCi/g							
Uranium-238			0.218	+/-0.198	0.182	0.500	pCi/g							
-	Scintillation Analys													
1	nt Tc99, Soil "As Re			12.05		5.00	<b>C</b> :/				05/10/00	0.670	1005245	2
Technetium-9		U	0.00658	+/-2.05	3.57	5.00	pCi/g			JJ3	05/12/20	0659	1995247	2
-	ing Prep Methods w	<b>^</b>									D 1			
Method		ription				Analyst	Date		Time		ep Batch			
Dry Soil Prep	•	-	GL-RAD-A-0			CXB7	05/06/20		1726	199	95223			
	ing Analytical Meth		ere perform	ned:										
Method	Descri							Analys	st Con	nments	5			
1				-RC Modified										
2		ML HA	SL-300, 1C-0.	2-RC Modified										
		Test					Result	Nomi	nal	Recov	-		otable L	
Uranium-232			-	"Dry Weight C	orrected"						86		5%-125%)	
Technetium-9	9m Tracer L	Jquid S	cint 1 c99, Soi	l "As Received"						ç	97.2	(15	5%-125%)	1
<b>Notes:</b> Counting U	Incertainty is calcula	ated at	the 95% co	onfidence leve	el (1.96-s	igma).								
Column he	aders are defined as	follov	vs:											
DF: Dilutio				Lc/LC: Critic	al Level									
DL: Detect	tion Limit		1	PE · Pren Fact	tor									

D1: Detection LimitDF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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## **Certificate of Analysis**

				Ue.	runca	te of Al	lalysis							
	Company : Address :		stinghouse Drawer R	Electric Com	pany, LLO	C				R	eport Dat	te:	June 1,	2020
	Contact: Project:	Col Ms.	umbia, So Cynthia L	uth Carolina 2 ogsdon tation Analysi										
	Client Sample I Sample ID: Matrix: Collect Date: Receive Date: Collector: Moisture:	D: HF1 510 Soil 05-1	-B2-(8-10 757005 MAY-20 1 MAY-20 ent	))	~			roject: lient II		WNU WNU	C00821 C008			
Parameter	Qu	alifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Rad Alpha	Spec Analysis													
-	U, Soil/Veg "Dry /234	Weight U	Corrected 1.52 0.0407	+/-0.453 +/-0.114	0.248 0.122	0.500 0.500	pCi/g pCi/g			BXA4	05/09/20	0839	1995261	1
Uranium-238			0.421	+/-0.253	0.231	0.500	pCi/g							
-	l Scintillation Ana nt Tc99, Soil "As 9	•	d" -2.27	+/-2.18	3.97	5.00	pCi/g			JJ3	05/12/20	0716	1995247	2
The follow	ring Prep Methods	were pe	erformed:											
Method		scription				Analyst	Date		Time		ep Batch			
Dry Soil Prep	Dry	/ Soil Prep	GL-RAD-A	-021		CXB7	05/06/20	C	1726	19	95223			
The follow	ving Analytical M	ethods v	vere perfor	rmed:										
Method 1 2	DO		ASL-300, U-(	02-RC Modified -02-RC Modified				Analy	st Con	nment	8			
Surrogate/	Fracer Recovery	Test	,				Result	Nomi	nal	Reco	verv%	Accer	table L	imits
Uranium-232 Technetium-9	Tracer	Alphasp		eg "Dry Weight C oil "As Received"							87.2 94.7	(15	5%-125%) 5%-125%)	)
<b>Notes:</b> Counting U	Jncertainty is calc	ulated a	t the 95% o	confidence lev	el (1.96-s	igma).								
	eaders are defined	as follo	ws:											
DF: Dilution DL: Detec				Lc/LC: Critic PF: Prep Fac										

D1: Diration FactorD2: Detection LimitD5: Prep FactorDL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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## **Certificate of Analysis**

				Cel	runca	te of Al	1213515							
	Company : Address :		stinghouse l Drawer R	Electric Comp	pany, LLO	C				R	eport Dat	te:	June 1,	2020
	nuuross .													
	Contooti		,	th Carolina 2	9205									
	Contact: Project:		Cynthia Lo	gsoon ation Analysis	c									
	Client Sample ID		-B3-(1-2)				D	roject:		W/NILL	C00821			
	Sample ID:		757006					lient ID		WNU				
	Matrix:	Soil					C	nem il	<i>.</i>	WINU	0008			
	Collect Date:		MAY-20 14	.12										
	Receive Date:		MAY-20 14	.15										
	Collector:	Clie												
	Moisture:	7.09												
	woisture.	7.09	7%0											
Parameter	Qua	lifier	Result U	Incertainty	MDC	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Rad Alpha	Spec Analysis													
-	U, Soil/Veg "Dry V	Weight	Corrected"											
Uranium-233/		U	3.52	+/-0.714	0.281	0.500	pCi/g			BXA4	05/09/20	0839	1995261	1
Uranium-235/	/236	U	0.0795	+/-0.156	0.217	0.500	pCi/g							
Uranium-238	Spintillation Analy		1.13	+/-0.414	0.256	0.500	pCi/g							
-	Scintillation Analy		4"											
Technetium-9	nt Tc99, Soil "As R 9	U	-0.758	+/-2.03	3.59	5.00	pCi/g			JJ3	05/12/20	0732	1995247	2
	ing Prep Methods	-		17 2.05	5.57	5.00	pens			33.5	03/12/20	0752	1775247	2
Method	• •	cription				Analyst	Date		Time	Pr	ep Batch			
Dry Soil Prep			GL-RAD-A-(	)21		CXB7	05/06/20		1726		95223			
•	ving Analytical Me	-												
Method	<b>v v</b>	ription	-	lieu.				Analys	t Con	mont	2			
1				2-RC Modified				Anarys		mem	3			
2				2-RC Modified										
Surrogate/7	Fracer Recovery	Test					Result	Nomir	nal	Recov	very%	Accej	otable L	imits
Uranium-232				g "Dry Weight C							74.2		5%-125%)	
Technetium-9	9m Tracer	Liquid S	Scint Tc99, So	il "As Received"							101	(15	5%-125%)	
<b>Notes:</b> Counting U	Incertainty is calcu	lated at	t the 95% co	onfidence leve	el (1.96-s	igma).								
Column he	aders are defined a	s follo	ws:											
DF: Diluti				Lc/LC: Critic	cal Level									
DL: Detect	tion Limit			PF: Prep Fact	tor									

DF: Dilution Factor Lc/LC: Critical DL: Detection Limit PF: Prep Factor

MDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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## **Certificate of Analysis**

				Cel	runca	te of A	liarysis							
	Company :		-	Electric Comp	pany, LLC	2				R	Report Dat	ie:	June 1,	2020
	Address :	PO	Drawer R											
		Col	umbia, Sou	th Carolina 2	9205									
	Contact:		Cynthia L											
	Project:	Soil	and Veget	ation Analysis	S									
	Client Sample ID:	HF1	-B3-(2-4)				Pr	oject:		WNU	JC00821			
	Sample ID:	510	757007				Cl	lient II	):	WNU	JC008			
	Matrix:	Soil												
	Collect Date:	05-1	MAY-201	4:44										
	Receive Date:	06-1	MAY-20											
	Collector:	Clie												
	Moisture:	8.9%												
		0.77	•											
Parameter	Quali	fier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analy	yst Date	Time	Batch	Method
Rad Alpha	Spec Analysis													
-	U, Soil/Veg "Dry W	'eight	Corrected	,										
Uranium-233/		0	3510	+/-99.5	5.06	0.500	pCi/g			MP2	05/19/20	1147	1997576	1
Uranium-235/	/236		159	+/-23.6	2.72	0.500	1 0							
Uranium-238	~		582	+/-40.5	3.73	0.500	pCi/g							
-	Scintillation Analys													
1	nt Tc99, Soil "As Re			(			<i></i>				0.5.11.0.10.0		100	
Technetium-9		U	-0.638	+/-2.39	4.21	5.00	pCi/g			JJ3	05/12/20	0429	1995246	2
-	ing Prep Methods w													
Method	Desci					Analyst	Date		Time		rep Batch			
Dry Soil Prep	-	-	GL-RAD-A-			CXB7	05/06/20	)	1723	19	995224			
The follow	ving Analytical Meth	ods v	vere perfor	med:										
Method	Descri							Analys	st Con	nment	S			
1				2-RC Modified										
2		ML HA	ASL-300, Tc-	02-RC Modified										
Surrogate/7	<i>`</i>	Test					Result	Nomir	nal	Reco	very%	Accer	otable L	imits
Uranium-232				eg "Dry Weight C							66.5		5%-125%)	
Technetium-9	9m Tracer I	liquid S	Scint Tc99, So	oil "As Received"							93.3	(15	5%-125%)	
Notes:														
Counting U	Incertainty is calcula	ated at	t the 95% c	confidence leve	el (1.96-s	igma).								
	aders are defined as	follo	ws:											
DF: Dilutio	on Factor			Lc/LC: Critic	cal Level									
DL: Detect	tion Limit			PF: Prep Fact	tor									

DF: Dilution FactorLc/LC: CriticaDL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting

Lc/LC: Critical Level PF: Prep Factor RL: Reporting Limit SQL: Sample Quantitation Limit

MDC: Minimum Detectable Concentration

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## **Certificate of Analysis**

				Ce	runca	te of Al	liarysis							
	Company : Address :		stinghous Drawer R	e Electric Com	pany, LLO	2				R	Report Dat	e:	June 1,	2020
					0205									
	Contact:		Cynthia	outh Carolina 2	9205									
	Project:			etation Analysi	s									
	Client Sample ID:		0	•	5		Dr	oject:		WNI	JC00821			
	Sample ID:		757008	)				lient II			JC00821			
	Matrix:	Soil					C		).	WINC	0008			
	Collect Date:		MAY-20	15.35										
	Receive Date:		MAY-20	15.55										
	Collector:	Clie												
	Moisture:	13.9												
	woisture.	15.,	//0											
Parameter	Quali	ifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analy	yst Date	Time	Batch	Method
Rad Alpha	Spec Analysis													
Alphaspec	U, Soil/Veg "Dry W	/eight	Correcte	d''										
Uranium-233/			5600		6.49	0.500	pCi/g			MP2	05/19/20	1147	1997576	1
Uranium-235/ Uranium-238	/236		264 948		5.06 3.66	0.500 0.500	pCi/g pCi/g							
	Scintillation Analy	sis	940	+/-50.5	5.00	0.500	pei/g							
-	nt Tc99, Soil "As Re		d"											
Technetium-9		U	-0.0340	+/-2.23	3.89	5.00	pCi/g			JJ3	05/12/20	0445	1995246	2
The follow	ing Prep Methods w	ere pe	erformed:											
Method	Desc	riptio	n			Analyst	Date		Time	P	rep Batch			
Dry Soil Prep	Dry So	oil Prep	GL-RAD-A	A-021		CXB7	05/06/20	)	1723	19	95224			
The follow	ving Analytical Meth	nods v	were perfo	ormed:										
Method	Descr	iption	l					Analys	st Con	nment	S			
1				-02-RC Modified										
2		EML HA	ASL-300, To	c-02-RC Modified										
	Fracer Recovery	Test					Result	Nomi	nal	Reco		-	otable L	
Uranium-232 Technetium-9				Veg "Dry Weight C Soil "As Received"							61.5 93		5%-125%)	
			5cm 1099,	Soli As Received							73	(12	5%-125%)	1
Notes: Counting U	Incertainty is calcula	ated a	t the 95%	confidence lev	el (1.96-s	igma).								
	eaders are defined as	<u>follo</u>	ws:											
DF: Dilution				Lc/LC: Critic										
DL: Detect	tion Limit			PF: Prep Fac	tor									

DL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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## **Certificate of Analysis**

				Ce	runca	te of Al	liarysis							
	Company : Address :		stinghous Drawer R	e Electric Comj	pany, LLC	2				F	Report Dat	te:	June 1,	2020
		Col	umbia, So	outh Carolina 2	.9205									
	Contact:		Cynthia											
	Project:	Soil	and Veg	etation Analysis	s									
	Client Sample ID:	HF	l-B3-(6-8	)			Pr	oject:			JC00821			
	Sample ID:		757009				C	lient II	D:	WNU	JC008			
	Matrix:	Soil												
	Collect Date:	05-1	MAY-20	16:20										
	Receive Date:	06-l	MAY-20											
	Collector:	Clie	ent											
	Moisture:	12.3	3%											
Parameter	Quali	ifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Anal	yst Date	Time	Batch	Method
Rad Alpha	Spec Analysis													
Alphaspec	U, Soil/Veg "Dry W	/eight	Correcte	d"										
Uranium-233/		-	2790		5.36	0.500	pCi/g			MP2	05/19/20	1147	1997576	1
Uranium-235/	236		171		3.32	0.500	pCi/g							
Uranium-238 Pad Liquid	Scintillation Analy	oio	632	+/-46.6	4.21	0.500	pCi/g							
-	nt Tc99, Soil "As Re		d"											
Technetium-9		U	u -1.07	+/-2.20	3.92	5.00	pCi/g			JJ3	05/12/20	0502	1995246	2
	ing Prep Methods w						1 - 8							
Method	Desc	riptio	1			Analyst	Date		Time	P	rep Batch			
Dry Soil Prep	Dry Se	oil Prep	GL-RAD-A	A-021		CXB7	05/06/20	)	1723	19	95224			
The follow	ving Analytical Meth	hods v	vere perfo	ormed:										
Method	Descr	iption						Analy	st Cor	nment	s			
1				-02-RC Modified										
2		EML HA	ASL-300, To	c-02-RC Modified										
	Fracer Recovery	Test					Result	Nomi	nal	Reco	very%	-	otable L	
Uranium-232 Technetium-9				Veg "Dry Weight C Soil "As Received"							50.9 94.8		5%-125%) 5%-125%)	
Notes:	Incertainty is calcula	1				igma).							- / • )	
Column he DF: Dilutio DL: Detect		s follo	ws:	Lc/LC: Critic PF: Prep Fac										

DL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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## **Certificate of Analysis**

				UE.	i unca	te of Al	1a1y515							
	Company :			Electric Com	pany, LLC	C				F	Report Dat	le:	June 1,	2020
	Address :	PO	Drawer R											
		Col	umbia, Sou	th Carolina 2	29205									
	Contact:	Ms.	Cynthia L	ogsdon										
	Project:	Soil	and Veget	ation Analysi	s									
	Client Sample ID:	HF	-B3-(8-10)	)			P	roject:		WNU	JC00821			
	Sample ID:		757010					lient II		WNU	JC008			
	Matrix:	Soil												
	Collect Date:	05-1	MAY-20 1'	7:22										
	Receive Date:		MAY-20											
	Collector:	Clie												
	Moisture:	12.6												
	Moisture.	12.0	570											
Parameter	Qual	ifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Anal	yst Date	Time	Batch	Method
Rad Alpha	Spec Analysis													
Alphaspec	U, Soil/Veg "Dry W	/eight	Corrected'	,										
Uranium-233/		U	2600	+/-83.9	5.25	0.500	pCi/g			MP2	05/19/20	1147	1997576	1
Uranium-235/			139	+/-21.6	3.66	0.500	pCi/g							
Uranium-238			636	+/-41.5	4.19	0.500	pCi/g							
-	Scintillation Analy													
-	nt Tc99, Soil "As Re			. / 0.15	2.02	5.00	0.1			110	05/10/20	0510	1005046	2
Technetium-9		U	-2.17	+/-2.15	3.92	5.00	pCi/g			JJ3	05/12/20	0518	1995246	2
	ing Prep Methods w						Data				D.(.1			
Method Dry Soil Prep		ription	n GL-RAD-A-	021		Analyst CXB7	Date 05/06/20		Time 1723		rep Batch			
• •	-	-				CAB/	05/06/20	)	1725	15	995224			
	ving Analytical Mether		1	med:										
Method	Descr							Analy	st Cor	nmen	ts			
1 2				2-RC Modified										
	Fracer Recovery	Test	ASL-300, 1C-0	02-RC Modified			Result	Nomi	nol	Daac	overy%	Accor	otable L	imite
Uranium-232			ec II Soil/Ve	g "Dry Weight C	'orrected"		Kesun	Nom	IIIaI	Rect	64.6	-	5%-125%)	
Technetium-9				oil "As Received"							96.1	· ·	5%-125%)	
Notes:														
Counting U	Uncertainty is calcul	ated a	t the 95% c	onfidence lev	el (1.96-s	igma).								
	eaders are defined as	s follo	ws:											
DF: Diluti	on Factor			Lc/LC: Critic	cal Level									
DL: Detec	tion Limit			PF: Prep Fac	tor									

MDC: Minimum Detectable Concentration

DL: Detection Limit MDA: Minimum Detectable Activity PF: Prep Factor RL: Reporting Limit SQL: Sample Quantitation Limit

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## **QC Summary**

Report Date: June 1, 2020

Page 1 of 3

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

Workorder: 510757

**Contact:** 

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range A	nlst	Date Time
Ion Chromatography Batch 1995237										
QC1204557123 510757001 DUP Fluoride		1.28	J	0.471	mg/kg	92.1 ^	ι.	(+/-1.10) I	LXA2	05/07/20 00::
Nitrate-N		76.5		103	mg/kg	29.9		(0%-104%)		05/07/20 16:2
QC1204557122 LCS Fluoride	25.1			27.1	mg/kg		108	(90%-110%)		05/06/20 22:2
Nitrate-N	25.1			26.6	mg/kg		106	(90%-110%)		
QC1204557121 MB Fluoride			U	ND	mg/kg					05/06/20 21:4
Nitrate-N			U	ND	mg/kg					
QC1204557125 510757001 MS Fluoride	27.4	1.28		10.7	mg/kg		34.2*	(75%-125%)		05/07/20 01:2
Nitrate-N	27.4	76.5		108	mg/kg		116	(75%-125%)		05/07/20 16:5
Batch 1996294 —										
QC1204559298 510757006 DUP Fluoride		6.24		5.79	mg/kg	7.5		(0%-109%) I	LXA2	05/15/20 00:1
Nitrate-N		285		278	mg/kg	2.37		(0%-104%)		05/15/20 00:4
QC1204559297 LCS Fluoride	24.7			24.8	mg/kg		100	(90%-110%)		05/14/20 22:5
Nitrate-N	24.7			25.0	mg/kg		101	(90%-110%)		

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### **QC Summary**

Workorder: 510757										Page	e 2 of 3
Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range A	nlst	Date	Time
<b>Ion Chromatography</b> Batch 1996294											
QC1204559296 MB Fluoride			U	ND	mg/kg				LXA2	05/14/2	0 21:55
Nitrate-N			U	ND	mg/kg						
QC1204559300 510757006 MS Fluoride	26.8	6.24		12.7	mg/kg		24.1*	(75%-125%)		05/15/2	20 01:08
Nitrate-N	26.8	285		302	mg/kg		N/A	(75%-125%)		05/15/2	20 01:35
Titration and Ion Analysis Batch 1994735											
QC1204556044 510581001 DUP Corrosivity	Н	4.81	Н	5.15	SU	6.83		(0%-10%)	RXB5	05/07/2	0 14:47
QC1204556042 LCS Corrosivity	7.00			7.00	SU		100	(95%-105%)		05/07/2	20 14:42

#### Notes:

Wardsondam

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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 General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
- H Analytical holding time was exceeded
- J See case narrative for an explanation
- J Value is estimated
- 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

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### **QC Summary**

Parmna	me	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
U	Analyte was analyzed for,	but not detected abo	ve the MDL,	MDA, MI	DC or LOD							
Х	Consult Case Narrative, D	ata Summary packag	e, or Project I	Manager o	concerning	his qualifi	er					
Ζ	Paint Filter TestParticula	ates passed through the	e filter, howe	ever no fre	e liquids w	ere observ	ed.					
۸	RPD of sample and duplic	ate evaluated using +	-/-RL. Conce	entrations a	are <5X the	RL. Qual	lifier Not Ap	plicable for I	Radiochem	istry.		
d	5-day BODThe 2:1 deple	etion requirement wa	s not met for	this samp	le							
e	5-day BODTest replicate reporting purposes	es show more than 30	% difference	between l	nigh and lov	v values. 7	The data is q	ualified per tl	ne method	and can be	e used fo	r
h	Preparation or preservation	n holding time was ex	kceeded									
	licates that spike recovery li	11.2	1				-					4
	elative Percent Difference ( es (5X) the contract require											
	sed to evaluate the DUP resi											

\* 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.

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## **QC Summary**

Report Date: June 1, 2020

Page 1 of 3

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

Workorder: 510757

**Contact:** 

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Alpha Spec Batch 1995261 ———										
QC1204557184 510752001 DUP Uranium-233/234	Uncertainty	1.56 +/-0.476		1.31 +/-0.436	pCi/g	17.7		(0% - 100%)	BXA4	05/09/20 08:39
Uranium-235/236	U	0.0219 +/-0.122	U	0.0496	pCi/g	N/A		N/A		
Uranium-238	-	1.60		+/-0.136	pCi/g	40.4*		(0%-20%)		
QC1204557186 LCS	Uncertainty	+/-0.470		+/-0.376	<b></b>					05/00/20 00 20
Uranium-233/234	Uncertainty			11.9 +/-1.09	pCi/g					05/09/20 08:39
Uranium-235/236	Uncertainty			0.344 +/-0.228	pCi/g					
Uranium-238	12.5 Uncertainty			13.2 +/-1.15	pCi/g		106	(75%-125%)		
QC1204557183 MB Uranium-233/234	Uncertainty		U	-0.0435 +/-0.0855	pCi/g					05/09/20 08:39
Uranium-235/236	Uncertainty		U	-0.0501 +/-0.0808	pCi/g					
Uranium-238	Uncertainty		U	0.0146 +/-0.0813	pCi/g					
Batch 1997576										
QC1204562383 510757007 DUP Uranium-233/234	Uncertainty	3510 +/-99.5		2820 +/-85.0	pCi/g	21.9*		(0%-20%)	MP2	05/19/20 11:47
Uranium-235/236	Uncertainty	159 +/-23.6		128 +/-20.2	pCi/g	21.6*		(0%-20%)		
Uranium-238	Uncertainty	582 +/-40.5		417 +/-32.7	pCi/g	33*		(0%-20%)		

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## **QC Summary**

				<u> </u>	<u>i                                    </u>	ummar	<u>. y</u>						
Workorder:	510757											Page	e 2 of 3
Parmname			NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date '	
Rad Alpha SpecBatch1	997576		_	_	_	_	_	_		_			
QC1204562384						71.6	·C:/-				MD2	05/10/2	0 11.47
Uranium-233/234	1		Uncertainty			71.6 +/-16.2	pCi/g				MP2	05/19/20	011:47
Uranium-235/23	5					4.52	pCi/g						
			Uncertainty			+/-5.03							
Uranium-238			97.3			97.1	pCi/g		99.8	(75%-125%)	)		
			Uncertainty			+/-18.7							
QC1204562382					ŦŢ	0.502						05/10/0	0.11.47
Uranium-233/234	4		Uncertainty		U	0.523 +/-1.70	pCi/g					05/19/20	011:47
Uranium-235/23	5				U	0.147	pCi/g						
			Uncertainty			+/-1.49							
Uranium-238			Uncertainty		U	-0.153 +/-0.856	pCi/g						
Rad Liquid Scintil Batch 1	<b>lation</b> 995246												
QC1204557146	5 510757007	DUP											
Technetium-99			U Uncertainty	-0.638 +/-2.39	U	-1.41 +/-2.24	pCi/g	N/A		N/A	A JJ3	05/12/20	0 05:51
QC1204557147	7 LCS												
Technetium-99			59.9			52.9	pCi/g		88.3	(75%-125%)	)	05/12/20	0 06:08
			Uncertainty			+/-3.84							
QC1204557145	5 MB				TT	1.72	<b>C</b> :/					05/10/0	0.05.05
Technetium-99			Uncertainty		U	-1.73 +/-2.25	pCi/g					05/12/20	0 05:35
רי ני <u>ר</u> ו	005047		-										
Batch 1 QC1204557150	995247	סוות											
Technetium-99	) 510757001	DUF	U	-1.41	U	-0.0762	pCi/g	N/A		N/A	A JJ3	05/12/20	0 08:22
			Uncertainty	+/-1.95		+/-2.19							
QC120455715	LCS												
Technetium-99			57.2			57.2	pCi/g		100	(75%-125%)	1	05/12/20	0 08:38
			Uncertainty			+/-3.64							
QC1204557148	B MB				TT	1.50	·C:/-					05/10/0	0.07.40
Technetium-99			Uncertainty		U	-1.52 +/-1.89	pCi/g					05/12/20	007:49
			•										ŀ

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### **QC Summary**

Worko	ordor: f	510757			-									
		510757	N	1014	Gammle			T 1-0 \$4 m			Banas	<u> </u>		ge 3 of 3
Parmna				NOM	Sample	Quai	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Notes:				-onfidon	level (1.06	( ciama)								
	-	-	culated at the 95% of are defined as follo		le level (1.90-	-sigma).								
**		is a Tracer o		· · · · ·										
<	-		value reported											
>			an value reported											
BD	Results a	are either be	elow the MDC or t	tracer rec <sup>,</sup>	overy is low									
FA	Failed and	alysis.												
Н	Analytica	al holding t	time was exceeded	1										
J	See case	narrative fo	for an explanation											
J	Value is	estimated												
K	Analyte <sub>f</sub>	present. Re	eported value may l	be biased	l high. Actual	t value is e	expected to	be lower.						
L	Analyte J	present. Re	eported value may b	be biased	l low. Actual	value is e	xpected to !	be higher.						
М	M if abov	ve MDC ar	nd less than LLD											
М	REMP R	$.esult > M\Gamma$	DC/CL and < RDL	<u>_</u>										
N/A	• RPD or 9	%Recovery	y limits do not apply	ly.										
N1	See case i	narrative												
ND	Analyte c	concentratio	ion is not detected a	above the	e detection lir	nit								
NJ	Consult (	Case Narrat	tive, Data Summar	ry packag	ge, or Project	Manager	concerning	, this qualif	ier					
Q	One or m	ore quality	y control criteria ha	ave not be	een met. Refe	er to the ap	pplicable na	arrative or I	DER.					
R	Sample r	results are re	rejected											
U	Analytev	was analyze	ed for, but not dete	ected abor	we the MDL,	MDA, M	DC or LOF	Э.						
UI	Gamma S	Spectroscor	pyUncertain iden	atificatior	a									
UJ	Gamma S	Spectroscor	pyUncertain iden	atification	a									
UL	Not cons;	idered dete	ected. The associate	.ed numbe	er is the repor	rted conce	entration, w	hich may b	e inaccurate	due to a low	/ bias.			
Х	Consult (	Case Narrat	ative, Data Summar	ry packag	ge, or Project	Manager	concerning	, this qualif	ier					
Y	Other spe	ecific quali	ifiers were required	d to prope	erly define the	e results. (	Consult cas	e narrative						
^	RPD of s	ample and	l duplicate evaluate	ed using +	+/-RL. Conce	entrations	are <5X the	e RL. Qua	lifier Not Ar	pplicable for	Radiochem	iistry.		
h	Preparati	on or prese	ervation holding tir	me was er	xceeded									
^ The R five tim RL is u * Indica	Relative Per mes (5X) the used to evalu cates that a Q	ercent Differ le contract re luate the DU Quality Cor	ontrol parameter wa	ined from limit (RL)	the sample du L). In cases wh thin specificat	luplicate ( here either	(DUP) is ev er the sample	valuated aga le or duplica	ainst the acce ate value is le	eptance criter	eria when the	ne sample i	is greater	
E DC		CDU T	ulto the velues list	tod one th	- management a	mounte r	not final age	noontration	~					

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 #: 510757

### **General Chemistry**

Product: Ion Chromatography Analytical Method: SW846 9056A Analytical Procedure: GL-GC-E-086 REV# 27 Analytical Batches: 1995237 and 1995236

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

<u>GEL Sample ID#</u>	Client Sample Identification
510757001	HF1-B2-(1-2)
510757002	HF1-B2-(2-4)
510757003	HF1-B2-(4-6)
510757004	HF1-B2-(6-8)
510757005	HF1-B2-(8-10)
1204557121	Method Blank (MB)
1204557122	Laboratory Control Sample (LCS)
1204557123	510757001(HF1-B2-(1-2)) Sample Duplicate (DUP)
1204557125	510757001(HF1-B2-(1-2)) 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
Fluoride	1204557125 (HF1-B2-(1-2)MS)	34.2* (75%-125%)

### **Technical Information**

### **Sample Dilutions**

The following samples 1204557123 (HF1-B2-(1-2)DUP), 1204557125 (HF1-B2-(1-2)MS), 510757001 (HF1-B2-(1-2)), 510757002 (HF1-B2-(2-4)) and 510757003 (HF1-B2-(4-6)) 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.

Amolysta	510757					
Analyte	001	002	003			
Nitrate	2X	5X	5X			

<u>Product:</u> Ion Chromatography <u>Analytical Method:</u> SW846 9056A <u>Analytical Procedure:</u> GL-GC-E-086 REV# 27 <u>Analytical Batches:</u> 1996294 and 1996293

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

<u>GEL Sample ID#</u>	Client Sample Identification
510757006	HF1-B3-(1-2)
510757007	HF1-B3-(2-4)
510757008	HF1-B3-(4-6)
510757009	HF1-B3-(6-8)
510757010	HF1-B3-(8-10)
1204559296	Method Blank (MB)
1204559297	Laboratory Control Sample (LCS)
1204559298	510757006(HF1-B3-(1-2)) Sample Duplicate (DUP)
1204559300	510757006(HF1-B3-(1-2)) 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
Fluoride	1204559300 (HF1-B3-(1-2)MS)	24.1* (75%-125%)

### **Technical Information**

### **Sample Dilutions**

The following samples 1204559298 (HF1-B3-(1-2)DUP), 1204559300 (HF1-B3-(1-2)MS), 510757006 (HF1-B3-(1-2)), 510757007 (HF1-B3-(2-4)), 510757008 (HF1-B3-(4-6)), 510757009 (HF1-B3-(6-8)) and 510757010 (HF1-B3-(8-10)) 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.

A	510757					
Analyte	006	007	008	009	010	
Fluoride	1X	50X	50X	25X	10X	
Nitrate	10X	50X	50X	25X	10X	

Product: pH Analytical Method: SW846 9045D Analytical Procedure: GL-GC-E-008 REV# 24 Analytical Batch: 1994735

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

<u>GEL Sample ID#</u>	Client Sample Identification
510757001	HF1-B2-(1-2)
510757002	HF1-B2-(2-4)
510757003	HF1-B2-(4-6)
510757004	HF1-B2-(6-8)
510757005	HF1-B2-(8-10)
510757006	HF1-B3-(1-2)
510757007	HF1-B3-(2-4)
510757008	HF1-B3-(4-6)
510757009	HF1-B3-(6-8)
510757010	HF1-B3-(8-10)
1204556042	Laboratory Control Sample (LCS)
1204556044	510581001(HF1-B1-(1-2)) 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
1204556044 (HF1-B1-(1-2)DUP)		Received 05-MAY-20, out of holding 04-MAY-20
510757001 (HF1-B2-(1-2))		Received 06-MAY-20, out of holding 05-MAY-20
510757002 (HF1-B2-(2-4))		Received 06-MAY-20, out of holding 05-MAY-20
510757003 (HF1-B2-(4-6))		Received 06-MAY-20, out of holding 05-MAY-20
510757004 (HF1-B2-(6-8))		Received 06-MAY-20, out of holding 05-MAY-20
510757005 (HF1-B2-(8-10))		Received 06-MAY-20, out of holding 05-MAY-20
510757006 (HF1-B3-(1-2))		Received 06-MAY-20, out of holding 05-MAY-20

510757007 (HF1-B3-(2-4))	Received 06-MAY-20, out of holding 05-MAY-20
510757008 (HF1-B3-(4-6))	Received 06-MAY-20, out of holding 05-MAY-20
510757009 (HF1-B3-(6-8))	Received 06-MAY-20, out of holding 05-MAY-20
510757010 (HF1-B3-(8-10))	Received 06-MAY-20, out of holding 05-MAY-20

### **Radiochemistry**

**Product:** Alphaspec U, Soil/Veg <u>Analytical Method:</u> DOE EML HASL-300, U-02-RC Modified <u>Analytical Procedure:</u> GL-RAD-A-011 REV# 27 <u>Analytical Batch:</u> 1995261

<u>Preparation Method:</u> Dry Soil Prep <u>Preparation Procedure:</u> GL-RAD-A-021 REV# 23 <u>Preparation Batch:</u> 1995223

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

<u>GEL Sample ID#</u>	<b><u>Client Sample Identification</u></b>
510757001	HF1-B2-(1-2)
510757002	HF1-B2-(2-4)
510757003	HF1-B2-(4-6)
510757004	HF1-B2-(6-8)
510757005	HF1-B2-(8-10)
510757006	HF1-B3-(1-2)
1204557183	Method Blank (MB)
1204557184	510752001(NonSDG) Sample Duplicate (DUP)
1204557186	Laboratory Control Sample (LCS)

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**

### Duplication Criteria between QC Sample and Duplicate Sample

The Sample and the Duplicate, (See Below), did not meet the relative percent difference requirement; however, they do meet the relative error ratio requirement with the value listed below.

Sample	Analyte	Value
1204557184 (Non SDG 510752001DUP)	Uranium-238	RPD 40.4* (0.00%-20.00%) RER 1.6 (0-3)

### **Miscellaneous Information**

#### **Manual Integration**

Manual integration of alpha spectroscopy spectra 510757003 (HF1-B2-(4-6)) was performed to fully separate counts in Regions of Interest which would have been biased.

#### **Additional Comments**

The tracer peak centroid for sample 510757003 (HF1-B2-(4-6)) is greater than 50 keV from the expected library energy value for the tracer; however, the tracer yield requirement was met and the tracer peak is within the tracer region of interest.

**Product:** Alphaspec U, Soil/Veg <u>Analytical Method:</u> DOE EML HASL-300, U-02-RC Modified <u>Analytical Procedure:</u> GL-RAD-A-011 REV# 27 <u>Analytical Batch:</u> 1997576

**Preparation Method:** Dry Soil Prep **Preparation Procedure:** GL-RAD-A-021 REV# 23 **Preparation Batch:** 1995224

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

<u>GEL Sample ID#</u>	Client Sample Identification
510757007	HF1-B3-(2-4)
510757008	HF1-B3-(4-6)
510757009	HF1-B3-(6-8)
510757010	HF1-B3-(8-10)
1204562382	Method Blank (MB)
1204562383	510757007(HF1-B3-(2-4)) Sample Duplicate (DUP)
1204562384	Laboratory Control Sample (LCS)

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**

### Duplication Criteria between QC Sample and Duplicate Sample

The Sample and the Duplicate, (See Below), did not meet the relative percent difference requirement; however, they do meet the relative error ratio requirement with the value listed below.

	Sample	Analyte	Value
12045623	83 (HF1-B3-(2-4)DUP)	Uranium-233/234	RPD 21.9* (0.00%-20.00%) RER 1.48 (0-3)

	Uranium-235/236	RPD 21.6* (0.00%-20.00%) RER 1.18 (0-3)
	Uranium-238	RPD 33* (0.00%-20.00%) RER 2.09 (0-3)

### **RDL** Met

The blank (See Below) did not meet the detection limit due to keeping the blank volume consistent with the other sample aliquots.

Sample	Analyte	Value
1204562382 (MB)	Uranium-233/234	Result 0.523 < MDA 3.21 > RDL 0.5 pCi/g
	Uranium-235/236	Result 0.147 < MDA 3.13 > RDL 0.5 pCi/g
	Uranium-238	Result -0.153 < MDA 2.16 > RDL 0.5 pCi/g

**Product: Dry Weight Preparation Method:** ASTM D 2216 (Modified) **Preparation Procedure:** GL-OA-E-020 REV# 13 **Preparation Batch:** 1995223

**Preparation Method:** Dry Soil Prep **Preparation Procedure:** GL-RAD-A-021 REV# 23 **Preparation Batch:** 1995223

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

<u>GEL Sample ID#</u>	Client Sample Identification
510757001	HF1-B2-(1-2)
510757002	HF1-B2-(2-4)
510757003	HF1-B2-(4-6)
510757004	HF1-B2-(6-8)
510757005	HF1-B2-(8-10)
510757006	HF1-B3-(1-2)
1204557002	510752001(NonSDG) 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.

**Product: Dry Weight Preparation Method:** ASTM D 2216 (Modified) **Preparation Procedure:** GL-OA-E-020 REV# 13 **Preparation Batch:** 1995224

<u>Preparation Method:</u> Dry Soil Prep <u>Preparation Procedure:</u> GL-RAD-A-021 REV# 23 <u>Preparation Batch:</u> 1995224

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

<u>GEL Sample ID#</u>	Client Sample Identification
510757007	HF1-B3-(2-4)
510757008	HF1-B3-(4-6)
510757009	HF1-B3-(6-8)
510757010	HF1-B3-(8-10)
1204557003	510757007(HF1-B3-(2-4)) 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.

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: 1995246

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

<u>GEL Sample ID#</u>	Client Sample Identification
510757007	HF1-B3-(2-4)
510757008	HF1-B3-(4-6)
510757009	HF1-B3-(6-8)
510757010	HF1-B3-(8-10)
1204557145	Method Blank (MB)
1204557146	510757007(HF1-B3-(2-4)) Sample Duplicate (DUP)
1204557147	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.

**Product: Liquid Scint Tc99, Soil** <u>Analytical Method:</u> DOE EML HASL-300, Tc-02-RC Modified <u>Analytical Procedure:</u> GL-RAD-A-059 REV# 5 <u>Analytical Batch:</u> 1995247

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

<u>GEL Sample ID#</u>	Client Sample Identification
510757001	HF1-B2-(1-2)
510757002	HF1-B2-(2-4)
510757003	HF1-B2-(4-6)
510757004	HF1-B2-(6-8)
510757005	HF1-B2-(8-10)
510757006	HF1-B3-(1-2)
1204557148	Method Blank (MB)
1204557150	510757001(HF1-B2-(1-2)) Sample Duplicate (DUP)
1204557151	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.

CEES Laboratories LLC		к	C	SAMPLE RECEIPT & REVIEW FORM
Client:				DC/AR/COCAVert Order E10757
Received By:				ate Received: 5/6/20
Carrier and Tracking Number				Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other
Suspected Hazard Information	Ycs	No	*If	Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation
A)Shipped as a DOT Hazardous?		$\bigvee$	Ha If (	zard Class Shipped: UN#: UN2910, Is the Radioactive Shipment Survey Compliant? Yes No
B) Did the client designate the samples are to be received as radioactive?		/	со	C notation or radioactive stickers on containers equal client designation.
C) Did the RSO classify the samples as radioactive?	$\left \right $		Ma Cla	aximum Net Counts Observed* (Observed Counts - Area Background Counts): 800 (PM) mR/Hr assified as: Rad 1 Rad 2 Rad 3 HF1-B3-(6-8), HF1-B-(4-6), HF1-B3-(6-4), +HF1-B3-(8-10)
D) Did the client designate samples are hazardous?		$\checkmark$	1.14	C notation or hazard labels on containers equal client designation.
E) Did the RSO identify possible hazards?		$\checkmark$	If D PCI	O or E is yes, select Hazards below. B's Flammable Foreign Soil RCRA Asbestos Beryllium Other:
Sample Receipt Criteria	Yes	VN	No.	( and an early for field of filling fields)
1 Shipping containers received intact and sealed?	1	Contraction of the second		Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	$\mathbb{Z}$			Circle Applicable: Client contacted and provided COC COC created upon receipt
3 Samples requiring cold preservation within $(0 \le 6 \text{ deg. C})$ ?*	$\checkmark$	Comment.		Preservation Method Wet Ice Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP:
Daily check performed and passed on IR temperature gun?				Temperature Device Serial #: <u>ZH4~16</u> 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?	$\checkmark$	4-063		Sample ID's and Containers Affected: If Preservation added 1 of#
7 Do any samples require Volatile Analysis?			1	If Yes, are Encores or Soil Kits present for solids? Yes       No       NA       (If yes, take to VOA Freezer)         De liquid VOA viais contain acid preservation? Yes       No       NA       (If unknown, select.No)         Are liquid VOA vials free of headspace? Yes       No       NA       (If unknown, select.No)         Sample ID's and containers affected:       If unknown, select.No       If unknown, select.No
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?	$\bigwedge$			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 <u>GEL provided?</u> COC form is properly signed in			/	
relinquished/received sections?	$\checkmark$			Circle Applicable: Not relinquished Other (describe)
omments (Use Continuation Form if needed):				als NRG Date 517 20 Page 1 of GL-CHL-SR-001 Rev 6
PM (or PMA	) revi	ew:	nitia	als NR5 Date 517 20 Page 1 of 1 CL

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State	Certification
Alaska	17-018
Alaska Drinking Water	SC00012
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
Massachusetts PFAS Approv	Letter
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	2019–165
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-20-17
Utah NELAP	SC000122020-32
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

List of current GEL Certifications as of 01 June 2020



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 04, 2020

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

Re: Soil and Vegetation Analysis Work Order: 510807

Dear Ms. Logsdon:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on May 07, 2020. 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. 4707.

Sincerely,

Samuel Hogan for Katelyn Gray Project Manager

Purchase Order: 4500799254 Enclosures



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#### Certificate of Analysis Report for

WNUC008 Westinghouse Electric Co, LLC (4500775170)

Client SDG: 510807 GEL Work Order: 510807

#### 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 See case narrative for an explanation
- 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, Katelyn Gray.

Lond Upm

Reviewed by

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

## **Certificate of Analysis**

						ary 515			R	eport Dat	te:	June 4,	2020
	Company : Address :		stinghouse Electri Drawer R	c Company, LL	С								
	Contact: Project:	Ms.	umbia, South Caro Cynthia Logsdon l and Vegetation A										
	Client Sample ID: Sample ID: Matrix:	510 Soi					oject: ient ID	:	WNU WNU	C00821 C008			
	Collect Date: Receive Date: Collector: Moisture:												
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	vst Date	Time	e Batch	Method
Ion Chrom	• • •												
	56A Fluoride and Ni	trate											
Fluoride Nitrate-N			65.8 69.3	1.72 1.67		mg/kg mg/kg	9.90 9.90		JLD1	05/13/20	1033	1995671	1
	nd Ion Analysis		09.5	1.07	5.05	mg/kg	9.90	5					
	Corrosivity (pH<20)	·>14)	"As Received"										
Corrosivity	conosivity (pri<20	H	5.46	0.0100	0.100	SU		1	RXB5	05/28/20	1438	1995459	2
•	ing Prep Methods w	ere p	erformed:										
Method	Desc	-			Analyst	Date		Time	e Pr	ep Batch			
SW846 90564		1	A Total Anions in Soil		CJ2	05/12/20		2001		95670			
The follow	ving Analytical Meth	ods v	were performed:										
Method	Descr		•				Analys	t Cor	nment	s			
1	SW846						~						
2	SW846	9045I	)										
Notes:													
	eaders are defined as	follo	ws:										
DE: Diluti	on Factor		Lall	Critical Laval									

DF: Dilution FactorLDL: Detection LimitPMDA: Minimum Detectable ActivityRMDC: Minimum Detectable ConcentrationSt

Lc/LC: Critical Level PF: Prep Factor RL: Reporting Limit SQL: Sample Quantitation Limit

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# **Certificate of Analysis**

					<u>a1y 515</u>		Report Dat	te: June 4	, 2020
	Company :	Westinghouse Electric	Company, LLC	2					
	Address :	PO Drawer R							
		Columbia, South Caroli	ina 29205						
	Contact:	Ms. Cynthia Logsdon							
	Project:	Soil and Vegetation An	alysis						
	Client Sample ID:	HF1-B4-(2-4)			Pro	ject:	WNUC00821		
	Sample ID:	510807002			Clie	ent ID:	WNUC008		
	Matrix:	Soil							
	Collect Date:	06-MAY-20 08:35							
	Receive Date:	07-MAY-20							
	Collector:	Client							
	Moisture:	1.71%							
Parameter	Quali	fier Result	DL	RL	Units	PF DF	Analyst Date	Time Batch	Method
Ion Chroma	atography								
SW846 905	66A Fluoride and Ni	itrate "Dry Weight Correc	ted"						
Nitrate-N		70.4	1.68	5.10	mg/kg	10.0 5	JLD1 05/14/20		
Fluoride		335	3.47	10.2	mg/kg	10.0 10	JLD1 05/14/20	1038 1995671	2
	d Ion Analysis								
	Corrosivity (pH<2or	r>14) "As Received"	0.0100	0.100	CII	1	DVD5 05/00/20	1442 1005450	
Corrosivity		Н 3.97	0.0100	0.100	SU	1	RXB5 05/28/20	1443 1995459	) 3
	ing Prep Methods w	-			<b>D</b> (		<b>D D</b> 1		
Method		ription		Analyst	Date	Time			
SW846 9056A		6 9056A Total Anions in Soil		CJ2	05/12/20	2001	1995670		
	· ·	nods were performed:							
Method	Descr	•			A	Analyst Co	mments		
1		5 9056A							
2 3		5 9056A 5 9045D							
5	5 W 840								
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

Page 4 of 47 SDG: 510807

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## **Certificate of Analysis**

						ary 515			_	_			
									R	eport Dat	ie:	June 4	, 2020
	Company :		stinghouse Electric C	Company, LLC	2								
	Address :	PO	Drawer R										
		Col	umbia, South Carolii	na 29205									
	Contact:		Cynthia Logsdon										
	Project:		and Vegetation Ana	lysis									
	Client Sample ID:		-B4-(4-5.33)	-		Pro	oject:		WNU	C00821			
	Sample ID:		807003				ent ID	:	WNU				
	Matrix:	Soil						-					
	Collect Date:		MAY-20 08:55										
	Receive Date:		MAY-20										
	Collector:	Clie											
	Moisture:	4.19											
	Woisture.	4.15	70										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	vst Date	Time	e Batch	Metho
Ion Chrom	atography												
SW846 903	56A Fluoride and Ni	trate '	Dry Weight Correct	ed"									
Fluoride			359	3.56	10.5	mg/kg	10.0	10	JLD1	05/14/20	0350	1995671	1
Nitrate-N			82.5	3.45	10.5	mg/kg	10.0	10					
	nd Ion Analysis												
	Corrosivity (pH<20)	:>14)											
Corrosivity		Н	3.29	0.0100	0.100	SU		1	RXB5	05/28/20	1446	1995459	2
	ing Prep Methods w	ere pe	erformed:										
Method	Descr	1			Analyst	Date	,	Time		ep Batch			
SW846 9056	A SW84	6 90564	A Total Anions in Soil		CJ2	05/12/20		2001	19	95670			
The follow	ving Analytical Meth	ods v	vere performed:										
Method	Descr					A	Analys	t Cor	nment	s			
1	SW846												
2	SW846	9045E	)										
Notes:													
Column he	eaders are defined as	follo	ws:										
DF: Diluti				Critical Level									

DF: Dilution Factor DL: Detection Limit MDA: Minimum Detectable Activity MDC: Minimum Detectable Concentration

Lc/LC: Critical Level PF: Prep Factor RL: Reporting Limit SQL: Sample Quantitation Limit

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# **Certificate of Analysis**

			<u> </u>			a1y 515			R	eport Dat	e:	June 4,	2020
	Company : Address :		stinghouse Electric Co Drawer R	ompany, LLC	2								
		Col	umbia, South Carolin	a 29205									
	Contact: Project:	Ms.	Cynthia Logsdon and Vegetation Anal										
	Client Sample ID:	HF	1-B5-(1-2)			Pro	oject:		WNU	C00821			
	Sample ID:	510	807004			Cli	ent ID:		WNU	C008			
	Matrix:	Soil	l										
	Collect Date:	06-1	MAY-20 09:47										
	Receive Date:	07-1	MAY-20										
	Collector:	Clie	ent										
	Moisture:	8.03	3%										
Parameter	Qual	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	e Batch	Method
Ion Chroma	atography												
SW846 905	56A Fluoride and N	itrate	"Dry Weight Correcte	ed"									
Fluoride			1.55	0.372	1.09	mg/kg	10.1	1	JLD1	05/13/20		1995671	1
Nitrate-N			232	3.61	10.9	mg/kg	10.1	10	JLD1	05/14/20	0421	1995671	2
	d Ion Analysis												
	Corrosivity (pH<20			0.0100	0.100	SU		1	DVD5	05/29/20	1447	1005450	2
Corrosivity		Н	5.07	0.0100	0.100	30		1	кавэ	05/28/20	1447	1995459	3
	ing Prep Methods w	-				Data				an Datah			
Method SW846 9056A		ription	n A Total Anions in Soil		Analyst CJ2	Date 05/12/20		<u>Fime</u> 2001		ep Batch 95670			
					CJ2	03/12/20	4	.001	19	93070			
-	ring Analytical Met		1					~					
Method	Descr SW840					A	Analyst	Cor	nment	8			
1 2	SW840 SW840												
3	SW840												
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	n SQL: Sample Quantitation Limit

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## **Certificate of Analysis**

			-	Certifica		aly 515			D	eport Dat	to.	June 4,	2020
	Company :	We	stinghouse Electric C	Company, LLC	1				К		с.	June 4,	2020
	Address :		Drawer R	1 57									
		Col	umbia, South Carolii	na 29205									
	Contact:	Ms.	Cynthia Logsdon										
	Project:	Soi	l and Vegetation Ana	alysis									
	Client Sample ID:	HF	1-B5-(2-4)			Pro	ject:		WNU	C00821			
	Sample ID:	510	807005			Cli	ent ID	:	WNU	C008			
	Matrix:	Soil	l										
	Collect Date:	06-	MAY-20 10:15										
	Receive Date:		MAY-20										
	Collector:	Clie											
	Moisture:	7.57											
	Moisture.	1.5	7 70										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chrom	atography												
SW846 905	56A Fluoride and Ni	trate	"Dry Weight Correct	ted"									
Fluoride			135	3.72	11.0	mg/kg	10.1	10	JLD1	05/14/20	0452	1995671	1
Nitrate-N			288	3.62	11.0	mg/kg	10.1	10					
	nd Ion Analysis												
	Corrosivity (pH<20)	:>14)											
Corrosivity		Н	4.39	0.0100	0.100	SU		1	RXB5	05/28/20	1448	1995459	2
The follow	ing Prep Methods w	ere po	erformed:										
Method	Desci	iptio	n		Analyst	Date	,	Time	e Pr	ep Batch			
SW846 9056A	A SW84	5 9056.	A Total Anions in Soil		CJ2	05/12/20		2001	19	95670			
The follow	ving Analytical Meth	ods v	were performed:										
Method	Descr	ption	l			A	Analys	t Cor	nments	8	-		
1	SW846	9056A	A										
2	SW846	90451	)										
Notes:													
Column he	aders are defined as	follo	ws.										
DF Diluti		10110		Critical Level									

DF: Dilution FactorLc/LC: CDL: Detection LimitPF: PrepMDA: Minimum Detectable ActivityRL: RepoMDC: Minimum Detectable ConcentrationSQL: San

Lc/LC: Critical Level PF: Prep Factor RL: Reporting Limit SQL: Sample Quantitation Limit

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## **Certificate of Analysis**

						aly 515			R	eport Dat	e:	June 4,	2020
	Company : Address :		stinghouse Electric Drawer R	c Company, LLC									
			umbia, South Caro										
	Contact: Project:		Cynthia Logsdon and Vegetation A										
	Client Sample ID:		I-B5-(4-6)	lindiysis		Dro	oject:		WNU	C00821			
	Sample ID:		807006				ent ID	•	WNU				
	Matrix:	Soil				Ch		•		0000			
	Collect Date:		MAY-20 10:45										
	Receive Date:		MAY-20 MAY-20										
	Collector:	Clie											
	Moisture:	14.3											
	Wioldture.	1 1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chroma	atography												
SW846 905	56A Fluoride and Ni	trate	"Dry Weight Corre	ected"									
Fluoride			21.7	0.396	1.16	mg/kg	9.98		JLD1	05/13/20		1995671	1
Nitrate-N			440	9.60	29.1	mg/kg	9.98	25	JLD1	05/14/20	1312	1995671	2
	nd Ion Analysis												
	Corrosivity (pH<20)			0.0100	0 100	CI I		1	DVD5	05/00/00	1 4 4 0	1005450	2
Corrosivity		Н	4.28	0.0100	0.100	SU		1	RXB5	05/28/20	1448	1995459	3
	ing Prep Methods w	-				Data		<b>—</b> •	D	D 4 1			
Method SW846 90564	Descr		1 A Total Anions in Soil		Analyst CJ2	Date		Time		ep Batch 95670			
					CJ2	05/12/20		2001	19	95670			
	ving Analytical Meth		•										
Method	Descr					A	Analys	t Coi	nment	s			
1	SW846												
2 3	SW846 SW846												
J	3 W 840	704JL	,										
Notes:													

Column headers are defined as follows: Lc/LC: Critical Level DF: Dilution Factor PF: Prep Factor **DL:** Detection Limit MDA: Minimum Detectable Activity RL: Reporting Limit MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

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### **Certificate of Analysis**

						a1y 515			R	eport Dat	te:	June 4,	2020
	Company : Address :		stinghouse Electric ( Drawer R	Company, LLC	2								
		Col	umbia, South Caroli	ina 29205									
	Contact:	Ms.	Cynthia Logsdon										
	Project:	Soi	l and Vegetation An	alysis									
	Client Sample ID:	HF	1-B5-(6-8)			Pro	ject:		WNU	C00821			
	Sample ID:	510	807007			Cli	ent ID	:	WNU	C008			
	Matrix:	Soil	l										
	Collect Date:	06-1	MAY-20 11:51										
	Receive Date:	07-1	MAY-20										
	Collector:	Clie	ent										
	Moisture:	11.4	4%										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	vst Date	Time	e Batch	Method
Ion Chroma	atography												
SW846 905	56A Fluoride and Ni	trate	"Dry Weight Correc	ted"									
Fluoride		U	ND	0.377	1.11	mg/kg	9.83	1	JLD1	05/13/20	0556	1995671	1
Nitrate-N			150	1.83	5.55	mg/kg	9.83	5	JLD1	05/14/20	0656	1995671	2
	nd Ion Analysis												
	Corrosivity (pH<20					~~~							
Corrosivity		Н	5.67	0.0100	0.100	SU		1	RXB5	05/28/20	1449	1995459	3
	ing Prep Methods w	-											
Method	Descr				Analyst	Date		Time		ep Batch			
SW846 9056A			A Total Anions in Soil		CJ2	05/12/20		2001	19	95670			
The follow	ving Analytical Meth	ods v	were performed:										
Method	Descr					A	Analyst	t Coi	mment	s			
1	SW846												
2	SW846												
3	SW846	90451	)										
Notes:													

#### Column headers are defined as follows: Lc/LC: Critical Level DF: Dilution Factor PF: Prep Factor **DL:** Detection Limit MDA: Minimum Detectable Activity RL: Reporting Limit MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

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## **Certificate of Analysis**

					ie of Alla	ary 515							
									R	eport Dat	te:	June 4	, 2020
	Company :		stinghouse Electric (	Company, LLC	2								
	Address :	PO	Drawer R										
		Col	umbia, South Caroli	na 29205									
	Contact:		Cynthia Logsdon										
	Project:		and Vegetation An	alysis									
	Client Sample ID:	HF1	-B5-(8-10)	-		Pro	oject:		WNU	C00821			
	Sample ID:		807008				ent ID	:	WNU	C008			
	Matrix:	Soil											
	Collect Date:		MAY-20 13:40										
	Receive Date:		MAY-20										
	Collector:	Clie											
	Moisture:	12.6											
	Moisture:	12.0	1%0										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	vst Date	Time	e Batch	Method
Ion Chrom	atography										-		
SW846 903	56A Fluoride and Ni	trate '	Dry Weight Correc	ted"									
Fluoride		J	0.879	0.393	1.16	mg/kg	10.1	1	JLD1	05/13/20	0626	1995671	1
Nitrate-N			54.3	0.381	1.16	mg/kg	10.1	1					
Titration a	nd Ion Analysis												
	Corrosivity (pH<20)	r>14)	"As Received"										
Corrosivity		Н	4.35	0.0100	0.100	SU		1	RXB5	05/28/20	1450	1995459	2
The follow	ing Prep Methods w	ere pe	erformed:										
Method	Desci	iption	1		Analyst	Date	,	Time	e Pr	ep Batch			
SW846 90564	A SW840	5 90564	A Total Anions in Soil		CJ2	05/12/20		2001	19	95670			
The follow	ving Analytical Meth	ods v	vere performed:										
Method	Descr	iption				A	Analyst	t Cor	nment	s			
1	SW846												
2	SW846	9045E	)										
Notes:													
Column he	eaders are defined as	follo	ws.										
DF: Diluti		10110		Critical Level									

DF: Dilution Factor DL: Detection Limit MDA: Minimum Detectable Activity MDC: Minimum Detectable Concentration

Lc/LC: Critical Level PF: Prep Factor RL: Reporting Limit SQL: Sample Quantitation Limit

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### **Certificate of Analysis**

								Re	port Dat	e: Jun	e 4, 2020
	Company : Address :	Westinghouse Elec PO Drawer R	etric Company, LLC								
	Contact: Project:	Columbia, South C Ms. Cynthia Logso Soil and Vegetatio	lon								
	Client Sample ID:				Pro	ject:		WNUC	200821		
	Sample ID:	510807009			Clie	ent ID	:	WNUC	2008		
	Matrix:	Soil									
	Collect Date:	06-MAY-20 14:20									
	Receive Date:	07-MAY-20									
	Collector:	Client									
Parameter	Quali	fier Result	DL	RL	Units	PF	DE	Analyz	st Date	Time Der	ch Method
		nei Kesuit	DL	KL	Units	L L.	DI	Analys	st Date		
	d Ion Analysis	= 14) "As Deserved"									
SW9045D Corrosivity	Confosivity (pri<20)	r>14) "As Received" H 8.09	0.0100	0.100	SU		1	RXB5	05/28/20	1450 1995	459 1
2	ing Analytical Meth	nods were performed		0.100	20				22,20,20		
Method	Descri	1	·		А	nalvs	t Cor	nments			
1	SW846					j b					

Notes:

Column headers are defined as follows:DF: Dilution FactorLc/LC: Critical LevelDL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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## **Certificate of Analysis**

			2			aly 515			R	eport Dat	te:	June 4,	2020
	Company : Address :		stinghouse Electric C Drawer R	ompany, LLC						T T			
		Col	umbia, South Carolin	na 29205									
	Contact:		Cynthia Logsdon										
	Project:	Soil	and Vegetation Ana	lysis									
	Client Sample ID:	HF	I-B6-(2-4)			Pro	oject:		WNU	C00821			
	Sample ID:	510	807010			Cli	ent ID	:	WNU	C008			
	Matrix:	Soil											
	Collect Date:	06-1	MAY-20 14:40										
	Receive Date:		MAY-20										
	Collector:	Clie											
	Moisture:	3.15	0%										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	vst Date	Time	Batch	Method
Ion Chrom	atography												
SW846 905	56A Fluoride and Ni	trate	"Dry Weight Correct	ed"									
Fluoride			5.67	0.348	1.02	mg/kg	9.90	1	JLD1	05/13/20	0657	1995671	1
Nitrate-N			14.5	0.337	1.02	mg/kg	9.90	1					
Titration ar	nd Ion Analysis												
SW9045D	Corrosivity (pH<201	>14)	"As Received"										
Corrosivity		Н	6.35	0.0100	0.100	SU		1	RXB5	05/28/20	1452	1995459	2
The follow	ing Prep Methods w	ere pe	erformed:										
Method	Descr	iptio	n		Analyst	Date	,	Time	e Pr	ep Batch			
SW846 9056A	4 SW846	9056	A Total Anions in Soil		CJ2	05/12/20		2001	19	95670			
The follow	ving Analytical Meth	ods v	vere performed:										
Method	Descri	ption	l			A	Analyst	Cor	nment	s			
1	SW846	9056A	A										
2	SW846	90451	)										
Notes:													
Column he	eaders are defined as	follo	ws:										
DF. Diluti	on Factor			ritical Level									

DF: Dilution FactorLDL: Detection LimitPMDA: Minimum Detectable ActivityRMDC: Minimum Detectable ConcentrationS

Lc/LC: Critical Level PF: Prep Factor RL: Reporting Limit SQL: Sample Quantitation Limit

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# **Certificate of Analysis**

						<u>aiy515</u>			R	eport Dat	te:	June 4,	2020
	Company : Address :		stinghouse Electric Drawer R	Company, LLC	2								
			umbia, South Carol	ina 29205									
	Contact: Project:		. Cynthia Logsdon l and Vegetation Ar	nalysis									
	Client Sample ID:	HF	1-B6-(4-5.67)			Pro	oject:		WNU	C00821			
	Sample ID:	510	807011			Cli	ent ID	:	WNU	C008			
	Matrix:	Soi	1										
	Collect Date:		MAY-20 15:25										
	Receive Date:		MAY-20										
	Collector:	Clie											
	Moisture:	4.4											
	Moisture:	4.4	/ %										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	vst Date	Time	Batch	Method
Ion Chroma	atography												
SW846 905	56A Fluoride and Ni	trate	"Dry Weight Corre	cted"									
Fluoride			43.8	0.350	1.03	mg/kg	9.83	1	JLD1	05/13/20	0728	1995671	1
Nitrate-N			38.0	0.339	1.03	mg/kg	9.83	1					
Titration ar	nd Ion Analysis												
SW9045D	Corrosivity (pH<201	:>14)	"As Received"										
Corrosivity		Н	6.22	0.0100	0.100	SU		1	RXB5	05/28/20	1454	1995459	2
The follow	ing Prep Methods w	ere p	erformed:										
Method	Descr	iptio	n		Analyst	Date	,	Time	e Pr	ep Batch			
SW846 9056A	A SW846	5 9056	A Total Anions in Soil		CJ2	05/12/20		2001	19	95670			
The follow	ving Analytical Meth		-										
Method	Descri	-				A	Analys	Cor	nment	s			
1	SW846												
2	SW846	90451	)										
Notes:													
Column he	aders are defined as	follo	ws:										
DF: Diluti				Critical Level									

DF: Dilution FactorLcDL: Detection LimitPFMDA: Minimum Detectable ActivityRIMDC: Minimum Detectable ConcentrationSC

Lc/LC: Critical Level PF: Prep Factor RL: Reporting Limit SQL: Sample Quantitation Limit

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### **Certificate of Analysis**

						ary 515			R	eport Dat	e:	June 4,	2020
	Company : Address :		stinghouse Electric ( Drawer R	Company, LLC									
		Col	umbia, South Caroli	na 29205									
	Contact:		Cynthia Logsdon										
	Project:	Soi	and Vegetation Ana	alysis									
	Client Sample ID:	HF	I-B7-(0-2)			Pro	oject:		WNU	C00821			
	Sample ID:	510	807012			Cli	ent ID	:	WNU	C008			
	Matrix:	Soil	l										
	Collect Date:	06-1	MAY-20 15:53										
	Receive Date:	07-1	MAY-20										
	Collector:	Clie	ent										
	Moisture:	3.63	3%										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chroma	atography												
SW846 905	56A Fluoride and Ni	trate	"Dry Weight Correc	ted"									
Fluoride			40.4	0.349	1.03	mg/kg	9.90	1	JLD1	05/13/20	0759	1995671	1
Nitrate-N			127	1.70	5.14	mg/kg	9.90	5	JLD1	05/14/20	0726	1995671	2
	nd Ion Analysis												
	Corrosivity (pH<20)				0.100					0.5/20/20		1005150	
Corrosivity		Η	4.72	0.0100	0.100	SU		1	RXB5	05/28/20	1455	1995459	3
	ing Prep Methods w	-											
Method	Descr				Analyst	Date		Time		ep Batch			
SW846 9056A			A Total Anions in Soil		CJ2	05/12/20		2001	19	95670			
	ing Analytical Meth		•										
Method	Descr					A	Analyst	t Coi	nment	8			
1	SW846												
2 3	SW846 SW846												
5	5 W 840	70431	,										
Notes:													

Column headers are defined as follows: Lc/LC: Critical Level DF: Dilution Factor PF: Prep Factor **DL:** Detection Limit MDA: Minimum Detectable Activity RL: Reporting Limit MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

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## **Certificate of Analysis**

			<u> </u>		it of Alla	a1 y 515			ъ			<b>T</b> 4	2020
									R	eport Dat	te:	June 4	, 2020
	Company :		stinghouse Electric C	ompany, LLC	2								
	Address :	PO	Drawer R										
		Col	umbia, South Carolin	a 29205									
	Contact:		Cynthia Logsdon										
	Project:	Soil	and Vegetation Ana	lysis									
	Client Sample ID:	HF1	-B7-(2-4)			Pro	oject:		WNU	C00821			
	Sample ID:		807013			Cli	ent ID	:	WNU	C008			
	Matrix:	Soil											
	Collect Date:	06-1	MAY-20 16:13										
	Receive Date:		MAY-20										
	Collector:	Clie											
	Moisture:	3.49											
	Moisture.	5.47	//0										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	st Date	Time	Batch	Method
Ion Chrom	atography										-		
SW846 90	56A Fluoride and Ni	trate '	'Dry Weight Correcte	ed"									
Fluoride			158	3.51	10.3	mg/kg	9.98	10	JLD1	05/14/20	0757	1995671	1
Nitrate-N			178	3.41	10.3	mg/kg	9.98	10					
	nd Ion Analysis												
	Corrosivity (pH<20)												
Corrosivity		Н	4.41	0.0100	0.100	SU		1	RXB5	05/28/20	1456	1995459	2
	ring Prep Methods w	-											
Method	Desci	1			Analyst	Date		Time		ep Batch			
SW846 9056.	A SW840	5 90562	A Total Anions in Soil		CJ2	05/12/20		2001	19	95670			
The follow	ving Analytical Meth	ods v	vere performed:										
Method	Descr					A	Analys	t Cor	nment	s			
1	SW846												
2	SW846	9045E	)										
Notes:													
Column he	eaders are defined as	follo	ws:										
DF: Diluti				ritical Level									

DF: Dilution FactorIDL: Detection LimitFMDA: Minimum Detectable ActivityFMDC: Minimum Detectable ConcentrationS

Lc/LC: Critical Level PF: Prep Factor RL: Reporting Limit SQL: Sample Quantitation Limit

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## **Certificate of Analysis**

					it of All	ary 515			Б			<b>T</b> 4	2020
	Company	Wa	stinghouse Electric	Company II	C				R	eport Da	te:	June 4,	, 2020
	Company : Address :		Drawer R	Company, LL	L								
		0.1		1									
	Contooti		umbia, South Caro	lina 29205									
	Contact:		Cynthia Logsdon										
	Project:		and Vegetation A	naiysis									
	Client Sample ID:		I-B7-(4-5.42)				oject:			C00821			
	Sample ID:	510	807014			Cli	ient ID	:	WNU	C008			
	Matrix:	Soil											
	Collect Date:	06-1	MAY-20 16:31										
	Receive Date:	07-1	MAY-20										
	Collector:	Clie	ent										
	Moisture:	2.69											
	woisture.	2.02	//0										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analy	vst Date	Time	e Batch	Method
Ion Chrom	atography												
SW846 903	56A Fluoride and Ni	trate	"Dry Weight Corre	ected"									
Fluoride			121	1.76	5.19	mg/kg	10.1	5	JLD1	05/14/20	0828	1995671	1
Nitrate-N			83.0	1.71	5.19	mg/kg	10.1	5					
Titration a	nd Ion Analysis												
	Corrosivity (pH<201	>14)	"As Received"										
Corrosivity		Н	5.21	0.0100	0.100	SU		1	RXB5	05/28/20	1457	1995459	2
The follow	ing Prep Methods w	ere pe	erformed:										
Method	Desci	iptio	1		Analyst	Date		Time	e Pr	ep Batch			
SW846 9056	A SW846	9056	A Total Anions in Soil		CJ2	05/12/20		2001	19	95670			
The follow	ving Analytical Meth	ods v	vere performed:										
Method	Descr	ption				A	Analys	t Coi	nment	s			
1	SW846	9056A	Δ										
2	SW846	90451	)										
Notes:													
Column be	eaders are defined as	follo	ws.										
DF: Diluti		10110		Critical Level									

DF: Dilution FactorLc/LC:DL: Detection LimitPF: PreMDA: Minimum Detectable ActivityRL: ReMDC: Minimum Detectable ConcentrationSQL: S

Lc/LC: Critical Level PF: Prep Factor RL: Reporting Limit SQL: Sample Quantitation Limit

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### **Certificate of Analysis**

			2	<u>ser meute</u>		<u>, , , , , , , , , , , , , , , , , , , </u>			Re	eport Dat	e: Ju	ine 4,	2020
	Company : Address :		tinghouse Electric Co Drawer R	ompany, LLC									
	Contact: Project:	Ms.	umbia, South Carolin Cynthia Logsdon and Vegetation Anal										
	Client Sample ID:	HF1	-B7-Refusal			Pro	ject:			200821			
	Sample ID:	5108	807015			Cli	ent ID	:	WNU	2008			
	Matrix:	Soil											
	Collect Date:	06-N	IAY-20 16:31										
	Receive Date:	07-N	IAY-20										
	Collector:	Clie	nt										
Parameter	Quali	fier	Result	DL	RL	Units	PF	DF	Analys	st Date	Time I	Batch	Method
Titration ar	nd Ion Analysis												
SW9045D	Corrosivity (pH<201	>14)	"As Received"										
Corrosivity		Н	4.58	0.0100	0.100	SU		1	RXB5	05/28/20	1458 19	995459	1
The follow	ving Analytical Meth	ods w	ere performed:										
Method	Descri	ption				A	Analys	t Cor	nments				
1	SW846	9045D					-						

Notes:

Column headers are defined as follows:DF: Dilution FactorLc/LC: Critical LevelDL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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# **Certificate of Analysis**

				Ce	runca	te of All	larysis							
	Company : Address :		stinghouse Drawer R	Electric Com	pany, LL(	C				]	Report Dat	te:	June 4,	2020
	Address :	PO	Drawer K											
	Contact: Project:	Ms	. Cynthia L	th Carolina 2 ogsdon ation Analysis										
	Client Sample ID: Sample ID:	HF	0					roject: lient I			JC00821 JC008			
	Matrix:	Soi	1											
	Collect Date:	06-	MAY-20 0	8:23										
	Receive Date:	07-	MAY-20											
	Collector:	Clie	ent											
	Moisture:	1.89	9%											
Parameter	Qual	ifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Anal	yst Date	Time	Batch	Method
Rad Alpha	Spec Analysis			<u> </u>							<u>,</u>			
-	U, Soil/Veg "Dry W	Veight	Corrected'	,										
Uranium-233/			563	+/-16.4	0.997	0.500	pCi/g			MP2	05/11/20	1421	1995498	1
Uranium-235/			29.0	+/-4.16	0.937	0.500	pCi/g							
Uranium-238			110	+/-7.26	0.595	0.500	pCi/g							
-	Scintillation Analy													
	nt Tc99, Soil "As Re			10.00		1.00	<b>C</b> :/				05/17/20		1005744	2
Technetium-9		U	-0.924	+/-2.26	4.01	1.00	pCi/g			JJ3	05/17/20	0509	1995744	2
Method	ring Prep Methods w					A 1 /	Data		<b>T</b> '		man Datah			
Dry Soil Prep		riptio	n o GL-RAD-A-	021		Analyst CXB7	Date 05/07/20	)	Time 1252		rep Batch			
• •	•	-				CAD/	05/07/20	J	1232	1	<i>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</i>			
-	ving Analytical Met		-	mea:				. 1						
Method 1	Desci			2-RC Modified				Analy	vst Cor	nmen	ts			
2				02-RC Modified										
Surrogate/7	Fracer Recovery	Test				]	Result	Nomi	nal	Reco	overy%	Accep	table L	imits
Uranium-232		Alphas	pec U, Soil/Ve	eg "Dry Weight C	orrected"						25.9	(15	5%-125%)	1
Technetium-9	99m Tracer	Liquid	Scint Tc99, So	oil "As Received"							95.1	(15	5%-125%)	1
Notes: Counting U	Jncertainty is calcul	ated a	t the 95% c	confidence lev	el (1.96-s	igma).								
Column he	eaders are defined as	s follo	ws:											
DF: Diluti		-		Lc/LC: Critic	cal Level									
DL: Detec	tion Limit			PF: Prep Fac	tor									

DL: Detection Limit MDA: Minimum Detectable Activity MDC: Minimum Detectable Concentration

PF: Prep Factor RL: Reporting Limit SQL: Sample Quantitation Limit

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# **Certificate of Analysis**

				Cel	runca	te of Al	1a1y515							
	Company : Address :		stinghous Drawer R	e Electric Com	pany, LLO	2				]	Report Dat	e:	June 4,	2020
	Contact: Project:	Ms.	Cynthia	outh Carolina 2 Logsdon etation Analysis										
	Client Sample ID:		I-B4-(2-4	•	, 		P	roject:		WN	UC00821			
	Sample ID:		807002	)				lient I			UC008			
	Matrix:	Soil					C	iieiit i	2.		00000			
	Collect Date:	06-]	MAY-20	08:35										
	Receive Date:	07-1	MAY-20											
	Collector:	Clie	ent											
	Moisture:	1.71	۱%											
Parameter	Qual	ifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Ana	lyst Date	Time	Batch	Method
Rad Alpha	Spec Analysis	-									<b>)</b>			
-	U, Soil/Veg "Dry W	Veight	Corrected	d"										
Uranium-233/		e-B	511		0.721	0.500	pCi/g			MP2	05/11/20	1421	1995498	1
Uranium-235/	236		22.1	+/-3.41	0.408	0.500	pCi/g							
Uranium-238	Caintillation Anala		105	+/-6.66	0.771	0.500	pCi/g							
-	Scintillation Analy		111											
Technetium-9	nt Tc99, Soil "As Re	U U	0.171	+/-2.45	4.26	1.00	pCi/g			JJ3	05/17/20	0525	1995744	2
	ing Prep Methods w			17 2.45	4.20	1.00	peng			335	05/17/20	0525	1775744	2
Method	• •	ription				Analyst	Date		Time	, F	Prep Batch			
Dry Soil Prep			GL-RAD-A	A-021		CXB7	05/07/20	)	1252	1	995477			
The follow	ving Analytical Met	hods v	vere perfo	ormed:										
Method	Descr							Analy	vst Cor	nmer	nts			
1				-02-RC Modified										
2		EML HA	ASL-300, To	c-02-RC Modified										
	Fracer Recovery	Test					Result	Nomi	inal	Rec		-	table L	
Uranium-232 Technetium-9				Veg "Dry Weight C Soil "As Received"	orrected"						24.1 89.2		5%-125%)	
			5cmt 1099, 5	Soli As Received							09.2	(1:	5%-125%)	1
<b>Notes:</b> Counting U	Incertainty is calcul	ated a	t the 95%	confidence leve	el (1.96-s	igma).								
	eaders are defined as	s follo	ws:											
DF: Dilutio				Lc/LC: Critic										
DL: Detect	tion Limit			PF: Prep Fact										

DL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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# **Certificate of Analysis**

				Cel	runca	te of Al	larysis							
	Company : Address :		stinghouse Drawer R	Electric Com	pany, LLO						Report Dat	te:	June 4,	2020
	Contact: Project:	Ms.	Cynthia I											
	5		-	etation Analysis	8		D.			XX/NT	UC00821			
	Client Sample ID: Sample ID:		1-B4-(4-5. 807003	33)				oject: lient I			UC00821 UC008			
	Matrix:	Soil					C	nent n	D.	VV IN	00008			
	Collect Date:		MAY-20 (	18.55										
	Receive Date:		MAY-20 (	0.55										
	Collector:	Clie												
	Moisture:	4.19												
	Wolsture.	1.12	//0											
Parameter	Qual	ifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Ana	lyst Date	Time	Batch	Method
Rad Alpha	Spec Analysis													
Alphaspec	U, Soil/Veg "Dry W	Veight	Corrected	l''										
Uranium-233/			700	+/-17.4	0.789	0.500	pCi/g			MP2	05/11/20	1421	1995498	1
Uranium-235/ Uranium-238	236		31.9 139	+/-4.14 +/-7.78	0.668 0.790	0.500 0.500	pCi/g pCi/g							
	Scintillation Analy	sis	139	+/-7.78	0.790	0.500	pc1/g							
-	nt Tc99, Soil "As Re		d"											
Technetium-9	'	U	2.60	+/-2.27	3.78	1.00	pCi/g			JJ3	05/17/20	0542	1995744	2
The follow	ing Prep Methods w	vere pe	erformed:											
Method	Desc	riptio	n			Analyst	Date		Time	e I	Prep Batch			
Dry Soil Prep	Dry S	oil Prep	GL-RAD-A	-021		CXB7	05/07/20	)	1252	1	995477			
The follow	ving Analytical Meth	hods v	were perfo	rmed:										
Method	Descr							Analy	vst Cor	nmer	nts			
1				02-RC Modified										
2		EML HA	ASL-300, Tc	-02-RC Modified										
	Fracer Recovery	Test					Result	Nomi	inal	Rec			otable L	
Uranium-232 Technetium-9				eg "Dry Weight C Soil "As Received"	orrected"						25.4 91.7		5%-125%)	
Notes:			50m 1099, 5	Son As Received							71.1	(1;	5%-125%)	1
	Incertainty is calcul	ated a	t the 95%	confidence leve	el (1.96-s	igma).								
	aders are defined as	s follo	ws:											
DF: Dilutio				Lc/LC: Critic										
DL: Detect	tion Limit			PF: Prep Fact										

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# **Certificate of Analysis**

				<u>ce</u>	runca	te of Al	1217515							
	Company : Address :		stinghous Drawer R	e Electric Com	pany, LLO	C				F	leport Dat	e:	June 4,	2020
	Address .	FU	Diawei K	<b>L</b>										
		Col	umbia, So	outh Carolina	29205									
	Contact:		Cynthia											
	Project:	Soi	l and Veg	etation Analysi	is									
	Client Sample ID:	HF	1-B5-(1-2	)			Pr	oject:		WNU	JC00821			
	Sample ID:	510	807004				C	lient II	D:	WNU	JC008			
	Matrix:	Soil	1											
	Collect Date:	06-1	MAY-20	09:47										
	Receive Date:	07-1	MAY-20											
	Collector:	Clie	ent											
	Moisture:	8.03	3%											
Parameter	Quali	ifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Anal	yst Date	Time	Batch	Method
Rad Alpha	Spec Analysis									· ····.	/~		Dutti	
	U, Soil/Veg "Dry W	/eioht	Corrected	d"										
Uranium-233/		eigin	9.36		0.221	0.500	pCi/g			MP2	05/11/20	1421	1995498	1
Uranium-235/	/236		0.396		0.233	0.500	pCi/g							
Uranium-238			2.56	+/-0.505	0.141	0.500	pCi/g							
-	Scintillation Analy													
Liquid Scir Technetium-9	nt Tc99, Soil "As Re	ceive U	d" -2.14	+/-2.33	4.21	1.00	pCi/g			JJ3	05/17/20	0550	1005744	2
					4.21	1.00	pc1/g			112	03/17/20	0339	1993744	2
Method	ing Prep Methods w	-				A a 1	Date		Т:	D	rep Batch			
Dry Soil Prep		ription	n o GL-RAD-A	A-021		Analyst CXB7	05/07/20	1	Time 1252		95477			
	-	-				CADI	05/07/20		1252	1,				
-	ving Analytical Met		-	inneu:				A 1						
Method	Descr			-02-RC Modified				Analy	st Coi	nmeni	.S			
2				c-02-RC Modified										
Surrogate/7	Fracer Recovery	Test					Result	Nomi	nal	Reco	very%	Accep	table L	mits
Uranium-232	Tracer	Alphasj	pec U, Soil/V	Veg "Dry Weight O	Corrected"						109	(15	5%-125%)	
Technetium-9	9m Tracer I	Liquid	Scint Tc99,	Soil "As Received"	"						92.4	(15	5%-125%)	
<b>Notes:</b> Counting U	Incertainty is calculated	ated a	t the 95%	confidence lev	vel (1.96-s	igma).								
Column he	aders are defined as	s follo	ws:											
DF: Diluti				Lc/LC: Criti										
DL: Detect	tion Limit			PF: Prep Fac	ctor									

DL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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				<u>Ce</u>	runca	te of All	larysis							
	Company : Address :		stinghouse Drawer R	Electric Com	pany, LLC	C				F	Report Dat	te:	June 4,	2020
	ridaress .	_												
	Contact:		lumbia, Soi . Cynthia L	uth Carolina 2	29205									
	Project:			tation Analysi	s									
	Client Sample ID	: HF	1-B5-(2-4)				P	roject:		WNU	JC00821			
	Sample ID:	510	807005				С	lient II	D:	WNU	JC008			
	Matrix:	Soi	1											
	Collect Date:	06-	MAY-201	0:15										
	Receive Date:	07-	MAY-20											
	Collector:	Clie	ent											
	Moisture:	7.5	7%											
Parameter	Qua	lifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Anal	yst Date	Time	Batch	Method
Rad Alpha	Spec Analysis			,							5			
Alphaspec	U, Soil/Veg "Dry V	Weight	t Corrected	"										
Uranium-233		U	1520	+/-51.1	2.49	0.500	pCi/g			MP2	05/11/20	1421	1995498	1
Uranium-235			82.8	+/-13.3	2.81	0.500	pCi/g							
Uranium-238			246	+/-20.6	2.55	0.500	pCi/g							
-	Scintillation Anal													
Liquid Scii Technetium-9	nt Tc99, Soil "As R	leceive U	-1.79	+/-2.17	3.91	1.00	nC:/a			112	05/17/20	0615	1005744	2
	ing Prep Methods			+/-2.17	5.91	1.00	pCi/g			JJ3	03/17/20	0615	1993/44	2
Method	0 1	criptio				Analyst	Date		Time	P	rep Batch			
Dry Soil Prep			GL-RAD-A	-021		CXB7	05/07/20	)	1252		995477			
The follow	ving Analytical Me	-												
Method		ription	-					Analy	st Con	nmen	ts			
1				02-RC Modified										
2	DOE	EML H	ASL-300, Tc-	-02-RC Modified										
Surrogate/	Fracer Recovery	Test				]	Result	Nomi	nal	Reco	overy%	Accep	table L	imits
Uranium-232 Technetium-9				eg "Dry Weight C oil "As Received"							17.9 94.9		5%-125%) 5%-125%)	
		ыции	Senit 1099, S	on As Received							74.7	(1.	, /0 = 1 <i>2 J 7</i> 0 )	1
Notes: Counting U	Uncertainty is calcu	lated a	t the 95%	confidence lev	el (1.96-s	igma).								
	eaders are defined a	as follo	ows:											
DF: Diluti				Lc/LC: Critic										
DL: Detec	tion Limit			PF: Prep Fac	tor									

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# **Certificate of Analysis**

				Ce	runca	te of Al	larysis							
	Company : Address :		stinghous Drawer R	e Electric Com	pany, LLO	2					Report Dat	te:	June 4,	2020
		Col	umbia Sc	outh Carolina 2	9205									
	Contact:		Cynthia		27203									
	Project:			etation Analysi	s									
	Client Sample ID:		I-B5-(4-6	-			P	oject:		WN	UC00821			
	Sample ID:		807006	,				lient I			UC008			
	Matrix:	Soil												
	Collect Date:	06-1	MAY-20	10:45										
	Receive Date:	07-1	MAY-20											
	Collector:	Clie	ent											
	Moisture:	14.3	3%											
Parameter	Quali	ifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Ana	lyst Date	Time	Batch	Method
Rad Alpha	Spec Analysis													
Alphaspec	U, Soil/Veg "Dry W	/eight	Correcte	d"										
Uranium-233/		•	1250		1.81	0.500	pCi/g			MP2	05/11/20	1421	1995498	1
Uranium-235/ Uranium-238	236		50.9 224		1.84 1.70	0.500 0.500	pCi/g pCi/g							
	Scintillation Analy	sis	224	+/-13.4	1.70	0.500	pc1/g							
-	nt Tc99, Soil "As Re		d"											
Technetium-9	'	U	-1.41	+/-2.27	4.05	1.00	pCi/g			JJ3	05/17/20	0632	1995744	2
The follow	ing Prep Methods w	vere pe	erformed:											
Method		riptio				Analyst	Date		Time	e I	Prep Batch			
Dry Soil Prep	Dry Se	oil Prep	GL-RAD-A	A-021		CXB7	05/07/20	)	1252	1	995477			
The follow	ving Analytical Metl	hods v	vere perfo	ormed:										
Method	Descr							Analy	vst Cor	nmer	nts			
1				-02-RC Modified										
2			ASL-300, To	c-02-RC Modified										
	Fracer Recovery	Test					Result	Nomi	inal	Rec			otable L	
Uranium-232 Technetium-9				Veg "Dry Weight C Soil "As Received'							25.9 92.8		5%-125%) 5%-125%)	
Notes:	Incertainty is calcula	1				igma).					2.0	(1,	,,,, 1 <i>20</i> 70,	,
•	-				(1.200	-D-114).								
DF: Dilutio	eaders are defined as	5 10110	ws	Lc/LC: Critic	cal Level									
DL: Detect				PF: Prep Fac										
	imum Datastahla A	ation: 4		DI . Domontin										

DL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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# **Certificate of Analysis**

				Ce	runca	te of All	1a1y515							
	Company : Address :		stinghouse Drawer R	Electric Com	pany, LLO	C				]	Report Dat	ie:	June 4,	2020
	Contact: Project:	Col Ms.	umbia, So . Cynthia L	uth Carolina 2 ogsdon tation Analysi										
	Client Sample ID: Sample ID: Matrix: Collect Date: Receive Date: Collector: Moisture:	HF 510 Soi 06-1	1-B5-(6-8) 807007 1 MAY-20 1 MAY-20 ent		5			roject: lient II			JC00821 JC008			
Parameter	Qual	ifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Anal	yst Date	Time	Batch	Method
Rad Alpha	Spec Analysis													
-	U, Soil/Veg "Dry V	Veight	Corrected	"										
Uranium-233/		U	9.67	+/-1.23	0.417	0.500	pCi/g			MP2	05/11/20	1410	1995498	1
Uranium-235/			0.587	+/-0.346	0.147	0.500	pCi/g							
Uranium-238			1.61	+/-0.510	0.277	0.500	pCi/g							
-	Scintillation Analy													
Liquid Scir Technetium-9	nt Tc99, Soil "As R			. / 2.21	4.02	1.00	- C:/-			112	05/17/20	0640	1005744	2
		U	-2.28	+/-2.21	4.02	1.00	pCi/g			JJ3	05/17/20	0648	1995744	2
Method	ing Prep Methods v						Data		<b></b>		Datah			
Dry Soil Prep		riptio	n o GL-RAD-A	021		Analyst CXB7	Date 05/07/20	)	Time 1252		rep Batch			
• •	•	-				CAD/	03/07/20	)	1232	1	993477			
-	ving Analytical Met		-	med:										
Method		ription		02-RC Modified				Analy	st Cor	nmen	ts			
1 2				-02-RC Modified										
	Fracer Recovery	Test					Result	Nomi	nal	Reco	overy%	Accer	table L	imits
Uranium-232	Tracer	Alphas	pec U, Soil/V	eg "Dry Weight C	Corrected"						89.5	(15	5%-125%)	)
Technetium-9	9m Tracer	Liquid	Scint Tc99, S	oil "As Received'	'						95.2	(15	5%-125%)	J
Notes: Counting U	Jncertainty is calcul	ated a	t the 95% (	confidence lev	el (1.96-s	igma).								
Column he	eaders are defined a	s follo	ws:											
DF: Diluti				Lc/LC: Critic	cal Level									
DL: Detec	tion Limit			PF: Prep Fac	tor									

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# **Certificate of Analysis**

				Cel	runca	te of Al	1a1y515							
	Company : Address :		stinghouse l Drawer R	Electric Com	pany, LLO	C				ł	Report Dat	e:	June 4,	2020
	Address .	10	Diawei K											
				th Carolina 2	9205									
	Contact:		Cynthia Lo											
	Project:		-	ation Analysis	S									
	Client Sample ID		1-B5-(8-10)					roject:			JC00821			
	Sample ID:		807008				C	lient II	D:	WNU	JC008			
	Matrix:	Soil	1											
	Collect Date:	06-1	MAY-2013	3:40										
	Receive Date:	07-1	MAY-20											
	Collector:	Clie	ent											
	Moisture:	12.6	5%											
Parameter	Qual	ifier	Result I	Jncertainty	MDC	RL	Units	PF	DF	Anal	yst Date	Time	e Batch	Method
	Spec Analysis			j							<i>j~</i>		Butth	
-	U, Soil/Veg "Dry V	Veight	Corrected"											
Uranium-233		, eight	2.65	+/-0.665	0.327	0.500	pCi/g			MP2	05/11/20	1410	1995498	1
Uranium-235/			0.294	+/-0.267	0.245	0.500	pCi/g							
Uranium-238			1.02	+/-0.424	0.306	0.500	pCi/g							
-	Scintillation Analy													
1	nt Tc99, Soil "As R													
Technetium-9	9	U	-2.91	+/-2.17	3.98	1.00	pCi/g			JJ3	05/17/20	0705	1995744	2
	ing Prep Methods v	vere pe	erformed:											
Method		ription				Analyst	Date		Time		rep Batch			
Dry Soil Prep	Dry S	oil Prep	GL-RAD-A-(	)21		CXB7	05/07/20	)	1252	19	995477			
The follow	ving Analytical Met	hods v	were perform	med:										
Method		ription						Analy	st Con	nmen	ts			
1				2-RC Modified										
2			ASL-300, Tc-0	2-RC Modified			_							
	Fracer Recovery	Test					Result	Nomi	nal	Reco		1	otable Li	
Uranium-232 Technetium-9				g "Dry Weight C il "As Received"							81.8 94.7		5%-125%) 5%-125%)	
<b>Notes:</b> Counting U	Incertainty is calcul	ated a	t the 95% c	onfidence lev	el (1.96-s	igma).								
Column he	eaders are defined a	s follo	ws:											
DF: Diluti				Lc/LC: Critic	cal Level									
DL: Detec	tion Limit			PF: Prep Fact	tor									

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# **Certificate of Analysis**

				Cel	<u>i iiiica</u>	te of Al	1a1y818							
	Company : Address :		stinghous Drawer R	e Electric Com	pany, LLO	0				I	Report Dat	te:	June 4,	2020
	i idai obb .	-												
				outh Carolina 2	9205									
	Contact:		Cynthia		_									
	Project:			etation Analysis	5						1000001			
	Client Sample ID:			)				roject:			JC00821			
	Sample ID:		807010				C	lient II	D:	WN	JC008			
	Matrix:	Soil		1.4.40										
	Collect Date:		MAY-20	14:40										
	Receive Date:		MAY-20											
	Collector:	Clie												
	Moisture:	3.15	5%											
Parameter	Qual	ifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Anal	yst Date	Time	Batch	Method
Rad Alpha	Spec Analysis													
-	U, Soil/Veg "Dry W	Veight	Corrected	d"										
Uranium-233/	• •	U	403		0.905	0.500	pCi/g			MP2	05/11/20	1410	1995498	1
Uranium-235/	236		19.3		0.618	0.500	pCi/g							
Uranium-238	Scintillation Analy		78.5	+/-5.62	0.808	0.500	pCi/g							
-	Scintillation Analy		.1"											
Technetium-9	nt Tc99, Soil "As Re	U	u -1.66	+/-2.31	4.14	1.00	pCi/g			JJ3	05/17/20	0721	1995744	2
	ing Prep Methods w			., 2101		1.00	Pers			555	00,11,20	0721	1770711	-
Method	• •	riptio				Analyst	Date		Time	e P	rep Batch			
Dry Soil Prep	Dry S	oil Prep	GL-RAD-A	A-021		CXB7	05/07/20	)	1252	1	995477			
The follow	ving Analytical Met	hods v	were perfo	ormed:										
Method	Desci	ription	l					Analy	st Cor	nmen	ts			
1				-02-RC Modified										
2	DOE I	EML H	ASL-300, To	c-02-RC Modified										
	Fracer Recovery	Test					Result	Nomi	nal	Reco	overy%	Accep	table Li	mits
Uranium-232				Veg "Dry Weight C							32.9		(%-125%)	
Technetium-9	9m Tracer	Liquid	Scint Tc99, S	Soil "As Received"							94.7	(15	5%-125%)	
Notes: Counting U	Incertainty is calcul	ated a	t the 95%	confidence lev	el (1.96-s	igma).								
Column he	aders are defined as	s follo	ws:											
DF: Diluti				Lc/LC: Critic										
DL: Detect	tion Limit			PF: Prep Fact	tor									

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# **Certificate of Analysis**

				Ce	runca	te of Al	1 <b>a</b> 1y515							
	Company : Address :		stinghouse H Drawer R	Electric Com	pany, LLC	C				F	Report Dat	ie:	June 4,	2020
	Contact:	Col		h Carolina 2 gsdon	29205									
	Project:			tion Analysi	s									
	Client Sample	D: HF	1-B6-(4-5.67	7)			Р	roject:		WNU	JC00821			
	Sample ID:	510	807011				С	lient I	D:	WNU	JC008			
	Matrix:	Soil	l											
	Collect Date:	06-1	MAY-2015	:25										
	Receive Date:	07-]	MAY-20											
	Collector:	Clie	ent											
	Moisture:	4.47	7%											
Parameter	Qı	ualifier	Result U	Incertainty	MDC	RL	Units	PF	DF	Anal	yst Date	Time	Batch	Method
Rad Alpha	Spec Analysis			•							•			
-	U, Soil/Veg "Dry	v Weight	Corrected"											
Uranium-233		0	226	+/-9.28	0.962	0.500	pCi/g			MP2	05/11/20	1410	1995498	1
Uranium-235			9.66	+/-2.16	0.805	0.500	pCi/g							
Uranium-238		.1	41.6	+/-3.99	0.858	0.500	pCi/g							
-	Scintillation An	•	111											
Technetium-9	nt Tc99, Soil "As	Keceive U	a -1.09	+/-2.26	4.01	1.00	pCi/g			JJ3	05/17/20	0738	1995744	2
	ing Prep Method	-		17-2.20	4.01	1.00	pc1/g			110	03/17/20	0758	1775744	2
Method	• •	escription				Analyst	Date		Time	P	rep Batch			
Dry Soil Prep			GL-RAD-A-0	21		CXB7	05/07/20	0	1252		995477			
•	ving Analytical N	• •												
Method		scription	-					Analy	st Cor	nmen	ts			
1			ASL-300, U-02	-RC Modified				<u> </u>	51 0 01					
2	DC	E EML H	ASL-300, Tc-0	2-RC Modified										
Surrogate/	Fracer Recovery	Test					Result	Nomi	nal	Reco	overy%	Accer	ptable Li	imits
Uranium-232 Technetium-9			-	g "Dry Weight C 1 "As Received"							34.1 97.1		5%-125%) 5%-125%)	
Notes:	Jncertainty is cal					igma).					<i>,,,</i> ,	(15	. /0 123 /0)	
U	eaders are defined													
DF: Diluti		10110		Lc/LC: Critic	cal Level									
DL: Detec	tion Limit			PF: Prep Fac	tor									

D1: Detection LimitDF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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# **Certificate of Analysis**

				Cel	i unca	te of Al	1a1y515			-			<b>T</b> 4	2020
	Company : Address :		stinghouse Drawer R	Electric Comp	pany, LLO	C				ŀ	Report Dat	te:	June 4,	2020
	Address .	rU	Diawei K											
				uth Carolina 2	9205									
	Contact:		Cynthia L											
	Project:			tation Analysis	s									
	Client Sample ID:	HF	1-B7-(0-2)					roject:			JC00821			
	Sample ID:	510	807012				C	lient ID	):	WNU	JC008			
	Matrix:	Soil	l											
	Collect Date:	06-1	MAY-201	5:53										
	Receive Date:	07-1	MAY-20											
	Collector:	Clie	ent											
	Moisture:	3.63	3%											
Parameter	Quali	fior	Docult	Uncertainty	MDC	RL	Units	PF	DE	Anal	yst Date	Time	Datah	Method
	· · · · · ·	inci	Kesun	Oncertainty	MDC	KL	Units	11	DI	Anar	yst Date	THIC	Daten	wichiou
-	Spec Analysis	· · · ·	<b>C</b> 1											
Uranium-233	U, Soil/Veg "Dry W	eight	2140	+/-68.1	4.07	0.500	nC:/a			MP2	05/21/20	1150	1009525	1
Uranium-235/ Uranium-235/			93.5	+/-08.1 +/-15.9	4.07 2.09	0.500 0.500	pCi/g pCi/g			MP2	05/21/20	1152	1998555	1
Uranium-238			313	+/-26.1	2.92	0.500	pCi/g							
	Scintillation Analy	sis					1 0							
-	nt Tc99, Soil "As Re		d"											
Technetium-9	,	U	-1.90	+/-2.17	3.91	1.00	pCi/g			JJ3	05/17/20	0754	1995744	2
The follow	ing Prep Methods w	ere pe	erformed:											
Method	Desc	-				Analyst	Date		Time	Р	rep Batch			
Dry Soil Prep	Dry So	oil Prep	GL-RAD-A	-021		CXB7	05/07/20	)	1252	19	995477			
The follow	ving Analytical Meth	nods v	were perfor	med:										
Method	Descr	iption						Analys	t Con	nmen	ts			
1	DOE E	ML H	ASL-300, U-0	2-RC Modified										
2	DOE E	EML HA	ASL-300, Tc-	02-RC Modified										
Surrogate/7	Fracer Recovery	Test					Result	Nomin	al	Reco	overy%	Accep	otable L	mits
Uranium-232				eg "Dry Weight C							90.4		5%-125%)	
Technetium-9	99m Tracer I	Liquid	Scint Tc99, S	oil "As Received"							97	(15	5%-125%)	
Notes:														
Counting U	Uncertainty is calcula	ated a	t the 95% o	confidence lev	el (1.96-s	igma).								
Column he	eaders are defined as	s follo	ws:											
DF: Diluti				Lc/LC: Critic	cal Level									
DL: Detec	tion Limit			PF: Prep Fact	tor									

DL: Detection Limit MDA: Minimum Detectable Activity MDC: Minimum Detectable Concentration PF: Prep Factor RL: Reporting Limit SQL: Sample Quantitation Limit

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# **Certificate of Analysis**

				Cel	runca	te of Al	1a1y515							
	Company : Address :		stinghouse Drawer R	e Electric Com	pany, LLO	2				]	Report Dat	e:	June 4,	2020
	Contact:		umbia, So Cynthia l	outh Carolina 2	9205									
	Project:			etation Analysis	5									
	Client Sample ID:	HF1	-B7-(2-4)	)			P	roject:		WN	UC00821			
	Sample ID:	510	807013				C	lient I	D:	WN	UC008			
	Matrix:	Soil												
	Collect Date:	06-1	MAY-20	16:13										
	Receive Date:		MAY-20											
	Collector:	Clie												
	Moisture:	3.49	9%											
Parameter	Quali	fier	Result	Uncertainty	MDC	RL	Units	PF	DF	Ana	lyst Date	Time	Batch	Method
Rad Alpha	Spec Analysis			· · · ·							•			
Alphaspec	U, Soil/Veg "Dry W	eight	Corrected	1"										
Uranium-233/		-	2020	+/-59.9	3.64	0.500	pCi/g			MP2	05/21/20	1152	1998535	1
Uranium-235/ Uranium-238	236		92.0 355	+/-14.3 +/-25.1	2.73 1.97	0.500 0.500	pCi/g pCi/g							
	Scintillation Analy	sis	555	17-23.1	1.97	0.500	pen/g							
-	nt Tc99, Soil "As Re		d"											
Technetium-9	,	U	3.15	+/-2.40	3.97	1.00	pCi/g			JJ3	05/17/20	0811	1995744	2
The follow	ing Prep Methods w	ere pe	erformed:											
Method		riptior				Analyst	Date		Time		Prep Batch			
Dry Soil Prep	Dry Se	oil Prep	GL-RAD-A	-021		CXB7	05/07/20	)	1252	1	995477			
The follow	ving Analytical Meth	nods v	vere perfo	rmed:										
Method	Descr							Analy	vst Cor	nmer	nts			
1 2				02-RC Modified										
	Fracer Recovery	Test	IDE 500, 10	02 Re Mounieu			Result	Nomi	nol	Daa	01101110/	A 0001	otable L	imite
Uranium-232	•		ec II Soil/X	/eg "Dry Weight C	orrected"		Kesun	NOIII	liiai	Reco	overy% 94.8	-	5%-125%)	
Technetium-9				Soil "As Received"	oncerea						97.3		5%-125%)	
Notes: Counting U	Incertainty is calcula	ated at	t the 95%	confidence leve	el (1.96-s	igma).								
Column he DF: Dilutio DL: Detect		follo	ws:	Lc/LC: Critic PF: Prep Fact										
	lion Linni Limum Dataatahla A		-	PF: Plep Faci										

DL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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# **Certificate of Analysis**

				Cer	<u>unca</u>	te of Al	11a1 y SIS							
	Company : Address :		stinghouse Drawer R	e Electric Com	pany, LLO	2				]	Report Dat	te:	June 4,	2020
		Col	umbia Sc	outh Carolina 2	0205									
	Contact:		. Cynthia l		9205									
	Project:			etation Analysis	8									
	Client Sample ID		-				P	roject:		WNI	JC00821			
	Sample ID:		807014	,				lient Il	D:		JC008			
	Matrix:	Soi												
	Collect Date:	06-	MAY-20	16:31										
	Receive Date:	07-	MAY-20											
	Collector:	Clie	ent											
	Moisture:	2.6	9%											
Parameter	Oua	lifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Anal	yst Date	Time	Batch	Method
	Spec Analysis		resur				Cints		<i>D</i> 1	1 Intel	JSt Duto	1 1111	Buten	incuroa
-	U, Soil/Veg "Dry V	Weight	Corrected	1"										
Uranium-233/		in orgin	799		1.88	0.500	pCi/g			MP2	05/11/20	1410	1995498	1
Uranium-235/	/236		46.5		1.37	0.500	pCi/g							
Uranium-238			158	+/-12.0	1.40	0.500	pCi/g							
-	Scintillation Anal													
Liquid Scir Technetium-9	nt Tc99, Soil "As R	eceive U	o.627	+/-2.37	4.09	1.00	pCi/g			JJ3	05/17/20	0827	1005744	2
	ing Prep Methods			+/-2.37	4.09	1.00	pci/g			112	03/17/20	0827	1993744	2
Method	• •	criptio				Analyst	Date		Time	, P	rep Batch			
Dry Soil Prep			GL-RAD-A	A-021		CXB7	05/07/20	)	1252		995477			
2 1	ving Analytical Me	-												
Method	• •	riptior	-					Analy	st Cor	nmen	ts			
1	DOE	EML H	ASL-300, U-	-02-RC Modified				2						
2	DOE	EML H	ASL-300, To	e-02-RC Modified										
Surrogate/	Fracer Recovery	Test					Result	Nomi	nal	Reco	overy%	Accep	otable Li	mits
Uranium-232			-	/eg "Dry Weight C	orrected"						29.4		5%-125%)	
Technetium-9	9m Tracer	Liquid	Scint Tc99, S	Soil "As Received"							94.1	(15	5%-125%)	
Notes: Counting U	Incertainty is calcu	lated a	t the 95%	confidence leve	el (1.96-s	igma).								
Column he	aders are defined a	s follo	ws:											
DF: Diluti				Lc/LC: Critic										
DL: Detec	tion Limit			PF: Prep Fact	tor									

DL: Detection LimitPF: Prep FactorMDA: Minimum Detectable ActivityRL: Reporting LimitMDC: Minimum Detectable ConcentrationSQL: Sample Quantitation Limit

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# **QC Summary**

Report Date: June 4, 2020

Page 1 of 3

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

Workorder: 510807

**Contact:** 

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range Anlst	Date Time
<b>Ion Chromatography</b> Batch 1995671 —								
QC1204557905 510807001 DUP Fluoride	,	65.8	65.1	mg/kg	1.06		(0%-109%) JLD1	05/13/20 11:04
Nitrate-N		69.3	68.5	mg/kg	1.27		(0%-104%)	
QC1204557906 510807002 DUP Fluoride		335	340	mg/kg	1.66		(0%-109%)	05/14/20 11:08
Nitrate-N		70.4	70.3	mg/kg	0.148		(0%-104%)	05/14/20 02:49
QC1204557904 LCS Fluoride	25.1		25.0	mg/kg		99.4	(90%-110%)	05/12/20 22:44
Nitrate-N	25.1		24.4	mg/kg		97.2	(90%-110%)	
QC1204557903 MB Fluoride		U	ND	mg/kg				05/12/20 22:13
Nitrate-N		U	ND	mg/kg				
QC1204557907 510807001 MS Fluoride	25.1	65.8	94.2	mg/kg		113	(75%-125%)	05/13/20 11:35
Nitrate-N	25.1	69.3	95.2	mg/kg		103	(75%-125%)	
QC1204557908 510807002 MS Fluoride	25.7	335	353	mg/kg		N/A	(75%-125%)	05/14/20 12:41
Nitrate-N	25.7	70.4	95.9	mg/kg		99.6	(75%-125%)	05/14/20 03:20

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### **QC Summary**

Workorder: 510807								Page 2 of 3
Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range Anlst	Date Time
Titration and Ion AnalysisBatch1995459								
QC1204557582 510807001 DUP Corrosivity	Н	5.46 Н	6.08	SU	10.7*		(0%-10%) RXB5	05/28/20 14:40
QC1204557583 510807002 DUP Corrosivity	Н	3.97 Н	3.98	SU	0.252		(0%-10%)	05/28/20 14:44
QC1204557581 LCS Corrosivity	7.00		7.00	SU		100	(95%-105%)	05/28/20 14:38

#### 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 General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
- H Analytical holding time was exceeded
- J See case narrative for an explanation
- J Value is estimated
- $N\!/\!A$   $\,$  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
- 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

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### **QC Summary**

Workorder:	510807									Page 3 of 3
Parmname		NOM	Sample Qual	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.

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.

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# **QC Summary**

Report Date: June 4, 2020

Page 1 of 3

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

Workorder: 510807

**Contact:** 

Parmname	NOM	Sample Qua	l QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Alpha Spec									
Batch 1995498									
QC1204557617 510807001 DUP									
Uranium-233/234		563	534	pCi/g	5.32		(0%-20%)	MP2	05/11/20 14:10
	Uncertainty	+/-16.4	+/-18.5						
Uranium-235/236		29.0	22.9	pCi/g	23.7*		(0%-20%)	)	
	Uncertainty	+/-4.16	+/-4.29						
Uranium-238		110	98.1	pCi/g	11.7		(0%-20%)		
Oramum-250	Uncertainty	+/-7.26	+/-7.94	peng	11.7		(070-2070)		
QC1204557618 LCS									
Uranium-233/234			11.6	pCi/g					05/11/20 14:10
	Uncertainty		+/-1.29	1 0					
Uranium-235/236			0.461	pCi/g					
	Uncertainty		+/-0.321	1 - 6					
Uranium-238	12.3		12.1	pCi/g		98.8	(75%-125%)	1	
	Uncertainty		+/-1.31	1 - 8			(,		
QC1204557616 MB									
Uranium-233/234		U	0.0886	pCi/g					05/11/20 14:10
	Uncertainty		+/-0.216						
Uranium-235/236		U	0.151	pCi/g					
	Uncertainty		+/-0.191	1 0					
Uranium-238		U	0.211	pCi/g					
	Uncertainty		+/-0.209	F 8					
Batch 1998535 —									
QC1204564487 510807012 DUP									
Uranium-233/234		2140	1770	pCi/g	19		(0%-20%)	MP2	05/21/20 11:52
	Uncertainty	+/-68.1	+/-56.9						
Uranium-235/236		93.5	81.2	pCi/g	14.1		(0%-20%)	1	
	Uncertainty	+/-15.9	+/-13.6	. 0					
Uranium-238		313	276	pCi/9	12.6		(0% - 20%)	)	
	Uncertainty	+/-26.1	+/-22.5	r~~5			(2.0 _0/0)		
Uranium-233/234	Uncertainty	+/-68.1 93.5 +/-15.9 313	+/-56.9 81.2 +/-13.6 276	pCi/g pCi/g pCi/g	19 14.1 12.6		(0%-20%) (0%-20%) (0%-20%)	I	05/21/20 1

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### **QC Summary**

Workorder: 510807										Page	e 2 of 3
Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Alpha SpecBatch1998535											
QC1204564488 LCS Uranium-233/234	Uncertainty			104 +/-11.8	pCi/g				MP2	05/21/2	0 09:49
Uranium-235/236	Uncertainty			4.86 +/-3.01	pCi/g						
Uranium-238	109 Uncertainty			101 +/-11.6	pCi/g		92.4	(75%-125%)	)		
QC1204564486 MB Uranium-233/234	Uncertainty		U	-0.479 +/-0.824	pCi/g					05/21/2	20 11:52
Uranium-235/236	Uncertainty		U	0.500 +/-1.39	pCi/g						
Uranium-238	Uncertainty		U	-0.104 +/-0.812	pCi/g						
Rad Liquid Scintillation Batch 1995744											
QC1204558065 510807001 DUP Technetium-99	U Uncertainty	-0.924 +/-2.26	U	-0.568 +/-2.24	pCi/g	N/A		N/2	A JJ3	05/17/2	0 09:01
QC1204558066 LCS Technetium-99	55.0 Uncertainty			49.6 +/-3.46	pCi/g		90.2	(75%-125%)	)	05/17/2	20 09:17
QC1204558064 MB Technetium-99	Uncertainty		U	-1.71 +/-1.93	pCi/g					05/17/2	20 08:44

#### Notes:

Werleender

E1000E

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 See case narrative for an explanation

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### **QC** Summary

Parmnar	ne	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
J	Value is estimated											
Κ	Analyte present. Reported	d value may be biased	high. Actual	value is e	xpected to b	e lower.						
L	Analyte present. Reported	d value may be biased	low. Actual	value is ex	spected to b	e higher.						
М	M if above MDC and less	s than LLD										
М	REMP Result > MDC/CI	L and < RDL										
N/A	RPD or %Recovery limit	s do not apply.										
N1	See case narrative											
ND	Analyte concentration is	not detected above the	detection lin	nit								
NJ	Consult Case Narrative, I	Data Summary packag	e, or Project l	Manager	concerning	his qualifi	er					
Q	One or more quality cont	rol criteria have not be	en met. Refe	r to the ap	plicable na	rative or I	DER.					
R	Sample results are rejected	ed										
U	Analyte was analyzed for	r, but not detected abov	ve the MDL,	MDA, M	DC or LOD							
UI	Gamma SpectroscopyU	Incertain identification										
UJ	Gamma SpectroscopyU	Incertain identification										
UL	Not considered detected.	The associated number	r is the report	ted conce	ntration, wh	ich may be	e inaccurate	due to a low	bias.			
Х	Consult Case Narrative, I	Data Summary packag	e, or Project l	Manager	concerning t	his qualifi	er					
Y	Other specific qualifiers	were required to prope	rly define the	results.	Consult case	narrative.						
۸	RPD of sample and dupli	cate evaluated using +	/-RL. Conce	ntrations	are <5X the	RL. Qual	ifier Not Ap	plicable for l	Radiochem	istry.		
h	Preparation or preservation	on holding time was ex	ceeded									
^ The Re	cates that spike recovery least that spike recovery least the encounter of the contract requires (5X) the contract require	(RPD) obtained from	the sample du	iplicate (	DUP) is eva	luated aga	inst the acce	ptance criter	ia when the	e sample i	s greater	

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 #: 510807

#### **General Chemistry**

Product: Ion Chromatography Analytical Method: SW846 9056A Analytical Procedure: GL-GC-E-086 REV# 27 Analytical Batches: 1995671 and 1995670

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

<u>GEL Sample ID#</u>	<b><u>Client Sample Identification</u></b>
510807001	HF1-B4-(1-2)
510807002	HF1-B4-(2-4)
510807003	HF1-B4-(4-5.33)
510807004	HF1-B5-(1-2)
510807005	HF1-B5-(2-4)
510807006	HF1-B5-(4-6)
510807007	HF1-B5-(6-8)
510807008	HF1-B5-(8-10)
510807010	HF1-B6-(2-4)
510807011	HF1-B6-(4-5.67)
510807012	HF1-B7-(0-2)
510807013	HF1-B7-(2-4)
510807014	HF1-B7-(4-5.42)
1204557903	Method Blank (MB)
1204557904	Laboratory Control Sample (LCS)
1204557905	510807001(HF1-B4-(1-2)) Sample Duplicate (DUP)
1204557906	510807002(HF1-B4-(2-4)) Sample Duplicate (DUP)
1204557907	510807001(HF1-B4-(1-2)) Matrix Spike (MS)
1204557908	510807002(HF1-B4-(2-4)) 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.

#### **Technical Information**

#### **Sample Dilutions**

The following samples 1204557905 (HF1-B4-(1-2)DUP), 1204557906 (HF1-B4-(2-4)DUP), 1204557907 (HF1-B4-(1-2)MS), 1204557908 (HF1-B4-(2-4)MS), 510807001 (HF1-B4-(1-2)), 510807002 (HF1-B4-(2-4)), 510807003 (HF1-B4-(4-5.33)), 510807004 (HF1-B5-(1-2)), 510807005 (HF1-B5-(2-4)), 510807006 (HF1-B5-(4-6)), 510807007 (HF1-B5-(6-8)), 510807012 (HF1-B7-(0-2)), 510807013 (HF1-B7-(2-4)) and 510807014 (HF1-B7-(4-5.42)) 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.

A					510	807				
Analyte	001	002	003	004	005	006	007	012	013	014
Fluoride	5X	10X	10X	1X	10X	1X	1X	1X	10X	5X
Nitrate	5X	5X	10X	10X	10X	25X	5X	5X	10X	5X

#### Sample Re-analysis

Sample510807006 (HF1-B5-(4-6)) was re-analyzed to verify the result.

Product: pH Analytical Method: SW846 9045D Analytical Procedure: GL-GC-E-008 REV# 24 Analytical Batch: 1995459

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

<u>GEL Sample ID#</u>	Client Sample Identification
510807001	HF1-B4-(1-2)
510807002	HF1-B4-(2-4)
510807003	HF1-B4-(4-5.33)
510807004	HF1-B5-(1-2)
510807005	HF1-B5-(2-4)
510807006	HF1-B5-(4-6)
510807007	HF1-B5-(6-8)
510807008	HF1-B5-(8-10)
510807009	HF1-B6-(0-2)
510807010	HF1-B6-(2-4)
510807011	HF1-B6-(4-5.67)
510807012	HF1-B7-(0-2)
510807013	HF1-B7-(2-4)
510807014	HF1-B7-(4-5.42)
510807015	HF1-B7-Refusal
1204557581	Laboratory Control Sample (LCS)
1204557582	510807001(HF1-B4-(1-2)) Sample Duplicate (DUP)
1204557583	510807002(HF1-B4-(2-4)) 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.

#### **Quality Control (QC) Information**

#### **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
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#### **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
1204557582 (HF1-B4-(1-2)DUP)		Received 07-MAY-20, out of holding 06-MAY-20
1204557583 (HF1-B4-(2-4)DUP)		Received 07-MAY-20, out of holding 06-MAY-20
510807001 (HF1-B4-(1-2))		Received 07-MAY-20, out of holding 06-MAY-20
510807002 (HF1-B4-(2-4))		Received 07-MAY-20, out of holding 06-MAY-20
510807003 (HF1-B4-(4-5.33))		Received 07-MAY-20, out of holding 06-MAY-20
510807004 (HF1-B5-(1-2))		Received 07-MAY-20, out of holding 06-MAY-20
510807005 (HF1-B5-(2-4))		Received 07-MAY-20, out of holding 06-MAY-20
510807006 (HF1-B5-(4-6))		Received 07-MAY-20, out of holding 06-MAY-20
510807007 (HF1-B5-(6-8))		Received 07-MAY-20, out of holding 06-MAY-20
510807008 (HF1-B5-(8-10))		Received 07-MAY-20, out of holding 06-MAY-20
510807009 (HF1-B6-(0-2))		Received 07-MAY-20, out of holding 06-MAY-20
510807010 (HF1-B6-(2-4))		Received 07-MAY-20, out of holding 06-MAY-20
510807011 (HF1-B6-(4-5.67))		Received 07-MAY-20, out of holding 06-MAY-20
510807012 (HF1-B7-(0-2))		Received 07-MAY-20, out of holding 06-MAY-20
510807013 (HF1-B7-(2-4))		Received 07-MAY-20, out of holding 06-MAY-20
510807014 (HF1-B7-(4-5.42))		Received 07-MAY-20, out of holding 06-MAY-20
510807015 (HF1-B7-Refusal)		Received 07-MAY-20, out of holding 06-MAY-20

#### **Radiochemistry**

Product: Alphaspec U, Soil/Veg Analytical Method: DOE EML HASL-300, U-02-RC Modified Analytical Procedure: GL-RAD-A-011 REV# 27 Analytical Batch: 1995498

<u>Preparation Method:</u> Dry Soil Prep <u>Preparation Procedure:</u> GL-RAD-A-021 REV# 23 <u>Preparation Batch:</u> 1995477 The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	Client Sample Identification
510807001	HF1-B4-(1-2)
510807002	HF1-B4-(2-4)
510807003	HF1-B4-(4-5.33)
510807004	HF1-B5-(1-2)
510807005	HF1-B5-(2-4)
510807006	HF1-B5-(4-6)
510807007	HF1-B5-(6-8)
510807008	HF1-B5-(8-10)
510807010	HF1-B6-(2-4)
510807011	HF1-B6-(4-5.67)
510807014	HF1-B7-(4-5.42)
1204557616	Method Blank (MB)
1204557617	510807001(HF1-B4-(1-2)) Sample Duplicate (DUP)
1204557618	Laboratory Control Sample (LCS)

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**

#### **Duplication Criteria between QC Sample and Duplicate Sample**

The Sample and the Duplicate, (See Below), did not meet the relative percent difference requirement; however, they do meet the relative error ratio requirement with the value listed below.

Sample	Analyte	Value
1204557617 (HF1-B4-(1-2)DUP)	Uranium-235/236	RPD 23.7* (0.00%-20.00%) RER 1.08 (0-3)

#### **Miscellaneous Information**

#### **Manual Integration**

Manual integration of alpha spectroscopy spectra 510807014 (HF1-B7-(4-5.42)) was performed to fully separate counts in Regions of Interest which would have been biased.

#### **Additional Comments**

The tracer peak centroid for sample 510807014 (HF1-B7-(4-5.42)) is greater than 50 keV from the expected library energy value for the tracer; however, the tracer yield requirement was met and the tracer peak is within the tracer region of interest.

Analytical Procedure: GL-RAD-A-011 REV# 27 Analytical Batch: 1998535

**Preparation Method:** Dry Soil Prep **Preparation Procedure:** GL-RAD-A-021 REV# 23 **Preparation Batch:** 1995477

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

<u>GEL Sample ID#</u>	Client Sample Identification
510807012	HF1-B7-(0-2)
510807013	HF1-B7-(2-4)
1204564486	Method Blank (MB)
1204564487	510807012(HF1-B7-(0-2)) Sample Duplicate (DUP)
1204564488	Laboratory Control Sample (LCS)

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**

#### **RDL Met**

The blank (See Below) did not meet the detection limit due to keeping the blank volume consistent with the other sample aliquots.

Sample	Analyte	Value
1204564486 (MB)	Uranium-233/234	Result -0.479 < MDA 2.7 > RDL 0.5 pCi/g
	Uranium-235/236	Result 0.5 < MDA 1.5 > RDL 0.5 pCi/g
	Uranium-238	Result -0.104 < MDA 1.93 > RDL 0.5 pCi/g

Product: Dry Weight Preparation Method: ASTM D 2216 (Modified) Preparation Procedure: GL-OA-E-020 REV# 13 Preparation Batch: 1995477

**Preparation Method:** Dry Soil Prep **Preparation Procedure:** GL-RAD-A-021 REV# 23 **Preparation Batch:** 1995477 The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	Client Sample Identification
510807001	HF1-B4-(1-2)
510807002	HF1-B4-(2-4)
510807003	HF1-B4-(4-5.33)
510807004	HF1-B5-(1-2)
510807005	HF1-B5-(2-4)
510807006	HF1-B5-(4-6)
510807007	HF1-B5-(6-8)
510807008	HF1-B5-(8-10)
510807010	HF1-B6-(2-4)
510807011	HF1-B6-(4-5.67)
510807012	HF1-B7-(0-2)
510807013	HF1-B7-(2-4)
510807014	HF1-B7-(4-5.42)
1204557593	510807001(HF1-B4-(1-2)) 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.

<u>Product:</u> Liquid Scint Tc99, Soil <u>Analytical Method:</u> DOE EML HASL-300, Tc-02-RC Modified <u>Analytical Procedure:</u> GL-RAD-A-059 REV# 5 <u>Analytical Batch:</u> 1995744

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

<u>GEL Sample ID#</u>	Client Sample Identification
510807001	HF1-B4-(1-2)
510807002	HF1-B4-(2-4)
510807003	HF1-B4-(4-5.33)
510807004	HF1-B5-(1-2)
510807005	HF1-B5-(2-4)
510807006	HF1-B5-(4-6)
510807007	HF1-B5-(6-8)
510807008	HF1-B5-(8-10)
510807010	HF1-B6-(2-4)
510807011	HF1-B6-(4-5.67)
510807012	HF1-B7-(0-2)
510807013	HF1-B7-(2-4)
510807014	HF1-B7-(4-5.42)
1204558064	Method Blank (MB)
1204558065	510807001(HF1-B4-(1-2)) Sample Duplicate (DUP)
1204558066	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.

#### **<u>Certification Statement</u>**

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: <u>1</u> of <u>2</u>				-	-	-	-								GEL 1	GEL Laboratories, LLC	LLC	
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HF1-B5-(1-2)		5/6/2020	0947		N/A	so			-	×	×	×	×	× ×				
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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.	or yes the sample was	field filtered or - N	I - for sample	was not fie	eld filtered.													
4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=M	SW=Surface Water, V	WW=Waste Water	, W=Water, N	1L=Misc	Liquid, SO	=Soil, SD=	ise Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal	,=Sludge,	SS=Soli	d Waste,	0=0il	F=Filte	r, P=Wip	e, U=U	ine, F=Fec	al, 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)	d (i.e. 8260B, 6010B/7	7470A) and numbe	r of container:	s provided	for each (i	c. 8260B	-3, 60108/74	704 - 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	Acid, SH = Sodium H	ydroxide, $SA = Su$	Ifuric Acid, A	A = Ascor	bic Acid, H	IX = Hexar	ne, ST = Sodi	um Thios	ılfate, If	no prese	rvative	is added	= leave	field bla	ık			
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HF1-B6-(2-4)	1 941 8 2017 - 10	5/6/2020	1440	28	N/A	SO			1	×	×	×	x x	×		1			
HF1-B6-(4-5.67)		5/6/2020	1525		N/A	so			-	×	×	×	××	×		-			
HF1-B7-(0-2)	5. 5. 5. 5	5/6/2020	1553	, 13 	N/A	so			-	×	×	×	x x	×			14 		
HF1-B7-(2-4)		5/6/2020	1613		N/A	so			-	×	×	×	x x	×		-		Please note that MDC for	or
HF1-B7-(4-5.42)	5 5 1 2 4 -	5/6/2020	1631	2 2 2	N/A	so			-	×	×	×	x	×				Tc-99 should be 5 pCi/g	6
HF1-B7-Refusal		5/6/2020	1631		N/A	so			1	×									
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	nain of Custo	Chain of Custody Signatures						TA	T Requ	TAT Requested:		Normal:	X	Rush:		Specify:		(Subject to Surcharge)	
Relinquished By (Signed) Date Time		Received by (signed)		Date	Time			Fax Results: [ ] Yes	ults: [	] Yes	[ ] No	0N							
1 Randy Crews & Cours 5/ 2020	5101	1 lacy	Boun	S	517120		5101	Select Deliverable: [ ] C of A	elivera	ble: [	C of.		[ ] QC Summary	nmary	[ ] level 1		[ ] Level 2	[ ] Level 3 [ ] Level 4	4
2		2						Additional Remarks.	al Ren	arks:								-	
3 > For sample shipping and delivery details, see Sample Receipt & Review form (SRR)	ample Receipt	3 & Review form	(SRR.)	1. I.			For Lab Receiving Use Only: Custody Seal Intact?         ] Yes           Sample Collection Time Zone:         [X] Eastern         [] Pacific         [] Central	For La	Recei	Ving U. Zone:	se Onl	v: Cus astern	ody See	al Intac	For Lab Receiving Use Only: Custody Seal Intact? [] Yes ollection Time Zone: [X] Eastern [] Pacific [] Centi		No Cot	] No Cooler Temp:	
1.) Chain of Custody Number = Client Determined																	10		
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	ield Duplicate, EB	= Equipment Blank	, MS = Matrix	Spike Sa	nple, MSD	= Matrix	Spike Duplic	ate Sample	, <b>G</b> = Gr	ab, C = (	Compos	ę							
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.	r yes the sample wa	as field filtered or - I	N - for sample v	vas not fie	ld filtered.														
4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=M	W=Surface Water	, WW=Waste Wate	r, W=Water, N	IL=Misc	iquid, SO	=Soil, SD=	isc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal	L=Sludge,	SS=Solic	I Waste,	0=0il,	F=Filter,	P=Wipe	, U=Urir	e, 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).	(i.e. 8260B, 6010F	8/7470A) and numbe	er of containers	provided	for each (i	.e. 8260B	-3, 60108/7	4704 - 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	cid, SH = Sodium	Hydroxide, $SA = St$	Ifuric Acid, A/	A = Ascor	oic Acid, I	IX = Hexa	ne, ST = Sod	lium Thios	ilfate, If	no prese	rvative i	s added	= leave fi	eld blank	- 2012				
7.) KNOWN OR POSSIBLE HAZARDS	Characteristic Hazards FL = Flammable/Ignitable	ic Hazards able/Ignitable	Listed Waste LW= Listed W	Listed Waste LW= Listed Waste	aste	-		Other OT= Other / Unknown	her / U	nknow	٦.					Plea	tse provia	Please provide any additional details below reparding handling and/or disposal	osal
s	CO = Corrosive RE = Reactive	ive e	(F,K,P Waste	(F,K,P and U-I Waste code(s):	(F,K,P and U-listed wastes.) Waste code(s):	tes.)		(i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)	gh/low alth ha	pH, as zards,	bestos, etc.)	beryll	um, irr	itants,	other	con. of si	cerns. (i.	concerns. (i.e.: Origin of sample(s), type of site collected from. odd matrices. etc.)	ed be
Ba = Barium See Selenium Cd = Codmium Arr Silvor	TECA Dam	a ta d						Description:	tion:							,			
Cr = Chromium MR = Misc. RCRA metals	PCB = Polychlorinated	hlorinated		· .	2								a.						
Page 45 of 47 SDG: 510807	biphenyls	snyls									2		1						

CEE

c	lient: WNU	r		T	SAMPLE RECEIPT & REVIEW FORM
R					DG/AR/COC/Work Order: 50807
F	Leceived By: SLBOC	2N	-	D	ate Received: MAY7,2020
	Carrier and Tracking Number			5	Circk Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other
Su	spected Hazard Information	Yes	No	*11	f Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
A)	Shipped as a DOT Hazardous?		-	Ha	uzard Class Shipped: UN#: UN2910, Is the Radioactive Shipment Survey Compliant? Yes No
B) rec	Did the client designate the samples are to be reived as radioactive?		-	-00	DC notation or radioactive stickers on containers equal client designation.
C) rad	Did the RSO classify the samples as lioactive?		1	Ma Cl:	aximum Net Counts Observed* (Observed Counts - Area Background Counts):CPM / mR/Hr
D) haz	Did the client designate samples are ardous?		-		PC notation or hazard labels on containers equal client designation.
E)	Did the RSO identify possible hazards?		-	If E PCI	D or E is yes, select Hazards below. B's Flammable Foreign Soil RCRA Asbestos Beryllium Other:
	Sample Receipt Criteria	Yes	YN	No	Comments/Qualifiers (Description for No. 2)
1	Shipping containers received intact and sealed?				Comments/Qualifiers (Required for Non-Conforming Itenis) Circle Applicable: Seals broken Damagee container Leaking container Cither (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 $(0 \le 6 \text{ deg. C})$ ?*				Preservation Method: Wet Ice Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: 4 C
4,	Daily check performed and passed on IR temperature gun?				Temperature Device Serial #: TRI-19 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?		Contraction of the second		Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?		-	- 1	Sample ID's and Containers Affected:
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?		A MARKED		ID's and tests affected:
	Sample ID's on COC match ID's on bottles?		Service of the		ID's and containers affected:
	Date & time on COC match date & time on bottles?	1		C	Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
1	Number of containers received match number indicated on COC?		- Tanana	C	Circle Applicable: No container count on COC Other (describe)
-	Are sample containers identifiable as GEL provided?				
3	COC form is properly signed in relinquished/received sections? ments (Use Continuation Form if needed):		時に正確	C	Circle Applicable: Not relinquished Other (describe)
					,
					6.5p

Date 🕥

PM (or PMA) review: Initials NRG

a.t

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State	Certification
Alaska	17-018
Alaska Drinking Water	SC00012
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
Massachusetts PFAS Approv	Letter
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	2019–165
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-20-17
Utah NELAP	SC000122020-32
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
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#### List of current GEL Certifications as of 04 June 2020