
**SITE CLOSEOUT REPORT REV 2 –
APPENDIX B VALIDATION REPORTS**

U.S. DEPARTMENT OF ENERGY

**HIGH FLUX BEAM REACTOR STACK (BLDG 705)
DECOMMISSIONING AND DEMOLITION (D&D)
BROOKHAVEN NATIONAL LABORATORY
UPTON, NY
CERCLIS NUMBER NY 789008975**

APPENDIX B
VALIDATION REPORTS

FPM Remediations, Inc.
Data Verification and Usability Report
BNL Decommissioning
Contract No. W912DW-19-D-1025

FPM Project No. 1085-20-01-01:a

TestAmerica Jobs # 160-41698-1, -2, 160-41798-1, 160-42005-1, -2, 160-42457-1, -2
RJ Lee Group Job #AOH1061663-0, AOH1061738-0, AOH1061985-0, AOH1062465-0

Laboratory:	Test America Laboratories, Inc. (Metals) RJ Lee Group (Asbestos only)
Sample Matrix:	Soil
Number of Samples:	5
Analytical Protocol:	DOD Quality Systems Manual (QSM) Version 5.3, as per project-specific UFP QAPP
Data Reviewer:	Connie van Hoesel
Sample Date:	April 13, 21, May 10, and June 16, 2021

LIST OF DATA VERIFICATION SAMPLES

This verification report pertains to the following environmental samples and corresponding QC samples:

DELIVERABLES

The data deliverable report was per requirements of the DOD QSM, Version 5.3, as specified in the project-specific QAPP (FPM, 2019). The report consisted of the following major sections: lab attachment letter, case narrative, chain-of-custody, lab qualifier definitions, analytical results (sheet 2) based on analytical batch, calibration summaries, method blank summaries, laboratory control sample summaries, matrix spike/matrix spike duplicate summaries, holding time forms, performance checks, surrogate and internal standard recoveries, as applicable.

ANALYTICAL METHODS

The analytical test methods and QA/QC requirements used for the sample analyses were per methods as specified in the DOD QSM, Version 5.3, with project-specific modifications as listed in the project-specific QAPP. The analytical methods employed included metals by Method 6020B, mercury by Method 7471B, and asbestos by Method NYELAP Method 198.1.

**TABLE 1
SUMMARY OF SAMPLE ANALYSES
BNL DECOMMISSIONING**

Sample ID⁽¹⁾	Sample Date	Sample Matrix/ Sample Type	Lab ID	Metals	Mercury	Asbestos	Data Usable⁽²⁾
BF-03-041321	4/13/21	S/N	160-41698-1 10535722.HPL	X (lead only)	X	X	Yes
BF-04-042121	4/21/21	S/N	160-41798-1 10535977.HPL	X (lead only)		X	Yes
BF-05-051021	5/10/21	S/N	160-42005-1 10537264.HPL	X	X	X	Yes
BF-06-051021	5/10/21	S/N	160-42005-1 10537265.HPL	X	X	X	Yes
BF-07-061621	6/16/21	S/N	160-42457-1 10541233.HPL	X (lead only)	X	X	Yes

WG = groundwater, WQ=water quality, TB=trip blank, AB=ambient blank, MS/MSD=matrix spike/matrix spike duplicate, N=normal, FD=field duplicate.

⁽¹⁾ "Sample ID" as shown on COC.

⁽²⁾ "Yes"- Sample analysis considered valid and usable.

VERIFICATION GUIDANCE

The analytical work was performed by Test America Laboratories, Inc. and RJ Lee Group (subcontracted for asbestos only) in accordance with the QC requirements of the respective analytical methods and of the QAPP. The data usability analysis was based on the reviewer's professional judgment and on an assessment of the criteria as listed in the QAPP.

QA/QC CRITERIA

The following QA/QC criteria were reviewed for the metals analyses, as applicable:

- LODs and LOQs
- Holding times
- GC/MS tune performance
- Initial and Continuing calibration summaries
- Method blanks
- ICP interference check sample analysis
- Field duplicate results
- Matrix spike/matrix spike duplicate (MS/MSD) analysis
- Laboratory control samples (LCS)
- ICP serial dilution analysis
- Results reported between LOD and LOQ (J-flag)
- Sample storage and preservation
- Data system printouts
- Qualitative and quantitative compound identification
- Chain-of-custody (COC)
- Case narrative and deliverables compliance

According to the laboratory, the following criteria were reviewed as a part of the laboratory's NVLAP, NYELAP, and AIHA accreditations for asbestos identification methods:

- Microscope Alignment
- Refractive Index Liquid Calibration
- Blank Analysis
- Reference Sample Analysis
- Replicate Analysis

As part of this review, the sample receipt and the point counting results were reviewed.

The items listed above were in compliance with DOD QSM, Version 5.3 and project-specific QAPP criteria and protocols with exceptions discussed in the text below. The data have been verified according to the procedures outlined above and qualified accordingly.

GENERAL NOTES:

BLANKS

Whenever blanks, including method, ambient, equipment, and trip, contained low levels of contaminants (between the DL and LOQ), the laboratory qualified the subject results with a “J” flag. Since no qualification of associated field samples are required for blank concentrations less than half the LOQ, no further action was taken in such instances.

SAMPLE LABELING/CHAIN-OF-CUSTODY

No errors in the chain-of-custody were noted. There were no discrepancies noted between the sample labels and the chain-of-custody, or the cooler contents and the chain-of-custody.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

For metals, the laboratory performed MS/MSD analysis for an internal quality control sample. These was not requested by FPM and was performed for batch control; no action was taken for the MS/MSD criterion for these samples.

METALS

- According to the case narrative, the following samples required dilutions after original results were above the calibration curve:

Analyte	Sample	Dilution
Pb (total)	BF-04-042121	1:2

Use diluted sample results for these compounds only. Original sample results are modified accordingly.

- According to the case narrative, sample BF-07-061621 was analyzed outside of holding time for mercury (42 vs. 28 days).
Corrective Action: In accordance with the QAPP, the detected results are flagged “J”; results are usable but should be considered estimated.

ASBESTOS

- There were no quality control exceedances associated with the asbestos analyses.

DATA USABILITY RESULTS

For each analysis performed, the following data parameters were assessed:

- laboratory analytical precision,
- accuracy,
- representativeness,
- completeness, and
- comparability (PARCC).

Data qualifier results from this review are summarized in Table 2.

METALS

Based on the evaluation of all information in the analytical data groups, the results for metals are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable.

ASBESTOS

Based on the evaluation of all information in the analytical data groups, the results for asbestos are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable.

**TABLE 2
SUMMARY OF QUALIFIED DATA
BNL DECOMMISSIONING**

Sample ID	Lab Sample ID	Analyte	Lab Flag	Validation Flag	Reason
BF-07-061621	160-42457-1	Mercury	H	J	Holding time exceedance

*Data Usability Qualifier based on project QAPP data validation and data usability considerations.

DATA USABILITY SUMMARY

All data in Jobs # 160-41698-1, -2, 160-41798-1, 160-42005-1, -2, 160-42457-1, -2 are valid and usable with qualifications as noted in the data review.

Signed: Concordia van Hoesel Date: 8/23/2021

ATTACHMENTS

- Chain of Custody
- Laboratory's Case Narrative
- Qualified final data verification results on annotated Lab Sheet 2s

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-41698-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
160-41698-1	BF-03-041321	Solid	04/13/21 14:00	04/14/21 09:05	

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-41698-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The sample was received on 4/14/2021 9:05 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.1° C.

ASBESTOS

The sample was analyzed for asbestos by RJ Lee. Refer to the subcontract section of the report for notes and results of this analysis.

PERCENT SOLIDS

Sample BF-03-041321 (160-41698-1) was analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 04/14/2021 and 04/15/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Sample BF-03-041321 (160-41698-1) was analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 04/14/2021, prepared on 04/28/2021 and analyzed on 05/07/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Sample BF-03-041321 (160-41698-1) was analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 04/14/2021, prepared on 04/16/2021 and analyzed on 05/07/2021.

Preparation Batch 160-505916:

For samples BF-03-041321 (160-41698-1), (LCS 160-505916/2-A), (MB 160-505916/1-A), (820-457-B-1-A), and (820-457-B-1-B DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Sample BF-03-041321 (160-41698-1) was analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 04/14/2021, prepared on 04/22/2021 and analyzed on 04/27/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
 Project/Site: BNL Decommissioning Project

Job ID: 160-41698-1

Client Sample ID: BF-03-041321

Lab Sample ID: 160-41698-1

Date Collected: 04/13/21 14:00

Matrix: Solid

Date Received: 04/14/21 09:05

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0987	U	0.175	0.175	3.00	0.304	pCi/g	04/28/21 12:20	05/07/21 14:58	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Sr Carrier</i>	76.9		40 - 110					04/28/21 12:20	05/07/21 14:58	1
<i>Y Carrier</i>	92.3		40 - 110					04/28/21 12:20	05/07/21 14:58	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	-0.0550	U	0.108	0.108		0.184	pCi/g	04/16/21 16:08	05/07/21 06:47	1
Cesium-137	0.361		0.0599	0.0703		0.0353	pCi/g	04/16/21 16:08	05/07/21 06:47	1
Cobalt-60	0.0206	U	0.0108	0.0110		0.0439	pCi/g	04/16/21 16:08	05/07/21 06:47	1
Radium-226	0.213		0.0638	0.0674	1.00	0.0608	pCi/g	04/16/21 16:08	05/07/21 06:47	1
Europium-152	0.0566	U	0.0872	0.0874		0.138	pCi/g	04/16/21 16:08	05/07/21 06:47	1
Europium-154	0.0196	U	0.0239	0.0240		0.104	pCi/g	04/16/21 16:08	05/07/21 06:47	1
Europium-155	0.000	U	0.0543	0.0543		0.456	pCi/g	04/16/21 16:08	05/07/21 06:47	1
<i>Other Detected</i>			Count Uncert.	Total Uncert.						
<i>Radionuclides</i>	<i>Result</i>	<i>Qualifier</i>	<i>(1.96σ+/-)</i>	<i>(1.96σ+/-)</i>	<i>LOQ</i>	<i>MDC</i>	<i>Unit</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ac-228</i>	0.577		0.134	0.146		0.0599	pCi/g	04/16/21 16:08	05/07/21 06:47	1
<i>Bi-214</i>	0.213		0.0638	0.0674		0.0608	pCi/g	04/16/21 16:08	05/07/21 06:47	1
<i>K-40</i>	4.31		0.760	0.874		0.439	pCi/g	04/16/21 16:08	05/07/21 06:47	1
<i>Pb-212</i>	0.378		0.0647	0.0805		0.0641	pCi/g	04/16/21 16:08	05/07/21 06:47	1
<i>Pb-214</i>	0.351		0.0708	0.0793		0.0820	pCi/g	04/16/21 16:08	05/07/21 06:47	1
<i>Tl-208</i>	0.178		0.0372	0.0414		0.0146	pCi/g	04/16/21 16:08	05/07/21 06:47	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.00993	U	0.914	0.914	5.00	1.61	pCi/g	04/22/21 09:19	04/27/21 14:47	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni Carrier</i>	77.6		40 - 110					04/22/21 09:19	04/27/21 14:47	1

Laboratory Report

Eurofins TestAmerica, St. Louis
13715 Rider Trail North
Earth City, MO 63045
United States
Attention: Ivan H Vania
Telephone: 314-298-8566

Report Date 04/29/2021
Sample Receipt Date 04/15/2021
RJ Lee Group Job No. AOH1061663-0
Authorization/P.O. No.
Client Job No./Name 160-41698-1

Analysis: Asbestos in Bulk Samples by Point Count
Method: NYELAP Method 198.1

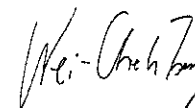
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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10535722.HPL	BF-03-041321 (160-41698-1)	Yes	1	ND		100.00	Q, CA, AM, F, OP, M	WT-04/28/2021
Description:		Tan Sand. 400 Point Count. Detection Limit=0.25%. No Asbestos Detected. NY ELAP Method 198.1						
Weight Loss:		0.0%						

Client Job No./Name: 160-41698-1

RJ Lee Group Job No: AOH1061663-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
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Authorized Signature: _____

Wei-Chieh Tseng, Microscopist

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ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- AM = Amphibole
- B = Binder
- CA = Carbonates
- CL = Clay
- F = Feldspar
- G = Gypsum
- HY = Hydromagnesite
- M = Miscellaneous
- MI = Mica
- OP = Opaque
- OR = Organic
- P = Perlite
- Q = Quartz
- T = Tar
- V = Vermiculite

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratory results are limited to the reported values.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-41698-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
160-41698-1	BF-03-041321	Solid	04/13/21 14:00	04/14/21 09:05	

Chain of Custody Record



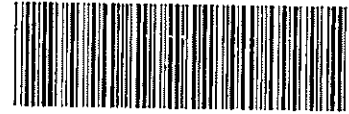
Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

Regulatory Program: DW NPDES RCRA Other:

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact		Project Manager: Dan Ours		Site Contact: Doug Beard		Date: 04-13-21		COC No: _____					
Email: d.ours@fpm-remediations.com		Tel/Fax: (315) 336-7721 ext. 218		Lab Contact: Ivan Vania		Carrier: Fed Ex		TALS Project #: _____					
Address 181 Kenwood Avenue		Analysis Turnaround Time		Filtered Sample (Y / N) Perform MS / MSD (Y / N) Gamma Spec: Ra-226+defects Strontium-90 (GFPC) Asbestos - EPA 600-R-93 Lead (ICP/MS) - EPA 6020B Mercury - EPA 7470A		<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below <u>30</u> Days		Sampler: Doug Beard					
Oneida, NY 13421		<input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day				For Lab Use Only:							
(315) 336-7721 ext. 218 Phone						Walk-in Client: _____							
Fax (315) 336-7722 FAX						Lab Sampling: _____							
Project Name: BNL 705 Stack Demo						Job / SDG No.: _____							
Site: BNL													
P O # 1085-20-01-01													
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Gamma Spec: Ra-226+defects	Strontium-90 (GFPC)	Asbestos - EPA 600-R-93	Lead (ICP/MS) - EPA 6020B	Mercury - EPA 7470A	Sample Specific Notes:
BF-03-041321	13-Apr	0:00	C	Soil	2	N	N	1	1	1	1	1	Plastic bag for rad, Glass jar for chemical
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other													
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)							
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown						<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months							
Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40													
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____		Corr'd: _____		Therm ID No.:					
Relinquished by: Douglas Beard		Company: Cabrera Services, Inc.		Date/Time: 04-13-21 / 17:00		Received by: FEDEX		Company:		Date/Time:			
Relinquished by: FEDEX		Company:		Date/Time:		Received by: <i>[Signature]</i>		Company: EIA STL		Date/Time: 4/14/21 0905			
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:		Date/Time:			

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160-41698 Chain of Custody

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-41698-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The sample was received on 4/14/2021 9:05 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.1° C.

METALS ICP/MS

Sample BF-03-041321 (160-41698-1) was analyzed for Metals ICP/MS in accordance with SW 846. The samples were prepared and analyzed on 05/10/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY

Sample BF-03-041321 (160-41698-1) was analyzed for mercury in accordance with EPA SW-846 Method 7471B. The samples were prepared and analyzed on 05/10/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-41698-2

Client Sample ID: BF-03-041321

Lab Sample ID: 160-41698-1

Date Collected: 04/13/21 14:00

Matrix: Solid

Date Received: 04/14/21 09:05

Percent Solids: 97.2

Method: 6020B - Metals (ICP/MS)										
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Lead	7.8		0.59	0.20	mg/Kg	✱	05/10/21 05:26	05/10/21 18:02	1	

Method: 7471B - Mercury (CVAA)										
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Mercury	0.036		0.016	0.0037	mg/Kg	✱	05/10/21 03:12	05/10/21 07:25	1	

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-41798-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
160-41798-1	BF-04-042121	Solid	04/21/21 15:00	04/22/21 09:00	

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-41798-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The sample was received on 4/22/2021 9:00 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8° C.

ASBESTOS

The sample was analyzed for asbestos by RJ Lee. Refer to the subcontract section of the report for notes and results of this analysis.

METALS (ICP/MS)

Sample BF-04-042121 (160-41798-1) was analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 04/28/2021 and analyzed on 05/03/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Sample BF-04-042121 (160-41798-1) was analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 04/26/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Sample BF-04-042121 (160-41798-1) was analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 04/23/2021, prepared on 05/04/2021 and analyzed on 05/13/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Sample BF-04-042121 (160-41798-1) was analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 04/23/2021, prepared on 04/29/2021 and analyzed on 05/20/2021.

Preparation Batch 160-507694:

The relative percent difference (RPD) and replicate error ratio (RER) is outside of the acceptance limits of 40%/1 for Co-60 (217%/1.76). Both the sample and duplicate activity were less than the MDC: (160-41814-A-4-C DU).

The method blank (MB) z-score is within limits and is stored in the level IV raw data: (MB 160-507694/1-A).

For samples BF-04-042121 (160-41798-1), (LCS 160-507694/2-A), (MB 160-507694/1-A), (160-41814-A-4-B), and (160-41814-A-4-C DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred	Reported
From	to
Nuclide	Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
 Project/Site: BNL Decommissioning Project

Job ID: 160-41798-1

Client Sample ID: BF-04-042121

Lab Sample ID: 160-41798-1

Date Collected: 04/21/21 15:00

Matrix: Solid

Date Received: 04/22/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.107	U	0.169	0.169	3.00	0.333	pCi/g	05/04/21 16:06	05/13/21 16:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	67.9		40 - 110					05/04/21 16:06	05/13/21 16:16	1
Y Carrier	89.7		40 - 110					05/04/21 16:06	05/13/21 16:16	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.364		0.182	0.186		0.177	pCi/g	04/29/21 12:54	05/20/21 05:45	1
Bismuth-212	0.0140	U	0.697	0.697		1.28	pCi/g	04/29/21 12:54	05/20/21 05:45	1
Bismuth-214	0.324		0.102	0.107		0.0880	pCi/g	04/29/21 12:54	05/20/21 05:45	1
Lead-212	0.280		0.0867	0.0937		0.117	pCi/g	04/29/21 12:54	05/20/21 05:45	1
Lead-214	0.394		0.0963	0.104		0.0806	pCi/g	04/29/21 12:54	05/20/21 05:45	1
Potassium-40	4.25		0.964	1.05		0.580	pCi/g	04/29/21 12:54	05/20/21 05:45	1
Radium-226	0.324		0.102	0.107	1.00	0.0880	pCi/g	04/29/21 12:54	05/20/21 05:45	1
Cesium-137	0.221		0.0690	0.0726		0.0548	pCi/g	04/29/21 12:54	05/20/21 05:45	1

Client Sample ID: BF-04-042121

Lab Sample ID: 160-41798-1

Date Collected: 04/21/21 15:00

Matrix: Solid

Date Received: 04/22/21 09:00

Percent Solids: 95.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	7.3	D	0.27	0.11	mg/Kg	*	04/28/21 10:49	05/03/21 21:34	2

cut
8/23/21

QC Sample Results

Client: FPM Remediations Inc
 Project/Site: BNL Decommissioning Project

Job ID: 160-41798-1

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 160-507496/1-A ^2						Client Sample ID: Method Blank			
Matrix: Solid						Prep Type: Total/NA			
Analysis Batch: 508220						Prep Batch: 507496			
Analyte	MB	MB	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.23	U	0.28	0.12	mg/Kg		04/28/21 10:49	05/03/21 20:39	2

Lab Sample ID: LCS 160-507496/2-A ^2						Client Sample ID: Lab Control Sample			
Matrix: Solid						Prep Type: Total/NA			
Analysis Batch: 508220						Prep Batch: 507496			
Analyte			Spike	LCS	LCS	Unit	D	%Rec	Limits
Lead			93.9	91.9	D	mg/Kg		98	84 - 118

Lab Sample ID: 280-147756-A-1-D MS ^2						Client Sample ID: Matrix Spike			
Matrix: Solid						Prep Type: Total/NA			
Analysis Batch: 508220						Prep Batch: 507496			
Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
Lead	3.1	D	90.9	88.4	D	mg/Kg		94	84 - 118

Lab Sample ID: 280-147756-A-1-E MSD ^2						Client Sample ID: Matrix Spike Duplicate					
Matrix: Solid						Prep Type: Total/NA					
Analysis Batch: 508220						Prep Batch: 507496					
Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
Lead	3.1	D	89.0	85.9	D	mg/Kg		93	84 - 118	3	20

Lab Sample ID: LRC 160-508220/12						Client Sample ID: Lab Control Sample			
Matrix: Solid									
Analysis Batch: 508220									
Analyte			Spike	LRC	LRC	Unit	D	%Rec	Limits
Lead			2000	1960		ug/L		98	90 - 110

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-508276/4-A						Client Sample ID: Method Blank				
Matrix: Solid						Prep Type: Total/NA				
Analysis Batch: 509482						Prep Batch: 508276				
Analyte	MB	MB	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.03066	U	(1.96σ+/-) 0.154	(1.96σ+/-) 0.154	3.00	0.287	pCi/g	05/04/21 16:06	05/13/21 16:16	1
Carrier	MB	MB					Unit	Prepared	Analyzed	Dil Fac
	%Yield	Qualifier	Limits							
Sr Carrier	93.1		40 - 110					05/04/21 16:06	05/13/21 16:16	1
Y Carrier	87.1		40 - 110					05/04/21 16:06	05/13/21 16:16	1

Laboratory Report

Eurofins TestAmerica, St. Louis
13715 Rider Trail North
Earth City, MO 63045
United States
Attention: Ivan H Vania
Telephone: 314-298-8566

Report Date 05/06/2021
Sample Receipt Date 04/23/2021
RJ Lee Group Job No. AOH1061738-0
Authorization/P.O. No.
Client Job No./Name 160-41798-1

Analysis: Asbestos in Bulk Samples by Point Count
Method: NYELAP Method 198.1

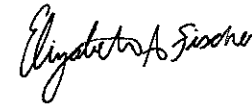
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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10535977.HPL	BF-04-042121 (160-41798-1)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-05/04/2021
Description:		Brown Powder NY ELAP Method 198.1. No Asbestos Detected.						
Weight Loss:		0.0%						

Client Job No./Name: 160-41798-1

RJ Lee Group Job No: AOH1061738-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
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Authorized Signature: _____

Elizabeth Fischer, Microscopist

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ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- AM = Amphibole
- B = Binder
- CA = Carbonates
- CL = Clay
- F = Feldspar
- G = Gypsum
- HY = Hydromagnesite
- M = Miscellaneous
- MI = Mica
- OP = Opaque
- OR = Organic
- P = Perlite
- Q = Quartz
- T = Tar
- V = Vermiculite

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-42005-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
160-42005-1	BF-05-051021	Solid	05/10/21 15:00	05/11/21 09:10	
160-42005-2	BF-06-051021	Solid	05/10/21 15:00	05/11/21 09:10	

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-42005-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 5/11/2021 9:10 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8° C.

ASBESTOS

The sample was analyzed for asbestos by RJ Lee. Refer to the subcontract section of the report for notes and results of this analysis.

PERCENT SOLIDS

Samples BF-05-051021 (160-42005-1) and BF-06-051021 (160-42005-2) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 05/11/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples BF-05-051021 (160-42005-1) and BF-06-051021 (160-42005-2) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 05/11/2021, prepared on 05/27/2021 and analyzed on 06/09/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples BF-05-051021 (160-42005-1) and BF-06-051021 (160-42005-2) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 05/11/2021, prepared on 05/13/2021 and analyzed on 06/03/2021.

Preparation Batch 160-509473:

For samples BF-05-051021 (160-42005-1), BF-06-051021 (160-42005-2), (LCS 160-509473/2-A), (MB 160-509473/1-A), (160-42040-A-1-A), and (160-42040-A-1-B DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Chain of Custody Record



A041061985-0

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Vania, Ivan H	Carrier Tracking No(s):	COC No: 160-213042.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Ivan.Vania@Eurofinset.com	State of Origin: New York	Page: Page 1 of 1
Company: RJ Lee Group, Inc	Accreditations Required (See note): DoD - AZLA; DoD - ANAB; NELAP - New York		Job #: 160-42005-1	

Address: 350 Hochberg Rd. City: Monroeville State, Zip: PA, 15146 Phone: Email:	Due Date Requested: 6/9/2021 TAT Requested (days):	Analysis Requested			Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)				
Project Name: BNL Decommissioning Project Site:	PO #: WO #:	<table border="1"> <tr> <td>Field Filtered Sample (Yes or No)</td> <td>Perform MS/MSD (Yes or No)</td> <td colspan="2">SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03) Asbestos - PLM-EPA600-R-93/LAP-080.03</td> </tr> </table>			Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03) Asbestos - PLM-EPA600-R-93/LAP-080.03		Other:
Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03) Asbestos - PLM-EPA600-R-93/LAP-080.03							

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/SL, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03) Asbestos - PLM-EPA600-R-93/LAP-080.03		Total Number of Containers	Special Instructions/Note:
BF-05-051021 (160-42005-1)	5/10/21	15:00 Eastern		Solid	X	X			1	Asbestos - PLM-EPA600-R-93/LAP-080.03
BF-06-051021 (160-42005-2)	5/10/21	15:00 Eastern		Solid	X	X			1	Asbestos - PLM-EPA600-R-93/LAP-080.03

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification Unconfirmed	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2
Special Instructions/QC Requirements:	

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: <i>[Signature]</i>	Date/Time: 5/11/21 1820	Company: <i>RTA-SEL</i>	Received by: <i>[Signature]</i>
Relinquished by:	Date/Time:	Company:	Received by: <i>[Signature]</i>
Relinquished by:	Date/Time:	Company:	Received by:

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
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Client Sample Results

Client: FPM Remediations Inc
 Project/Site: BNL Decommissioning Project

Job ID: 160-42005-1

Client Sample ID: BF-05-051021

Lab Sample ID: 160-42005-1

Date Collected: 05/10/21 15:00

Matrix: Solid

Date Received: 05/11/21 09:10

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.480		0.240	0.243	3.00	0.358	pCi/g	05/27/21 11:07	06/09/21 17:17	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Sr Carrier</i>	67.3		40 - 110					05/27/21 11:07	06/09/21 17:17	1
<i>Y Carrier</i>	86.0		40 - 110					05/27/21 11:07	06/09/21 17:17	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	-0.00944	U	0.109	0.109		0.172	pCi/g	05/13/21 11:19	06/03/21 09:41	1
Cesium-137	0.0262	U	0.0593	0.0594		0.104	pCi/g	05/13/21 11:19	06/03/21 09:41	1
Cobalt-60	0.0113	U	0.0540	0.0540		0.0690	pCi/g	05/13/21 11:19	06/03/21 09:41	1
Radium-226	0.386		0.100	0.108	0.200	0.0771	pCi/g	05/13/21 11:19	06/03/21 09:41	1
Europium-152	0.0685	U	0.126	0.126		0.126	pCi/g	05/13/21 11:19	06/03/21 09:41	1
Europium-154	0.0704	U	0.155	0.155		0.108	pCi/g	05/13/21 11:19	06/03/21 09:41	1
Europium-155	0.0522	U	0.120	0.120		0.207	pCi/g	05/13/21 11:19	06/03/21 09:41	1
<i>Other Detected Radionuclides</i>	<i>Result</i>	<i>Qualifier</i>	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
<i>Ac-228</i>	0.407		0.123	0.130		0.0925	pCi/g	05/13/21 11:19	06/03/21 09:41	1
<i>Bi-214</i>	0.386		0.100	0.108		0.0771	pCi/g	05/13/21 11:19	06/03/21 09:41	1
<i>K-40</i>	3.49		0.876	0.943		0.640	pCi/g	05/13/21 11:19	06/03/21 09:41	1
<i>Pb-212</i>	0.430		0.0836	0.0998		0.0859	pCi/g	05/13/21 11:19	06/03/21 09:41	1
<i>Tl-208</i>	0.139		0.0592	0.0609		0.0614	pCi/g	05/13/21 11:19	06/03/21 09:41	1

Client Sample ID: BF-06-051021

Lab Sample ID: 160-42005-2

Date Collected: 05/10/21 15:00

Matrix: Solid

Date Received: 05/11/21 09:10

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.116	U	0.244	0.244	3.00	0.427	pCi/g	05/27/21 11:07	06/09/21 17:17	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Sr Carrier</i>	51.8		40 - 110					05/27/21 11:07	06/09/21 17:17	1
<i>Y Carrier</i>	90.1		40 - 110					05/27/21 11:07	06/09/21 17:17	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	0.0572	U	0.143	0.143		0.244	pCi/g	05/13/21 11:19	06/03/21 10:18	1
Cesium-137	0.0949		0.0384	0.0396		0.0318	pCi/g	05/13/21 11:19	06/03/21 10:18	1
Cobalt-60	-0.00978	U	0.0449	0.0449		0.0565	pCi/g	05/13/21 11:19	06/03/21 10:18	1
Radium-226	0.264		0.0927	0.0965	0.200	0.101	pCi/g	05/13/21 11:19	06/03/21 10:18	1
Europium-152	0.0890	U	0.175	0.175		0.150	pCi/g	05/13/21 11:19	06/03/21 10:18	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
 Project/Site: BNL Decommissioning Project

Job ID: 160-42005-1

Client Sample ID: BF-06-051021

Lab Sample ID: 160-42005-2

Date Collected: 05/10/21 15:00

Matrix: Solid

Date Received: 05/11/21 09:10

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0501	U	0.0866	0.0868		0.111	pCi/g	05/13/21 11:19	06/03/21 10:18	1
Europium-155	-0.00577	U	0.236	0.236		0.255	pCi/g	05/13/21 11:19	06/03/21 10:18	1
Other Detected										
Radionuclides	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Ac-228	0.484		0.129	0.138		0.0795	pCi/g	05/13/21 11:19	06/03/21 10:18	1
Bi-214	0.264		0.0927	0.0965		0.101	pCi/g	05/13/21 11:19	06/03/21 10:18	1
K-40	3.57		1.03	1.09		0.935	pCi/g	05/13/21 11:19	06/03/21 10:18	1
Pb-212	0.500		0.0857	0.107		0.0831	pCi/g	05/13/21 11:19	06/03/21 10:18	1
Pb-214	0.338		0.0820	0.0889		0.0826	pCi/g	05/13/21 11:19	06/03/21 10:18	1
Tl-208	0.164		0.0495	0.0522		0.0450	pCi/g	05/13/21 11:19	06/03/21 10:18	1

Laboratory Report

Eurofins TestAmerica, St. Louis
13715 Rider Trail North
Earth City, MO 63045
United States
Attention: Ivan H Vania
Telephone: 314-298-8566

Report Date 05/27/2021
Sample Receipt Date 05/12/2021
RJ Lee Group Job No. AOH1061985-0
Authorization/P.O. No.
Client Job No./Name 160-42005-1

Analysis: Asbestos in Bulk Samples by Point Count
Method: NYELAP Method 198.1

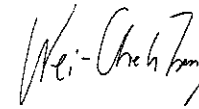
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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10537264.HPL	BF-05-051021 (160-42005-1)	Yes	1	ND		100.00	Q, CA, AM, F, OP, M	WT-05/26/2021
Description:		Tan Rock. 400 Point Count. Detection Limit=0.25%. NYELAP 198.1 No Asbestos Detected.						
Weight Loss: 0.0%								
10537265.HPL	BF-05-051021 (160-42005-2)	Yes	1	ND		100.00	Q, CA, AM, F, OP, M	WT-05/26/2021
Description:		Tan Rock. 400 Point Count. Detection Limit=0.25%. NYELAP 198.1 No Asbestos Detected.						
Weight Loss: 0.0%								

Client Job No./Name: 160-42005-1

RJ Lee Group Job No: AOH1061985-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
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Authorized Signature: _____

Wei-Chieh Tseng, Microscopist

ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- AM = Amphibole
- B = Binder
- CA = Carbonates
- CL = Clay
- F = Feldspar
- G = Gypsum
- HY = Hydromagnesite
- M = Miscellaneous
- MI = Mica
- OP = Opaque
- OR = Organic
- P = Perlite
- Q = Quartz
- T = Tar
- V = Vermiculite

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-42005-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
160-42005-1	BF-05-051021	Solid	05/10/21 15:00	05/11/21 09:10	
160-42005-2	BF-06-051021	Solid	05/10/21 15:00	05/11/21 09:10	

Eurofins TestAmerica, Denver

4955 Yarrow Street
 Arvada, CO 80002
 Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record



Environment Testing
 America

Client Information (Sub Contract Lab)					Sampler:	Lab PM:	Camera Tracking No(s):	COC No:																								
Client Contact: Shipping/Receiving					Phone:	Vania, Ivan H		280-568503.1																								
Company: TestAmerica Laboratories, Inc.					E-Mail:	Ivan.Vania@Eurofinset.com	State of Origin:	Page: Page 1 of 1																								
Address: 777 New Durham Road, City: Edison State, Zip: NJ, 08817 Phone: 732-549-3900(Tel) 732-549-3679(Fax) Email:					Due Date Requested: 6/8/2021	Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Job #: 160-42005-2																								
Project Name: BNL Decommissioning Project					TAT Requested (days):	Analysis Requested																										
Site:					PO #:	Preservation Codes:																										
Project #: 16009147					WO #:	<table border="0"> <tr><td>A - HCL</td><td>M - Hexane</td></tr> <tr><td>B - NaOH</td><td>N - None</td></tr> <tr><td>C - Zn Acetate</td><td>O - AsNaO2</td></tr> <tr><td>D - Nitric Acid</td><td>P - Na2O4S</td></tr> <tr><td>E - NaHSO4</td><td>Q - Na2SO3</td></tr> <tr><td>F - MeOH</td><td>R - Na2S2O3</td></tr> <tr><td>G - Amchlor</td><td>S - H2SO4</td></tr> <tr><td>H - Ascorbic Acid</td><td>T - TSP Dodecahydrate</td></tr> <tr><td>I - Ice</td><td>U - Acetone</td></tr> <tr><td>J - DI Water</td><td>V - MCAA</td></tr> <tr><td>K - EDTA</td><td>W - pH 4-5</td></tr> <tr><td>L - EDA</td><td>Z - other (specify)</td></tr> </table>			A - HCL	M - Hexane	B - NaOH	N - None	C - Zn Acetate	O - AsNaO2	D - Nitric Acid	P - Na2O4S	E - NaHSO4	Q - Na2SO3	F - MeOH	R - Na2S2O3	G - Amchlor	S - H2SO4	H - Ascorbic Acid	T - TSP Dodecahydrate	I - Ice	U - Acetone	J - DI Water	V - MCAA	K - EDTA	W - pH 4-5	L - EDA	Z - other (specify)
A - HCL	M - Hexane																															
B - NaOH	N - None																															
C - Zn Acetate	O - AsNaO2																															
D - Nitric Acid	P - Na2O4S																															
E - NaHSO4	Q - Na2SO3																															
F - MeOH	R - Na2S2O3																															
G - Amchlor	S - H2SO4																															
H - Ascorbic Acid	T - TSP Dodecahydrate																															
I - Ice	U - Acetone																															
J - DI Water	V - MCAA																															
K - EDTA	W - pH 4-5																															
L - EDA	Z - other (specify)																															
SSOW#:					Field Filtered Sample (Yes or No):	Total Number of containers:																										
Sample Identification - Client ID (Lab ID)				Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, Or waste/Oil, DT=TISSUE, A=Air)	Special Instructions/Note:																								
BF-05-051021 (160-42005-1)				5/10/21	15:00 Eastern	Solid		X	X	1																						
BF-06-051021 (160-42005-2)				5/10/21	15:00 Eastern	Solid		X	X	1																						

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
Level 1 radioactive					<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
Deliverable Requested: I, II, III, IV, Other (specify)					Primary Deliverable Rank: 2				
Empty Kit Relinquished by:					Special Instructions/QC Requirements:				

Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
<i>[Signature]</i>	5/14/21 1445		Jeanette via Fedex	5/15/21 1030	ETA
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.: <i>1213255</i>	Cooler Temperature(s) °C and Other Remarks: <i>4.5°C / 4.0°C</i>
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CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-42005-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 5/11/2021 9:10 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.8° C.

METALS ICP/MS

Samples BF-05-051021 (160-42005-1) and BF-06-051021 (160-42005-2) were analyzed for Metals ICP/MS in accordance with SW 846. The samples were prepared on 06/06/2021 and analyzed on 06/07/2021.

Analytical Batch 460-782702:

Beryllium failed the recovery criteria high for the MS of sample 460-235779-2..

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-42005-2

Client Sample ID: BF-05-051021

Lab Sample ID: 160-42005-1

Date Collected: 05/10/21 15:00

Matrix: Solid

Date Received: 05/11/21 09:10

Percent Solids: 97.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.1		0.87	0.087	mg/Kg	✱	06/06/21 19:45	06/07/21 11:08	1
Barium	7.2		1.7	0.13	mg/Kg	✱	06/06/21 19:45	06/07/21 11:08	1
Beryllium	0.080	J	0.35	0.050	mg/Kg	✱	06/06/21 19:45	06/07/21 11:08	1
Cadmium	0.098	U	0.87	0.098	mg/Kg	✱	06/06/21 19:45	06/07/21 11:08	1
Chromium	3.3		1.7	0.15	mg/Kg	✱	06/06/21 19:45	06/07/21 11:08	1
Copper	3.7		1.7	0.19	mg/Kg	✱	06/06/21 19:45	06/07/21 11:08	1
Lead	8.2		0.52	0.17	mg/Kg	✱	06/06/21 19:45	06/07/21 11:08	1
Manganese	46		3.5	0.35	mg/Kg	✱	06/06/21 19:45	06/07/21 11:08	1
Nickel	2.1		1.7	0.17	mg/Kg	✱	06/06/21 19:45	06/07/21 11:08	1
Selenium	0.10	U	1.1	0.10	mg/Kg	✱	06/06/21 19:45	06/07/21 11:08	1
Silver	0.077	U	0.87	0.077	mg/Kg	✱	06/06/21 19:45	06/07/21 11:08	1
Zinc	14		7.0	2.0	mg/Kg	✱	06/06/21 19:45	06/07/21 11:08	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.12		0.017	0.0040	mg/Kg	✱	06/07/21 03:22	06/07/21 07:43	1

Client Sample ID: BF-06-051021

Lab Sample ID: 160-42005-2

Date Collected: 05/10/21 15:00

Matrix: Solid

Date Received: 05/11/21 09:10

Percent Solids: 96.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.98		0.86	0.086	mg/Kg	✱	06/06/21 19:45	06/07/21 11:10	1
Barium	8.0		1.7	0.12	mg/Kg	✱	06/06/21 19:45	06/07/21 11:10	1
Beryllium	0.081	J	0.34	0.049	mg/Kg	✱	06/06/21 19:45	06/07/21 11:10	1
Cadmium	0.097	U	0.86	0.097	mg/Kg	✱	06/06/21 19:45	06/07/21 11:10	1
Chromium	3.2		1.7	0.15	mg/Kg	✱	06/06/21 19:45	06/07/21 11:10	1
Copper	3.9		1.7	0.19	mg/Kg	✱	06/06/21 19:45	06/07/21 11:10	1
Lead	7.6		0.52	0.17	mg/Kg	✱	06/06/21 19:45	06/07/21 11:10	1
Manganese	63		3.4	0.35	mg/Kg	✱	06/06/21 19:45	06/07/21 11:10	1
Nickel	2.2		1.7	0.17	mg/Kg	✱	06/06/21 19:45	06/07/21 11:10	1
Selenium	0.10	U	1.1	0.10	mg/Kg	✱	06/06/21 19:45	06/07/21 11:10	1
Silver	0.076	U	0.86	0.076	mg/Kg	✱	06/06/21 19:45	06/07/21 11:10	1
Zinc	14		6.9	2.0	mg/Kg	✱	06/06/21 19:45	06/07/21 11:10	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.13		0.017	0.0040	mg/Kg	✱	06/07/21 03:22	06/07/21 07:45	1

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: BF-05-051021

Lab Sample ID: 160-42005-1

Lab Name: Eurofins TestAmerica, Edison

Job No.: 160-42005-2

SDG ID.: _____

Matrix: Solid

Date Sampled: 05/10/2021 15:00

Reporting Basis: DRY

Date Received: 05/11/2021 09:10

% Solids: 97.4

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-38-2	Arsenic	1.1	0.87	0.087	mg/Kg			1	6020B
7440-39-3	Barium	7.2	1.7	0.13	mg/Kg			1	6020B
7440-41-7	Beryllium	0.080	0.35	0.050	mg/Kg	J		1	6020B
7440-43-9	Cadmium	0.098	0.87	0.098	mg/Kg	U		1	6020B
7440-47-3	Chromium	3.3	1.7	0.15	mg/Kg			1	6020B
7440-50-8	Copper	3.7	1.7	0.19	mg/Kg			1	6020B
7439-92-1	Lead	8.2	0.52	0.17	mg/Kg			1	6020B
7439-96-5	Manganese	46	3.5	0.35	mg/Kg			1	6020B
7440-02-0	Nickel	2.1	1.7	0.17	mg/Kg			1	6020B
7782-49-2	Selenium	0.10	1.1	0.10	mg/Kg	U		1	6020B
7440-22-4	Silver	0.077	0.87	0.077	mg/Kg	U		1	6020B
7440-66-6	Zinc	14	7.0	2.0	mg/Kg			1	6020B
7439-97-6	Mercury	0.12	0.017	0.0040	mg/Kg			1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: BF-06-051021

Lab Sample ID: 160-42005-2

Lab Name: Eurofins TestAmerica, Edison

Job No.: 160-42005-2

SDG ID.: _____

Matrix: Solid

Date Sampled: 05/10/2021 15:00

Reporting Basis: DRY

Date Received: 05/11/2021 09:10

% Solids: 96.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-38-2	Arsenic	0.98	0.86	0.086	mg/Kg			1	6020B
7440-39-3	Barium	8.0	1.7	0.12	mg/Kg			1	6020B
7440-41-7	Beryllium	0.081	0.34	0.049	mg/Kg	J		1	6020B
7440-43-9	Cadmium	0.097	0.86	0.097	mg/Kg	U		1	6020B
7440-47-3	Chromium	3.2	1.7	0.15	mg/Kg			1	6020B
7440-50-8	Copper	3.9	1.7	0.19	mg/Kg			1	6020B
7439-92-1	Lead	7.6	0.52	0.17	mg/Kg			1	6020B
7439-96-5	Manganese	63	3.4	0.35	mg/Kg			1	6020B
7440-02-0	Nickel	2.2	1.7	0.17	mg/Kg			1	6020B
7782-49-2	Selenium	0.10	1.1	0.10	mg/Kg	U		1	6020B
7440-22-4	Silver	0.076	0.86	0.076	mg/Kg	U		1	6020B
7440-66-6	Zinc	14	6.9	2.0	mg/Kg			1	6020B
7439-97-6	Mercury	0.13	0.017	0.0040	mg/Kg			1	7471B

Chain of Custody Record

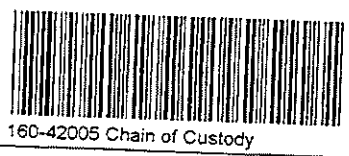
Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

Regulatory Program: DW NPDES RCRA Other:

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact		Project Manager: Dan Ours		Site Contact: Doug Beard		Date:		COC No:												
Email: d.ours@fpm-remediations.com		Tel/Fax: (315) 336-7721 ext. 218		Lab Contact: Ivan Vania		Carrier:		1 of 1 COCs												
Address 181 Kenwood Avenue		Analysis Turnaround Time						TALS Project #:												
Oneida, NY 13421		<input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS						Sampler: B. Gaudette												
(315) 336-7721 ext. 218 Phone		TAT if different from Below 30 Days						For Lab Use Only:												
Fax (315) 336-7722 FAX		<input type="checkbox"/> 2 weeks						Walk-in Client:												
Project Name: BNL 705 Stack Demo		<input type="checkbox"/> 1 week						Lab Sampling:												
Site: BNL		<input type="checkbox"/> 2 days						Job / SDG No.:												
P O # 1085-20-01-01		<input type="checkbox"/> 1 day																		
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Gamma Spec: Ra-226+detectors	Strontium-90 (GFPC)	Asbestos - EPA600 R-93	Lead (ICP/MS) - 6020B	Mercury - EPA 7470A								Sample Specific Notes:
BF-05-051021	10-May	15:00	C	S	2	N	N	1	1	1	1	1							Plastic bag for Rad, Glass jar for Chemical	
BF-06-051021	10-May	15:00	C	S	2	N	N	1	1	1	1	1								
						N	N													
						N	N													
						N	N													
						N	N													
						N	N													
						N	N													
						N	N													
						N	N													
						N	N													
						N	N													
						N	N													
Preservation Used: 1= Ice; 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other																				
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)														
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown						<input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months														
Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40																				
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____		Corr'd: _____		Therm ID No.:												
Relinquished by: Douglas Beard		Company: Cabrera Services, Inc.		Date/Time: 5-10-21/15:00		Received by: Fed Ex		Company:		Date/Time:										
Relinquished by: FED EX		Company:		Date/Time:		Received by: <i>[Signature]</i>		Company: ETA SN		Date/Time: 5/11/21 09:10										
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:		Date/Time:										

Page 1031 of 1034



Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

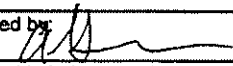
Job ID: 160-42457-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-42457-1	BF-07-061621	Solid	06/16/21 15:00	06/17/21 09:20

Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

Regulatory Program: DW NPDES RCRA Other:

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact		Project Manager: Dan Ours		Site Contact: Doug Beard		Date: 6/16/21		COC No: __1__ of __1__ COCs						
Email: d.ours@fpm-remediations.com		Tel/Fax: (315) 336-7721 ext. 218		Lab Contact: Ivan Vania		Carrier: FedEX		TALS Project #:						
Address 181 Kenwood Avenue		Analysis Turnaround Time		Filtered Sample (Y / N) Perform MS / MSD (Y / N) Gamma Spec: Ra-226+detects Strontium-90 (GFPC) Asbestos - EPA800 R-93 Lead (ICP/MS) - 6020B Mercury - EPA 7470A				Sampler: B. Gaudette						
Oneida, NY 13421		<input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS						TAT if different from Below 30 Days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		For Lab Use Only:				
(315) 336-7721 ext. 218 Phone										Walk-in Client:				
Fax (315) 336-7722 FAX										Lab Sampling:				
Project Name: BNL 705 Stack Demo										Job / SDG No.:				
Site: BNL								Sample Specific Notes:						
P O # 1085-20-01-01														
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Gamma Spec: Ra-226+detects	Strontium-90 (GFPC)	Asbestos - EPA800 R-93	Lead (ICP/MS) - 6020B	Mercury - EPA 7470A		
BF-07-061621	16-Jun	15:00	C	S	2	N	N	1	1	1	1	1	Plastic Bag for Rad, Glass Jar for Chemical	
						N	N							
						N	N							
						N	N							
						N	N							
						N	N							
						N	N							
						N	N							
						N	N							
						N	N							
						N	N							
						N	N							
						N	N							
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other														
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)								
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown						<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months								
Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40														
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.:								
Relinquished by: Douglas Beard		Company: Cabrera Services, Inc.		Date/Time: 6-16-21/15:00		Received by: Fed Ex		Company:		Date/Time:				
Relinquished by: FE		Company:		Date/Time:		Received by: 		Company: ETA STL		Date/Time: 6/17/21 0920				
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:		Date/Time:				

Eurofins TestAmerica, St. Louis

13715 Rider Trail North
Earth City, MO 63045
Phone: 314-298-8566 Fax: 314-298-8757

Chain of Custody Record



eurofins[®] Environment Testing America

Client Information (Sub Contract Lab)		Sampler:	Lab PM: Vania, Ivan H			Carrier Tracking No(s):	COC No: 160-214865.1																			
Client Contact:		Phone:	E-Mail: Ivan.Vania@Eurofinset.com			State of Origin: New York	Page: Page 1 of 1																			
Shipping/Receiving		Company: TestAmerica Laboratories, Inc.					Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York	Job #: 160-42457-1																		
Address: 777 New Durham Road,		Due Date Requested: 7/28/2021	Analysis Requested					Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify)																		
City: Edison		TAT Requested (days):																								
State, Zip: NJ, 08817		PO #:	<table border="1"> <thead> <tr> <th>Field Filtered Sample (Yes or No)</th> <th>Perform MS/MSD (Yes or No)</th> <th>6020B/3050B (MOD) NY Part 375 Analyte List</th> <th>7471B/7471B_Prep</th> <th>Moisture/ (MOD) Local Method</th> <th>Total Number of Containers</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>X</td> <td>X</td> <td></td> <td></td> <td>1</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020B/3050B (MOD) NY Part 375 Analyte List	7471B/7471B_Prep	Moisture/ (MOD) Local Method	Total Number of Containers	X	X	X			1							Other:
Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020B/3050B (MOD) NY Part 375 Analyte List						7471B/7471B_Prep	Moisture/ (MOD) Local Method	Total Number of Containers																
X	X	X								1																
Phone: 732-549-3900(Tel) 732-549-3679(Fax)		WO #:																								
Email:																										
Project Name: BNL Decommissioning Project		Project #: 16009147																								
Site:		SSOW#:																								
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Solid, Gas/Liquid, BT-Tissue, A-Air)	Special Instructions/Note:																				
BF-07-061621 (160-42457-1)		6/16/21	15:00 Eastern	Solid																						
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.																										
Possible Hazard Identification				Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)																						
Unconfirmed				<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months																						
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2		Special Instructions/QC Requirements:																						
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:																						
Relinquished by: <i>D. Chakarinsky</i>		Date/Time: 6/17/2021 17:00	Company: ETAS	Received by: <i>Udaci... via FedEx</i>		Date/Time: 6/18/21 1500	Company: <i>YHE</i>																			
Relinquished by:		Date/Time:	Company:	Received by:		Date/Time:	Company:																			
Relinquished by:		Date/Time:	Company:	Received by:		Date/Time:	Company:																			
Custody Seals Intact: △ Yes △ No	Custody Seal No.:			Cooler Temperature(s) °C and Other Remarks: <i>4.0°C/3.5°C</i>																						

Page 389 of 391

Eurofins TestAmerica, St. Louis

13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8566 Fax: 314-298-8757

Chain of Custody Record



AOH 10624650

Client Information (Sub Contract Lab)		Sampler:	Lab PM: Vania, Ivan H	Carrier Tracking No(s):	COC No: 160-214873.1	
Client Contact: Shipping/Receiving		Phone:	E-Mail: Ivan.Vania@Eurofinset.com	State of Origin: New York	Page: Page 1 of 1	
Company: RJ Lee Group, Inc		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York			Job #: 160-42457-1	
Address: 350 Hochberg Rd,		Due Date Requested: 7/29/2021	Analysis Requested		Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDTA Z - other (specify) Other:	
City: Monroeville		TAT Requested (days):				
State, Zip: PA, 15146		PO #:				
Phone:		WO #:				
Email:		Project #: 16009147	Field Filtered Sample (Yes or No)		Total Number of Containers	
Project Name: BNL Decommissioning Project		SSOW#:	Perform MS/MSD (Yes or No)			
Site:		Matrix (W=water, S=solid, O=waste/wat, ST=Trace, A=Air)		SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03) Asbestos - PLM-EPA600-R-93/LAP-080.03		
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Preservation Code:	Special Instructions/Note:
BF-07-061621 (160-42457-1)		6/16/21	15:00 Eastern	Solid	X	Asbestos - PLM-EPA600-R-93/LAP-080.03
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>						
Possible Hazard Identification			Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
Unconfirmed			<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2		Special Instructions/QC Requirements:		
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:		
Relinquished by: <i>[Signature]</i>		Date/Time: 6/17/21 17:00	Company: E.A.S.T.	Received by: <i>[Signature]</i>		Date/Time: 06-18-2021 09:06 AM
Relinquished by:		Date/Time:	Company:	Received by:		Date/Time:
Relinquished by:		Date/Time:	Company:	Received by:		Date/Time:
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-42457-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The sample was received on 6/17/2021 9:20 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 9.7° C.

Asbestos

The sample was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for notes regarding this analysis.

STRONTIUM-90 (GFPC)

Sample BF-07-061621 (160-42457-1) was analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 06/18/2021, prepared on 07/15/2021 and analyzed on 07/27/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Sample BF-07-061621 (160-42457-1) was analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 06/18/2021, prepared on 06/22/2021 and analyzed on 07/14/2021.

Preparation Batch 160-515451:

The following samples could not be thoroughly homogenized before sub-sampling was performed due to the sample matrix. The sample contained small rocks: BF-07-061621 (160-42457-1) and (160-42457-A-1-A DU).

The detection goal of 0.200 pCi/L was not met for Ra-226. An elevated MDC can occur when higher background counts are applied to a peak ROI. This is due to the relatively small size of the peak or subsequent "force-fit" of the non-existent peak which resulted in higher than normal background counts due to statistical fluctuations in the Compton background. The laboratory does not believe this adversely affects the data, the Ra-226 is well below the RL and MDC: (190-26213-A-1-A) and (190-26213-A-1-C DU).

For samples BF-07-061621 (160-42457-1), (LCS 160-515451/2-A), (MB 160-515451/1-A), (190-26213-A-1-A), and (190-26213-A-1-C DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
 Project/Site: BNL Decommissioning Project

Job ID: 160-42457-1

Client Sample ID: BF-07-061621

Lab Sample ID: 160-42457-1

Date Collected: 06/16/21 15:00

Matrix: Solid

Date Received: 06/17/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0164	U	0.152	0.152	3.00	0.277	pCi/g	07/15/21 09:31	07/27/21 19:17	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Sr Carrier</i>	79.2		40 - 110					07/15/21 09:31	07/27/21 19:17	1
<i>Y Carrier</i>	102		40 - 110					07/15/21 09:31	07/27/21 19:17	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	0.0415	U	0.0836	0.0837		0.110	pCi/g	06/22/21 14:52	07/14/21 05:54	1
Cesium-137	0.00470	U	0.0314	0.0315		0.0574	pCi/g	06/22/21 14:52	07/14/21 05:54	1
Cobalt-60	0.0150	U	0.0131	0.0132		0.0221	pCi/g	06/22/21 14:52	07/14/21 05:54	1
Radium-226	0.236		0.0748	0.0786	0.200	0.0768	pCi/g	06/22/21 14:52	07/14/21 05:54	1
Europium-152	0.0868	U	0.0463	0.0472		0.120	pCi/g	06/22/21 14:52	07/14/21 05:54	1
Europium-154	0.0696		0.0364	0.0371		0.0653	pCi/g	06/22/21 14:52	07/14/21 05:54	1
Europium-155	-0.0656	U	0.205	0.206		0.350	pCi/g	06/22/21 14:52	07/14/21 05:54	1
<i>Other Detected</i>			<i>Count</i>	<i>Total</i>						
<i>Radionuclides</i>	<i>Result</i>	<i>Qualifier</i>	<i>Uncert. (1.96σ+/-)</i>	<i>Uncert. (1.96σ+/-)</i>	<i>LOQ</i>	<i>MDC</i>	<i>Unit</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Bi-214</i>	0.236		0.0748	0.0786		0.0768	pCi/g	06/22/21 14:52	07/14/21 05:54	1
<i>K-40</i>	3.51		0.638	0.729		0.223	pCi/g	06/22/21 14:52	07/14/21 05:54	1
<i>Pb-210</i>	4.44		1.58	1.66		1.76	pCi/g	06/22/21 14:52	07/14/21 05:54	1
<i>Pb-212</i>	0.286		0.0581	0.0685		0.0645	pCi/g	06/22/21 14:52	07/14/21 05:54	1
<i>Pb-214</i>	0.292		0.0613	0.0681		0.0707	pCi/g	06/22/21 14:52	07/14/21 05:54	1
<i>Tl-208</i>	0.112		0.0301	0.0322		0.0209	pCi/g	06/22/21 14:52	07/14/21 05:54	1

Laboratory Report

Eurofins TestAmerica, St. Louis
13715 Rider Trail North
Earth City, MO 63045
United States
Attention: Ivan H Vania
Telephone: 314-298-8566

Report Date 07/07/2021
Sample Receipt Date 06/18/2021
RJ Lee Group Job No. AOH1062465-0
Authorization/P.O. No.
Client Job No./Name 160-42457-1

Analysis: Asbestos in Bulk Samples by Point Count

Method: NYELAP Method 198.1

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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10541233.HPL	BF-07-061621 (160-42457-1)	Yes	1	ND		100.00	Q, CA, OP, M	WT-07/06/2021
Description:		Tan Rock. 400 Point Count. Detection Limit=0.25%. NY ELAP Method 198.1. No Asbestos Detected.						
Weight Loss: 0.0%								

Client Job No./Name: 160-42457-1

RJ Lee Group Job No: AOH1062465-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
--------------------	----------------------	-------------	-------------	----------------------	------------------------	--------------------------	-----------------	-------------------------



Authorized Signature: _____

Wei-Chieh Tseng, Microscopist

ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- AM = Amphibole
- B = Binder
- CA = Carbonates
- CL = Clay
- F = Feldspar
- G = Gypsum
- HY = Hydromagnesite
- M = Miscellaneous
- MI = Mica
- OP = Opaque
- OR = Organic
- P = Perlite
- Q = Quartz
- T = Tar
- V = Vermiculite

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-42457-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-42457-1	BF-07-061621	Solid	06/16/21 15:00	06/17/21 09:20

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler:		Lab PM: Vania, Ivan H		Carrier Tracking No(s):		COC No: 160-214865.1															
Client Contact: Shipping/Receiving		Phone:		E-Mail: Ivan.Vania@Eurofinset.com		State of Origin: New York		Page: Page 1 of 1															
Company: TestAmerica Laboratories, Inc.				Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York				Job #: 160-42457-1															
Address: 777 New Durham Road, City: Edison State, Zip: NJ, 08817 Phone: 732-549-3900(Tel) 732-549-3679(Fax) Email:		Due Date Requested: 7/28/2021 TAT Requested (days):		Analysis Requested						Preservation Codes:													
Project Name: BNL Decommissioning Project Site:		Project #: 16009147 SSOW#:								A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)		Other:									
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=organic)		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		6020B/3050B (MCO) NY Part 375 Analyte List		7471B/7471B_Prep		Molature/ (MCO) Local Method		Total Number of containers		Special Instructions/Note:	
BF-07-061621 (160-42457-1)		6/16/21		15:00 Eastern				Solid		X		X		X									
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>																							
Possible Hazard Identification										Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)													
Unconfirmed										<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months													
Deliverable Requested: I, II, III, IV, Other (specify)										Primary Deliverable Rank: 2													
Empty Kit Relinquished by:										Special Instructions/QC Requirements:													
Date:										Method of Shipment:													
Relinquished by: <i>[Signature]</i>										Date/Time: 6/17/2021 17:00													
Date/Time:										Company: ETASL													
Relinquished by:										Received by: <i>[Signature]</i>													
Date/Time:										Date/Time: 6/18/21 1500													
Relinquished by:										Company: YPE													
Date/Time:										Company:													
Custody Seals Intact:										Cooler Temperature(s) °C and Other Remarks: 4.0°C/3.5°C													
Δ Yes Δ No										Custody Seal No.:													

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CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-42457-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The sample was received on 6/17/2021 9:20 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 9.7° C.

METALS ICP/MS

Sample BF-07-061621 (160-42457-1) was analyzed for Metals ICP/MS in accordance with SW 846. The samples were prepared and analyzed on 07/27/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY

Sample BF-07-061621 (160-42457-1) was analyzed for mercury in accordance with EPA SW-846 Method 7471B. The samples were prepared and analyzed on 07/28/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Sample BF-07-061621 (160-42457-1) was analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 07/14/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-42457-2

Client Sample ID: BF-07-061621

Lab Sample ID: 160-42457-1

Date Collected: 06/16/21 15:00

Matrix: Solid

Date Received: 06/17/21 09:20

Percent Solids: 97.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.4		0.62	0.21	mg/Kg	*	07/27/21 02:40	07/27/21 14:41	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.041	H	0.016	0.0039	mg/Kg	*	07/28/21 03:03	07/28/21 06:35	1

FPM Remediations, Inc.
Data Verification and Usability Report
BNL Decommissioning
Contract No. W912DW-19-D-1025

FPM Project No. 1043-15-01

Eurofins TestAmerica #160-42911-1

Laboratory:	Eurofins TestAmerica Laboratories, Inc.
Sample Matrix:	Soil
Number of Samples:	1
Analytical Protocol:	DOD QSM Final Version 5.3, as per project-specific UFP QAPP
Data Reviewer:	Connie van Hoesel
Sample Date:	July 27, 2021

LIST OF DATA VERIFICATION SAMPLES

This verification report pertains to the environmental samples and corresponding QC samples as listed in Table 1.

DELIVERABLES

The data deliverable reports were per requirements of the New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP) Category B (a “NYDOH-CatB” report, per the case narrative). The reports consisted of the following major sections: sample delivery group (SDG) narrative, reporting limit definitions, chain-of-custody, analytical results based on analytical batch, data package summary forms, including calibration summaries, method blank summaries, laboratory control sample summaries, matrix spike/matrix spike duplicate summaries, performance checks, surrogate and internal standard recoveries, etc., as applicable.

ANALYTICAL METHODS

The analytical test methods and QA/QC requirements used for the groundwater sample analyses were per method requirements: SW-846 Volatile Organic Compounds (VOCs) by Method 8260C, Semivolatile Organic Compounds (SVOCs) by Method 8270D, Organochlorine Pesticides by Method 8081B, Polychlorinated Biphenyls (PCBs) by Method 8082A, Chlorinated Herbicides by Method 8151A, Perfluorinated Alkyl Acids by Method 537 modified (Isotope Dilution), Metals by Method 6020B, Mercury by Method 7471B, Hexavalent Chromium by Method 3060A/7196A, Trivalent Chromium by Method 7196A_CR3, and Total Cyanide by Method 9012B.

**TABLE 1
SUMMARY OF SAMPLE ANALYSES
BNL DECOMMISSIONING PROJECT**

Sample ID⁽¹⁾	Sample Date	Sample Matrix/ Sample Type	Lab ID	VOCs, SVOCs, pesticides, PCBs, herbicides	PFAS	Metals, mercury, hexavalent chromium, trivalent chromium, cyanide	Data Usable⁽²⁾
BF-08-072721	7/27/21	S/N	160-42911-1	X	X	X	Yes

WG = groundwater, WQ=water quality, S = soil, TB=trip blank, AB=ambient blank, MS/MSD=matrixspike/matrix spike duplicate, N=normal, FD=field duplicate.

⁽¹⁾ "Sample ID" as shown on COC.

⁽²⁾ "Yes"- Sample analysis considered valid and usable.

VERIFICATION GUIDANCE

The analytical work was performed by Eurofins/TestAmerica in accordance with the project Quality Assurance Project Plan (QAPP). The data usability analysis was based on the reviewer's professional judgment and on an assessment of the criteria as listed in the QAPP.

QA/QC CRITERIA

The following QA/QC criteria were reviewed for the VOCs, SVOCs, pesticides, PCBs, herbicides, and PFAS analyses, as applicable:

- Method detection limits and reporting limits (MDL, RL)
- Holding times
- GC/MS tune performance
- Initial and Continuing calibration summaries
- Method blanks
- Field duplicate results
- Matrix spike/matrix spike duplicate (MS/MSD) analysis
- Surrogate spike recoveries
- Internal standard areas counts and retention times
- Laboratory control samples (LCS)
- Results reported between MDL and RL (J-flag)
- Sample storage and preservation
- Data system printouts
- Qualitative and quantitative compound identification
- Chain-of-custody (COC)
- Case narrative and deliverables compliance

The following QA/QC criteria were reviewed for the metals, hexavalent chromium, trivalent chromium, and mercury analyses, as applicable:

- LODs and LOQs
- Holding times
- GC/MS tune performance
- Initial and Continuing calibration summaries
- Method blanks
- ICP interference check sample analysis
- Field duplicate results
- Matrix spike/matrix spike duplicate (MS/MSD) analysis
- Laboratory control samples (LCS)
- ICP serial dilution analysis
- Results reported between LOD and LOQ (J-flag)
- Sample storage and preservation
- Data system printouts
- Qualitative and quantitative compound identification
- Chain-of-custody (COC)
- Case narrative and deliverables compliance

The items listed above were in compliance with DOD QSM, Version 5.3 and project-specific QAPP criteria and protocols with exceptions discussed in the text below. The data have been verified according to the procedures outlined above and qualified accordingly.

GENERAL NOTES:

BLANKS

Whenever blanks, including method, ambient, equipment, and trip, contained low levels of contaminants (between the DL and LOQ), the laboratory qualified the subject results with a “J” flag. Since no qualification of associated field samples are required for blank concentrations less than half the LOQ, no further action was taken in such instances.

SAMPLE LABELING/CHAIN-OF-CUSTODY

No errors in the chain-of-custody were noted. There were no discrepancies noted between the sample labels and the chain-of-custody, or the cooler contents and the chain-of-custody.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

For SVOCs, herbicides, PFAS, and metals, the laboratory performed MS/MSD analysis for an internal quality control sample. These was not requested by FPM and was performed for batch control; no action was taken for the MS/MSD criterion for these samples. No flags were applied for these MS/MSD exceedances alone.

VOLATILE ORGANIC COMPOUNDS (VOCs)

- The following blank sample analyses indicated blank contaminants present at concentrations equal to or greater than half the reporting limit (RL) (for the purposes of this data review, the RL is assumed to be equal to the LOQ). The Blank ID, detected contaminant, and concentration are listed.

Blank Client Sample ID	Analyte	Concentration (µg/L)	Reporting Limit (µg/L)	Samples Affected
MB 280-545086/5-A	Methylene chloride	0.427 J	5.0	BF-08-072721

The purpose of laboratory, equipment or trip blank analysis is to determine the existence and magnitude of contamination resulting from lab or field activities. If contamination is found in blanks the associated sample results for these analytes may be considered suspect. As per the UFP QAPP, based on the blank contaminants present above half the LOQ, results for the specific analytes in the associated environmental samples are qualified with a “U” flag, for only those sample results that are less than five times (5x) the blank concentration.

Corrective Action: Using professional judgment, no “U” flags were required since all associated field sample results were non-detect for methylene chloride.

- According to the case narrative, sample BF-08-072721 was not frozen within 48 hours of sample collection.

Corrective Action: In accordance with the QAPP, the detected results are flagged “J” and non-detects “UJ”; results are usable but should be considered estimated.

SVOCs

- There were no quality control exceedances associated with the SVOCs analyses.

PESTICIDES

- Method 8081 requires second column confirmation for the detection of pesticides. When the RPD exceeds 40%, review and possible qualification of the data is required per the QAPP. The following table lists the RPD results for analytes in field samples:

Sample ID	Analyte	First Column Result	Confirmation (CF) Result	RPD	Flag	Rationale
BF-08-072721	alpha-Chlordane	8.2	4.6	55.2	J	RPD > 40%

Corrective Action: In accordance with the DOD QSM, when the RPD exceeds 40%, the results should be flagged “J.” According to the case narrative, the reported result is always the lower of the two results.

PCBs

- There were no quality control exceedances associated with the PCBs analyses.

HERBICIDES

- There were no quality control exceedances associated with the PCBs analyses.

PFAS

- Quantifier and qualifier ions should be monitored for all target analytes (PFBA and PFPeA are exceptions). The ratio of quantifier ion response to qualifier ion response should be calculated from the standards for each target analyte. Lab-derived criteria should be used to determine if the ratios are acceptable. If the ratios fall outside of the laboratory criteria, qualify results as an estimated maximum concentration.

Sample	Analyte	Ratio	Ratio Limits	Flag Applied	Rationale
<i>Parent sample: QU-AD-0212-0920</i>					
BF-08-072721	PFHxS	1.55	1.59-4.78	J	Ratio outside acceptance criteria
CCVL 320-512178/2	PFHxA	17.55	5.79-17.37	J	Ratio outside acceptance criteria
CCVL 320-511877/2	PFHxA	23.63	5.79-17.37	J	Ratio outside acceptance criteria

Corrective Action: The “I” qualifier was applied to the PFHxS result in sample BF-08-072721 to indicate the results be considered an estimated maximum concentration. Since “I” is not a recognized qualifier for data validation purposes, using professional judgment, the results were qualified “J” as estimated. As stated in the case narrative, since the analytes in the CCVLs were in control in the corresponding CCVs, no further action was deemed required.

METALS

- There were no quality control exceedances associated with the metals analyses.

MERCURY

- There were no quality control exceedances associated with the mercury analyses.

HEXAVALENT/TRIVALENT CHROMIUM

- There were no quality control exceedances associated with the chromium analyses.

CYANIDE

- There were no quality control exceedances associated with the cyanide analyses.

DATA USABILITY RESULTS

For each analysis performed, the following data parameters were assessed:

- laboratory analytical precision,
- accuracy,
- representativeness,
- completeness, and
- comparability (PARCC).

Data qualifier results from this review are summarized in Table 2.

VOCs

Based on the evaluation of all information in the analytical data groups, the results for VOCs are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable. PARCC requirements were met overall.

SVOCs

Based on the evaluation of all information in the analytical data groups, the results for SVOCs are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable. PARCC requirements were met overall.

PESTICIDES

Based on the evaluation of all information in the analytical data groups, the results for pesticides are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable. PARCC requirements were met overall.

PCBs

Based on the evaluation of all information in the analytical data groups, the results for PCBs are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable. PARCC requirements were met overall.

HERBICIDES

Based on the evaluation of all information in the analytical data groups, the results for herbicides are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable. PARCC requirements were met overall.

PFAS

Based on the evaluation of all information in the analytical data groups, the results for PFAS are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable. PARCC requirements were met overall.

METALS

Based on the evaluation of all information in the analytical data groups, the results for metals are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable. PARCC requirements were met overall.

MERCURY

Based on the evaluation of all information in the analytical data groups, the results for mercury are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable. PARCC requirements were met overall.

HEXAVALENT/TRIVALENT CHROMIUM

Based on the evaluation of all information in the analytical data groups, the results for hexavalent/trivalent chromium are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable. PARCC requirements were met overall.

CYANIDE

Based on the evaluation of all information in the analytical data groups, the results for cyanide are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable. PARCC requirements were met overall.

DATA USABILITY SUMMARY

All data in Job # 160-42911-1 are valid and usable with qualifications as noted in the data review.

Signed: Concordia van Hoesel Date: 9/3/2021

ATTACHMENTS

- Chain of Custody
- Laboratory's Case Narrative
- Qualified final data verification results on annotated Lab Sheet 2s

**TABLE 2
SUMMARY OF QUALIFIED DATA
BNL DECOMMISSIONING**

Sample ID	Lab Sample ID	Analyte	Lab Flag	Validation Flag	Reason
BF-08-072721	160-42911-1	Methylene chloride	B	U	Analyte present in method blank; concentration in sample < 5x blank concentration
BF-08-072721	160-42911-1	All VOCs	H	UJ/J	Preservation exceedance prior to sample preparation
BF-08-072721	160-42911-1	PFHxS	I	J	Transition ion ratio outside acceptance criteria

*Data Usability Qualifier based on project QAPP data validation and data usability considerations.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-42911-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-42911-1	BF-08-072721	Solid	07/27/21 12:00	07/28/21 10:20

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler:		Lab PM:		Carrier Tracking No(s):		COC No:	
Client Contact:		Phone:		E-Mail:		State of Origin:		Page:	
Shipping/Receiving				Ivan.Vania@Eurofinset.com		New York		Page 1 of 1	
Company:		TestAmerica Laboratories, Inc.		Accreditations Required (See note):		DoD - A2LA; DoD - ANAB; NELAP - New York		Job #:	
Address:		4955 Yarrow Street,		Due Date Requested:		8/24/2021		TAT Requested (days):	
City:		Arvada		PO #:				WO #:	
State, Zip:		CO, 80002		Project #:		16009147		SSOW#:	
Phone:		303-736-0100(Tel) 303-431-7171(Fax)		Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time	
Email:				Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=organic, BT=Tissue, A=Ab)		Preservation Code:	
Project Name:		BNL Decommissioning Project		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		8260C/6035A, FW NY Part 375 Compound List	
Site:				8270D/3550C NY Part 375 Compound List		Moisture		Total Number of containers	
								Analysis Requested	
								Preservation Codes:	
								A - HCL M - Hexane	
								B - NaOH N - None	
								C - Zn Acetate O - AsNaO2	
								D - Nitric Acid P - Na2O4S	
								E - NaHSO4 Q - Na2SO3	
								F - MeOH R - Na2S2O3	
								G - Amchlor S - H2SO4	
								H - Ascorbic Acid T - TSP Dodecahydrate	
								I - Ice U - Acetone	
								J - DI Water V - MCAA	
								K - EDTA W - pH 4-5	
								L - EDA Z - other (specify)	
								Other:	
								Special Instructions/Note:	
BF-08-072721 (160-42911-1)		7/27/21		12:00 Eastern		Solid		X X X	
								5	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification				Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
Unconfirmed				<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2		Special Instructions/QC Requirements:			
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:	
Relinquished by: <i>S. V. Koenigs</i>		Date/Time: 7/29/21 17:30		Company: <i>ETA SL</i>		Received by: <i>[Signature]</i>	
Relinquished by:		Date/Time:		Company:		Date/Time: 8/12/2021 09:15	
Relinquished by:		Date/Time:		Company:		Date/Time:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 1.1 IR12 CPT-0.6			

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Chain of Custody Record



Regulatory Program: DW NPDES RCRA Other:

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact		Project Manager: Dan Ours		Site Contact: Jake Pratt		Date: 7/26/24 → 7-27-21		COC No:	
FPM		Email: d.ours@fpm-remediations.com		Tel/Fax: (315) 336-7721 ext. 218		Lab Contact: Ivan Vania		Carrier: FedEx	
Address 181 Kenwood Avenue		Analysis Turnaround Time		<input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below 30 Days <input type="checkbox"/> 2 weeks <input checked="" type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Filtered Sample (Y/N) Perform MS/MSD (Y/N) VOCs (8260C) SVOCs (8270D) Metals (6020A, 7471B, 7196A) Pesticides (8081B) Herbicides (8151A) PCBs (8082A) PFAS (EPA 637 Modified) Total Cyanide (8012B)		TALS Project #:	
Oneida, NY 13421		Phone						Sampler: PRATT - B. Gaudette	
(315) 336-7721 ext. 218		FAX						For Lab Use Only:	
Project Name: BNL 705 Stack Demo		Site: BNL						Walk-in Client:	
P O # 1085-20-01-01						Lab Sampling:		Job / SDG No.:	

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	VOCs (8260C)	SVOCs (8270D)	Metals (6020A, 7471B, 7196A)	Pesticides (8081B)	Herbicides (8151A)	PCBs (8082A)	PFAS (EPA 637 Modified)	Total Cyanide (8012B)	Sample Specific Notes:
BF-08-072621	27 Jul															
BF-08-072721	27 Jul	1200	C	S		W	X	X	X	X	X	X	X	X	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Special Instructions/QC Requirements & Comments: All samples to be analyzed in accordance with the August, 2020 UFP-QAPP for the above referenced project.

Custody Seals Intact: Yes No. Relinquished by: Jake Pratt. Company: FPM. Date/Time: 6-21/15:00. Received by: Fed EX. Company: ETA. Date/Time: JUL 27 2021 10:20.

Relinquished by: Jake Pratt. Company: FPM. Date/Time: 6-21/15:00. Received by: Fed EX. Company: ETA. Date/Time: JUL 27 2021 10:20.

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler:		Lab PM:		Carrier Tracking No(s):		COC No:			
Client Contact: Shipping/Receiving		Phone:		E-Mail:		State of Origin:		Page:			
Company: TestAmerica Laboratories, Inc.		Due Date Requested: 8/24/2021		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Job #:		160-42911-1			
Address: 777 New Durham Road,		TAT Requested (days):		Analysis Requested						Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify)	
City: Edison		PO #:									
State, Zip: NJ, 08817		WO #:		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		Total Number of Containers			
Phone: 732-549-3900(Tel) 732-549-3679(Fax)		Project #: 16009147		6020B/3060B NY Part 376 Analyte List		7471B/7471B_Prep					
Email:		SSOW#:		7196A/3060A Hexavalent Chromium - 7196		7196A_CR3		9012B/9012B_Prep			
Project Name: BNL Decommissioning Project		Site:		8081B/3546 (MOD) Target Compound List for Pesticide		8082A/3546 PCBs		8151A/8161A_SP Standard Herbicide List - 3 empds			
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=wastewater, BT=Trace, A=Al)		Special Instructions/Note:	
BF-08-072721 (160-42911-1)		7/27/21		12:00 Eastern		Solid		X X X X X X X X X X		5	
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>											
Possible Hazard Identification					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)						
Unconfirmed					<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months						
Deliverable Requested: I, II, III, IV, Other (specify)					Primary Deliverable Rank: 2		Special Instructions/QC Requirements:				
Empty Kit Relinquished by:			Date:		Time:		Method of Shipment:				
Relinquished by: <i>Nicha Konings</i>			Date/Time: 7/28/21 17:30		Company: <i>ETA-SN</i>		Received by: <i>Via FedEx</i>		Date/Time: 7/29/21 19:30		Company: <i>ETA-</i>
Relinquished by:			Date/Time:		Company:		Received by:		Date/Time:		Company:
Relinquished by:			Date/Time:		Company:		Received by:		Date/Time:		Company:
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:			Cooler Temperature(s) °C and Other Remarks: <i>#D#9-3.6=3.1</i>						

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Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler:		Lab PM:		Carrier Tracking No(s):		COC No:			
Client Contact:		Phone:		E-Mail:		State of Origin:		Page:			
Shipping/Receiving				Ivan.Vania@Eurofinset.com		New York		Page 1 of 1			
Company:		TestAmerica Laboratories, Inc.		Accreditations Required (See note):		DoD - A2LA; DoD - ANAB; NELAP - New York		Job #:			
Address:		Due Date Requested:		Analysis Requested						Preservation Codes:	
880 Riverside Parkway,		8/24/2021									
City:		TAT Requested (days):									
West Sacramento											
State, Zip:		PO #:									
CA, 95605				WO #:							
Phone:		Project #:		SSOW#:							
916-373-5600(Tel) 916-372-1059(Fax)		16009147									
Email:		Project Name:		Site:							
		BNL Decommissioning Project									
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=unknown)	Field Filled Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC, IDA/Shake_Bath_140 PPAS, Standard List (21 Analytes)	Moisture	Total Number of Containers	Special Instructions/Note:
				Preservation Code:							
BF-08-072721 (160-42911-1)	7/27/21	12:00 Eastern		Solid		X	X			3	
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>											
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
Unconfirmed						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Deliverable Requested: I, II, III, IV, Other (specify)			Primary Deliverable Rank: 2			Special Instructions/QC Requirements:					
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:					
Relinquished by: <i>Trina K... King</i>		Date/Time: 7/29/21 17:30		Company: ENA STL		Received by: <i>[Signature]</i>		Date/Time: 7/29/21 9:45		Company: <i>ENASAL</i>	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Custody Seals Intact:		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:							
Δ Yes Δ No		<i>Seal</i>		<i>4.0C</i>							

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CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-42911-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The sample was received on 7/28/2021 10:20 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 5.3° C.

VOLATILE ORGANIC COMPOUNDS BY GC/MS

Sample BF-08-072721 (160-42911-1) was analyzed for Volatile Organic Compounds by GC/MS in accordance with EPA SW-846 Method 8260C. The samples were prepared on 08/02/2021 and analyzed on 08/04/2021.

The following sample was received outside of the 48 hour holding time for preservation of the Core N One Capsules: BF-08-072721 (160-42911-1).

Preparation Batch 280-545086:

Methylene Chloride was detected in method blank MB 280-545086/5-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

SEMIVOLATILE ORGANIC COMPOUNDS (GC/MS)

Sample BF-08-072721 (160-42911-1) was analyzed for Semivolatile Organic Compounds (GC/MS) in accordance with EPA SW-846 Method 8270D. The samples were prepared on 08/02/2021 and analyzed on 08/09/2021.

Preparation Batch 280-545008, Analytical Batch 280-545822:

The matrix spike / matrix spike duplicate (MS/MSD) recoveries were outside control limits for Naphthalene, Phenol, and Phenanthrene. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ORGANOCHLORINE PESTICIDES (GC)

Sample BF-08-072721 (160-42911-1) was analyzed for Organochlorine Pesticides (GC) in accordance with SW-846 Method 8081B. The samples were prepared on 07/29/2021 and analyzed on 07/30/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

POLYCHLORINATED BIPHENYLS (PCBS) BY GAS CHROMATOGRAPHY

Sample BF-08-072721 (160-42911-1) was analyzed for Polychlorinated Biphenyls (PCBs) by Gas Chromatography in accordance with SW 846. The samples were prepared on 07/29/2021 and analyzed on 07/30/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CHLORINATED HERBICIDES

Sample BF-08-072721 (160-42911-1) was analyzed for chlorinated herbicides in accordance with EPA SW-846 Method 8151A. The samples were prepared on 07/30/2021 and analyzed on 08/02/2021.

Surrogates are added during the extraction process prior to dilution. When the sample dilution is 5X or greater, surrogate recoveries are diluted out and no corrective action is required.

Preparation Batch 460-793704, Analytical Batch 460-794019:

The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) recovered outside control limits for 2,4-D. This analyte was biased high in the LCS and LCSD and was not detected in the associated samples; therefore, the data was reported.

The %RPD between the primary and confirmation columns exceeded 40% for alpha-Chlordane. The lower value was reported and qualified in accordance with the laboratory's SOP: BF-08-072721 (160-42911-1).

Silvex (2,4,5-TP) failed the recovery criteria high for the MS of sample BF-08-072721MS (160-42911-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERFLUORINATED ALKYL ACIDS (LC/MS)

Sample BF-08-072721 (160-42911-1) was analyzed for Perfluorinated Alkyl Acids (LC/MS) in accordance with EPA 537. The samples were prepared on 07/30/2021 and analyzed on 07/31/2021.

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

Preparation Batch 320-511475, Analytical Batch 320-511961:

The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limit. The qualitative identification of the analyte has some degree of uncertainty, and the reported value may have some high bias. However, analyst judgment was used to positively identify the analyte: BF-08-072721 (160-42911-1).

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for several target analytes were outside control limits. Sample matrix interference and/or non-homogeneity are suspected.

The matrix spike/matrix spike duplicate (MS/MSD) precision for Perfluoroheptanesulfonic Acid (PFHpS) was outside control limits. Sample matrix interference is suspected.

The transition mass ion ratio was outside of the established limits for Perfluorohexanoic acid (PFHxA) in (CCVL 320-512178/2) as indicated by the "I" flag in the raw data. The analyte was in control in the CCV; therefore, the data was reported.

The transition mass ion ratio was outside of the established limits for Perfluorohexanoic acid (PFHxA) in (CCVL 320-511877/2) as indicated by the "I" flag in the raw data. The analyte was in control in the CCV; therefore, the data was reported.

Preparation Batch 320-511475, Analytical Batch 320-512253:

Due to the high concentration of Perfluorohexanesulfonic acid (PFHxS) and Perfluorooctanesulfonic acid (PFOS), the matrix spike / matrix spike duplicate (MS/MSD) could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

Results for samples (320-76807-A-2-A), (320-76807-A-2-B MS), and (320-76807-A-2-C MSD) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS ICP/MS

Sample BF-08-072721 (160-42911-1) was analyzed for Metals ICP/MS in accordance with SW 846. The samples were prepared and analyzed on 08/03/2021.

Analytical Batch 460-794193:

Barium, Chromium, and Lead failed the recovery criteria high for the MS of sample 460-239941-9.

Barium, Chromium, Lead, and Nickel failed the recovery criteria high for the MSD of sample 460-239941-9.

Beryllium, Chromium and Zinc exceeded the RPD limit for the duplicate of sample 460-239941-9.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY

Sample BF-08-072721 (160-42911-1) was analyzed for mercury in accordance with EPA SW-846 Method 7471B. The samples were prepared and analyzed on 08/10/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HEXAVALENT CHROMIUM

Sample BF-08-072721 (160-42911-1) was analyzed for hexavalent chromium in accordance with EPA SW-846 Method 3060A/7196A. The samples were prepared and analyzed on 08/05/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRIVALENT CHROMIUM

Sample BF-08-072721 (160-42911-1) was analyzed for trivalent chromium in accordance with SW-846 Method 7196A_CR3. The samples were analyzed on 08/06/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL CYANIDE

Sample BF-08-072721 (160-42911-1) was analyzed for total cyanide in accordance with EPA SW-846 Method 9012B. The samples were prepared and analyzed on 08/04/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Sample BF-08-072721 (160-42911-1) was analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 07/29/2021 and 07/30/2021.

Percent Moisture exceeded the RPD limit for the duplicate of sample 460-239392-8

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-42911-1

Client Sample ID: BF-08-072721

Lab Sample ID: 160-42911-1

Date Collected: 07/27/21 12:00

Matrix: Solid

Date Received: 07/28/21 10:20

General Chemistry

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (III)	23		2.0	mg/Kg			08/06/21 06:00	1

Client Sample ID: BF-08-072721

Lab Sample ID: 160-42911-1

Date Collected: 07/27/21 12:00

Matrix: Solid

Date Received: 07/28/21 10:20

Percent Solids: 85.7

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		7.8	1.3 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
4,4'-DDE	ND		7.8	0.92 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
4,4'-DDT	3.1	J	7.8	1.4 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
Aldrin	ND		7.8	1.2 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
alpha-BHC	ND		2.3	0.79 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
alpha-Chlordane	4.6	J	7.8	1.2 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
beta-BHC	ND		2.3	0.87 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
delta-BHC	ND		2.3	0.48 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
Dieldrin	ND		2.3	1.0 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
Endosulfan I	ND		7.8	1.2 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
Endosulfan II	ND		7.8	2.0 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
Endosulfan sulfate	ND		7.8	0.98 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
Endrin	ND		7.8	1.1 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
Endrin aldehyde	ND		7.8	1.8 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
Endrin ketone	ND		7.8	1.5 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
gamma-BHC (Lindane)	ND		2.3	0.72 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
gamma-Chlordane	4.7	J	7.8	1.4 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
Heptachlor	ND		7.8	0.92 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
Heptachlor epoxide	ND		7.8	1.2 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
Methoxychlor	ND		7.8	1.8 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1
Toxaphene	ND		78	28 ug/Kg	*	07/29/21 17:03	07/30/21 11:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	92		10 - 150	07/29/21 17:03	07/30/21 11:46	1
DCB Decachlorobiphenyl	91		10 - 150	07/29/21 17:03	07/30/21 11:46	1
Tetrachloro-m-xylene	84		10 - 133	07/29/21 17:03	07/30/21 11:46	1
Tetrachloro-m-xylene	80		10 - 133	07/29/21 17:03	07/30/21 11:46	1

CWA
8/2/21

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	10	UM	78	10 ug/Kg	*	07/29/21 17:00	07/30/21 08:04	1
PCB-1221	10	UM	78	10 ug/Kg	*	07/29/21 17:00	07/30/21 08:04	1
PCB-1232	10	UM	78	10 ug/Kg	*	07/29/21 17:00	07/30/21 08:04	1
PCB-1242	10	UM	78	10 ug/Kg	*	07/29/21 17:00	07/30/21 08:04	1
PCB-1248	10	UM	78	10 ug/Kg	*	07/29/21 17:00	07/30/21 08:04	1
PCB-1254	11	UM	78	11 ug/Kg	*	07/29/21 17:00	07/30/21 08:04	1
PCB-1260	11	UM	78	11 ug/Kg	*	07/29/21 17:00	07/30/21 08:04	1
PCB-1262	11	UM	78	11 ug/Kg	*	07/29/21 17:00	07/30/21 08:04	1
PCB-1268	11	UM	78	11 ug/Kg	*	07/29/21 17:00	07/30/21 08:04	1
Polychlorinated biphenyls, Total	11	U	78	11 ug/Kg	*	07/29/21 17:00	07/30/21 08:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	78		37 - 150	07/29/21 17:00	07/30/21 08:04	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-42911-1

Client Sample ID: BF-08-072721

Lab Sample ID: 160-42911-1

Date Collected: 07/27/21 12:00

Matrix: Solid

Date Received: 07/28/21 10:20

Percent Solids: 85.7

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	79		37 - 150	07/29/21 17:00	07/30/21 08:04	1
Tetrachloro-m-xylene	75		54 - 150	07/29/21 17:00	07/30/21 08:04	1
Tetrachloro-m-xylene	82		54 - 150	07/29/21 17:00	07/30/21 08:04	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND	E	39	4.0 ug/Kg	*	07/30/21 23:58	08/02/21 13:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	119		65 - 150	07/30/21 23:58	08/02/21 13:09	1
2,4-Dichlorophenylacetic acid	103		65 - 150	07/30/21 23:58	08/02/21 13:09	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.8		1.1	0.11 mg/Kg	*	08/03/21 02:59	08/03/21 16:05	1
Barium	30		2.2	0.16 mg/Kg	*	08/03/21 02:59	08/03/21 16:05	1
Beryllium	0.29	J	0.44	0.063 mg/Kg	*	08/03/21 02:59	08/03/21 16:05	1
Cadmium	ND		1.1	0.12 mg/Kg	*	08/03/21 02:59	08/03/21 16:05	1
Chromium	23		2.2	0.19 mg/Kg	*	08/03/21 02:59	08/03/21 16:05	1
Copper	13		2.2	0.24 mg/Kg	*	08/03/21 02:59	08/03/21 16:05	1
Lead	23		0.66	0.22 mg/Kg	*	08/03/21 02:59	08/03/21 16:05	1
Manganese	180		4.4	0.44 mg/Kg	*	08/03/21 02:59	08/03/21 16:05	1
Nickel	9.3		2.2	0.21 mg/Kg	*	08/03/21 02:59	08/03/21 16:05	1
Selenium	0.24	J	1.4	0.13 mg/Kg	*	08/03/21 02:59	08/03/21 16:05	1
Silver	ND		1.1	0.098 mg/Kg	*	08/03/21 02:59	08/03/21 16:05	1
Zinc	33		8.8	2.5 mg/Kg	*	08/03/21 02:59	08/03/21 16:05	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.048		0.018	0.0042 mg/Kg	*	08/10/21 03:07	08/10/21 06:28	1

General Chemistry

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		2.4	1.0 mg/Kg	*	08/05/21 08:33	08/05/21 16:50	1
Cyanide, Total	ND		0.23	0.13 mg/Kg	*	08/04/21 13:51	08/04/21 20:42	1

Client Sample ID: BF-08-072721

Lab Sample ID: 160-42911-1

Date Collected: 07/27/21 12:00

Matrix: Solid

Date Received: 07/28/21 10:20

Percent Solids: 92.5

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.20	0.046 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Perfluoropentanoic acid (PFPeA)	0.045	J	0.20	0.041 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Perfluorohexanoic acid (PFHxA)	0.040	J	0.20	0.031 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Perfluoroheptanoic acid (PFHpA)	0.064	J	0.20	0.038 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Perfluorooctanoic acid (PFOA)	0.12	J	0.20	0.053 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Perfluorononanoic acid (PFNA)	0.059	J	0.20	0.022 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Perfluorodecanoic acid (PFDA)	0.084	J	0.20	0.048 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Perfluoroundecanoic acid (PFUnA)	0.045	J	0.20	0.042 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1

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Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-42911-1

Client Sample ID: BF-08-072721

Lab Sample ID: 160-42911-1

Date Collected: 07/27/21 12:00

Matrix: Solid

Date Received: 07/28/21 10:20

Percent Solids: 92.5

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorododecanoic acid (PFDoA)	0.032	J	0.20	0.030 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Perfluorotridecanoic acid (PFTriA)	U ND		0.20	0.021 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Perfluorotetradecanoic acid (PFTeA)	U ND		0.20	0.037 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Perfluorobutanesulfonic acid (PFBS)	U ND		0.20	0.038 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Perfluorohexanesulfonic acid (PFHxS)	0.051	J	0.20	0.029 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Perfluoroheptanesulfonic Acid (PFHpS)	U ND		0.20	0.049 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Perfluorooctanesulfonic acid (PFOS)	0.40		0.20	0.043 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Perfluorodecanesulfonic acid (PFDS)	U ND		0.20	0.052 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Perfluorooctanesulfonamide (FOSA)	U ND		0.20	0.033 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	U ND		0.20	0.023 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	U ND		0.20	0.048 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
6:2 FTS	U ND		0.20	0.027 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
8:2 FTS	U ND		0.20	0.035 ug/Kg	*	07/30/21 04:34	07/31/21 16:16	1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C4 PFBA	79		25 - 150			07/30/21 04:34	07/31/21 16:16	1
13C5 PFPeA	80		25 - 150			07/30/21 04:34	07/31/21 16:16	1
13C2 PFHxA	97		25 - 150			07/30/21 04:34	07/31/21 16:16	1
13C4 PFHpA	89		25 - 150			07/30/21 04:34	07/31/21 16:16	1
13C4 PFOA	95		25 - 150			07/30/21 04:34	07/31/21 16:16	1
13C5 PFNA	90		25 - 150			07/30/21 04:34	07/31/21 16:16	1
13C2 PFDA	98		25 - 150			07/30/21 04:34	07/31/21 16:16	1
13C2 PFUnA	91		25 - 150			07/30/21 04:34	07/31/21 16:16	1
13C2 PFDoA	85		25 - 150			07/30/21 04:34	07/31/21 16:16	1
13C2 PFTeDA	87		25 - 150			07/30/21 04:34	07/31/21 16:16	1
13C3 PFBS	84		25 - 150			07/30/21 04:34	07/31/21 16:16	1
18O2 PFHxS	82		25 - 150			07/30/21 04:34	07/31/21 16:16	1
13C4 PFOS	85		25 - 150			07/30/21 04:34	07/31/21 16:16	1
13C8 FOSA	92		25 - 150			07/30/21 04:34	07/31/21 16:16	1
d3-NMeFOSAA	88		25 - 150			07/30/21 04:34	07/31/21 16:16	1
d5-NEtFOSAA	96		25 - 150			07/30/21 04:34	07/31/21 16:16	1
M2-6:2 FTS	116		25 - 150			07/30/21 04:34	07/31/21 16:16	1
M2-8:2 FTS	124		25 - 150			07/30/21 04:34	07/31/21 16:16	1

Client Sample ID: BF-08-072721

Lab Sample ID: 160-42911-1

Date Collected: 07/27/21 12:00

Matrix: Solid

Date Received: 07/28/21 10:20

Percent Solids: 93.0

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND	H	4.8	0.49 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
Methylene Chloride	0.76	J	4.8	0.32 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
Acetone	ND	H	76	26 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
1,1-Dichloroethene	ND	H	4.8	0.26 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
1,1-Dichloroethane	ND	H	4.8	0.38 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
trans-1,2-Dichloroethene	ND	H	2.4	0.37 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1

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Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-42911-1

Client Sample ID: BF-08-072721

Lab Sample ID: 160-42911-1

Date Collected: 07/27/21 12:00

Matrix: Solid

Date Received: 07/28/21 10:20

Percent Solids: 93.0

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	DII Fac
cis-1,2-Dichloroethene	ND	H	2.4	0.41 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
Chloroform	ND	H	9.6	0.32 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
1,2-Dichloroethane	ND	H	4.8	0.38 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
2-Butanone (MEK)	ND	H	19	6.1 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
1,1,1-Trichloroethane	ND	H	4.8	0.32 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
Carbon tetrachloride	ND	H	4.8	0.13 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
Trichloroethene	ND	H	4.8	0.33 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
Benzene	ND	H	4.8	0.18 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
Tetrachloroethene	ND	H	4.8	0.17 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
Toluene	ND	H	4.8	0.61 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
Chlorobenzene	ND	H	4.8	0.14 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
Ethylbenzene	ND	H	4.8	0.44 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
Xylenes, Total	ND	H	4.8	0.48 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
Methyl tert-butyl ether	ND	H	19	0.17 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
1,3-Dichlorobenzene	ND	H	4.8	0.39 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
1,4-Dichlorobenzene	ND	H	4.8	0.46 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
1,2-Dichlorobenzene	ND	H	4.8	0.45 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
1,4-Dioxane	ND	H	480	8.0 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
1,2,4-Trimethylbenzene	ND	H	4.8	1.3 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
1,3,5-Trimethylbenzene	ND	H	4.8	0.60 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
N-Propylbenzene	ND	H	4.8	0.45 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
sec-Butylbenzene	ND	H	4.8	0.50 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
tert-Butylbenzene	ND	H	4.8	0.44 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1
n-Butylbenzene	ND	H	4.8	0.48 ug/Kg	*	08/02/21 14:17	08/04/21 19:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	DII Fac
1,2-Dichloroethane-d4 (Surr)	92		58 - 140	08/02/21 14:17	08/04/21 19:25	1
Toluene-d8 (Surr)	100		80 - 126	08/02/21 14:17	08/04/21 19:25	1
Dibromofluoromethane (Surr)	99		75 - 121	08/02/21 14:17	08/04/21 19:25	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	DII Fac
Phenol	ND	FI	350	19 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
2-Methylphenol	ND		350	14 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
3 & 4 Methylphenol	ND		350	35 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Pentachlorophenol	ND		1700	350 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Naphthalene	ND	FI	350	33 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Acenaphthylene	ND		350	88 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Acenaphthene	73	J	350	11 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Dibenzofuran	30	J	350	22 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Fluorene	48	J	350	19 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Hexachlorobenzene	ND		350	31 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Phenanthrene	530	FI	350	18 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Anthracene	110	J	350	18 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Fluoranthene	710		350	39 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Pyrene	ND		350	13 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Benzo[a]anthracene	310	J	350	22 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Chrysene	310	J	350	29 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Benzo[b]fluoranthene	380		350	28 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Benzo[k]fluoranthene	150	J	350	43 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1

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Client Sample Results

Client: FPM Remediations Inc
 Project/Site: BNL Decommissioning Project

Job ID: 160-42911-1

Client Sample ID: BF-08-072721

Lab Sample ID: 160-42911-1

Date Collected: 07/27/21 12:00

Matrix: Solid

Date Received: 07/28/21 10:20

Percent Solids: 93.0

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]pyrene	320	J	350	22 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Indeno[1,2,3-cd]pyrene	260	J	350	24 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Dibenz(a,h)anthracene	47	J	350	20 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1
Benzo[g,h,i]perylene	210	J	350	17 ug/Kg	*	08/02/21 10:34	08/09/21 18:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	48		46 - 120	08/02/21 10:34	08/09/21 18:25	1
Phenol-d5 (Surr)	57		46 - 120	08/02/21 10:34	08/09/21 18:25	1
Terphenyl-d14 (Surr)	96		46 - 120	08/02/21 10:34	08/09/21 18:25	1
2,4,6-Tribromophenol (Surr)	83		35 - 120	08/02/21 10:34	08/09/21 18:25	1
2-Fluorophenol (Surr)	51		43 - 120	08/02/21 10:34	08/09/21 18:25	1
2-Fluorobiphenyl	67		46 - 120	08/02/21 10:34	08/09/21 18:25	1

FPM Remediations, Inc.
Data Verification and Usability Report
BNL Decommissioning
Contract No. W912DW-19-D-1025

FPM Project No. 1085-20-01-01:a

TestAmerica Jobs # 160-43079-1, 160-43113-1
RJ Lee Group Job #AOH1063230-0, AOH1063198-0

Laboratory:	Test America Laboratories, Inc. (Metals) RJ Lee Group (Asbestos only)
Sample Matrix:	Soil
Number of Samples:	34
Analytical Protocol:	DOD Quality Systems Manual (QSM) Version 5.3, as per project-specific UFP QAPP
Data Reviewer:	Connie van Hoesel
Sample Date:	August 11-12, 17, 2021

LIST OF DATA VERIFICATION SAMPLES

This verification report pertains to the following environmental samples and corresponding QC samples:

DELIVERABLES

The data deliverable report was per requirements of the DOD QSM, Version 5.3, as specified in the project-specific QAPP (FPM, 2019). The report consisted of the following major sections: lab attachment letter, case narrative, chain-of-custody, lab qualifier definitions, analytical results (sheet 2) based on analytical batch, calibration summaries, method blank summaries, laboratory control sample summaries, matrix spike/matrix spike duplicate summaries, holding time forms, performance checks, surrogate and internal standard recoveries, as applicable.

ANALYTICAL METHODS

The analytical test methods and QA/QC requirements used for the sample analyses were per methods as specified in the DOD QSM, Version 5.3, with project-specific modifications as listed in the project-specific QAPP. The analytical methods employed included metals by Method 6020B, mercury by Method 7471B, and asbestos by Method NYELAP Method 198.1.

TABLE 1
SUMMARY OF SAMPLE ANALYSES
BNL DECOMMISSIONING

Sample ID ⁽¹⁾	Sample Date	Sample Matrix/ Sample Type	Lab ID	Metals (lead only)	Mercury	Asbestos	Data Usable ⁽²⁾
FSS-001-081121	8/11/21	S/N	160-43079-1 10546418.HPL	X	X	X	Yes
FSS-002-081121	8/11/21	S/N	160-43079-2 10546419.HPL	X	X	X	Yes
FSS-003-081121	8/11/21	S/N	160-43079-3 10546420.HPL	X	X	X	Yes
FSS-004-081121	8/11/21	S/N	160-43079-4 10546421.HPL	X	X	X	Yes
FSS-005-081121	8/11/21	S/N	160-43079-5 10546422.HPL	X	X	X	Yes
FSS-006-081121	8/11/21	S/N	160-43079-6 10546423.HPL	X	X	X	Yes
FSS-007-081121	8/11/21	S/N	160-43079-7 10546424.HPL	X	X	X	Yes
FSS-008-081121	8/11/21	S/N	160-43079-8 10546425.HPL	X	X	X	Yes
FSS-009-081121	8/11/21	S/N	160-43079-9 10546426.HPL	X	X	X	Yes
FSS-010-081121	8/11/21	S/N	160-43079-10 10546427.HPL	X	X	X	Yes
FSS-011-081121	8/11/21	S/N	160-43079-11 10546428.HPL	X	X	X	Yes
FSS-012-081121	8/11/21	S/N	160-43079-12 10546429.HPL	X	X	X	Yes
FSS-013-081221	8/12/21	S/N	160-43079-13 10546430.HPL	X	X	X	Yes
FSS-014-081221	8/12/21	S/N	160-43079-14 10546431.HPL	X	X	X	Yes
FSS-015-081221	8/12/21	S/N	160-43079-15 10546432.HPL	X	X	X	Yes
FSS-016-081221	8/12/21	S/N	160-43079-16 10546433.HPL	X	X	X	Yes
FSS-044-081721	8/17/21	S/N	160-43113-1 10546258.HPL	X	X	X	Yes
FSS-045-081721	8/17/21	S/N	160-43113-2 10546259.HPL	X	X	X	Yes
FSS-046-081721	8/17/21	S/N	160-43113-3 10546260.HPL	X	X	X	Yes
FSS-047-081721	8/17/21	S/N	160-43113-4 10546261.HPL	X	X	X	Yes
FSS-048-081721	8/17/21	S/N	160-43113-5 10546262.HPL	X	X	X	Yes
FSS-049-081721	8/17/21	S/N	160-43113-6 10546263.HPL	X	X	X	Yes
FSS-050-081721	8/17/21	S/N	160-43113-7 10546264.HPL	X	X	X	Yes

Sample ID ⁽¹⁾	Sample Date	Sample Matrix/ Sample Type	Lab ID	Metals (lead only)	Mercury	Asbestos	Data Usable ⁽²⁾
FSS-051-081721	8/17/21	S/N	160-43113-8 10546265.HPL	X	X	X	Yes
FSS-052-081721	8/17/21	S/N	160-43113-9 10546266.HPL	X	X	X	Yes
FSS-053-081721	8/17/21	S/N	160-43113-10 10546267.HPL	X	X	X	Yes
FSS-054-081721	8/17/21	S/N	160-43113-11 10546268.HPL	X	X	X	Yes
FSS-055-081721	8/17/21	S/N	160-43113-12 10546269.HPL	X	X	X	Yes
FSS-056-081721	8/17/21	S/N	160-43113-13 10546270.HPL	X	X	X	Yes
FSS-256-081721	8/17/21	S/N	160-43113-14 10546271.HPL	X	X	X	Yes
FSS-057-081721	8/17/21	S/N	160-43113-15 10546272.HPL	X	X	X	Yes
FSS-257-081721	8/17/21	S/N	160-43113-16 10546273.HPL	X	X	X	Yes
FSS-058-081721	8/17/21	S/N	160-43113-17 10546274.HPL	X	X	X	Yes
FSS-258-081721	8/17/21	S/N	160-43113-18 10546275.HPL	X	X	X	Yes

WG = groundwater, WQ=water quality, TB=trip blank, AB=ambient blank, MS/MSD=matrix spike/matrix spike duplicate, N=normal, FD=field duplicate.

⁽¹⁾ "Sample ID" as shown on COC.

⁽²⁾ "Yes"- Sample analysis considered valid and usable.

VERIFICATION GUIDANCE

The analytical work was performed by Test America Laboratories, Inc. and RJ Lee Group (subcontracted for asbestos only) in accordance with the QC requirements of the respective analytical methods and of the QAPP. The data usability analysis was based on the reviewer's professional judgment and on an assessment of the criteria as listed in the QAPP.

QA/QC CRITERIA

The following QA/QC criteria were reviewed for the metals analyses, as applicable:

- LODs and LOQs
- Holding times
- GC/MS tune performance
- Initial and Continuing calibration summaries
- Method blanks
- ICP interference check sample analysis
- Field duplicate results
- Matrix spike/matrix spike duplicate (MS/MSD) analysis
- Laboratory control samples (LCS)
- ICP serial dilution analysis
- Results reported between LOD and LOQ (J-flag)
- Sample storage and preservation
- Data system printouts
- Qualitative and quantitative compound identification
- Chain-of-custody (COC)
- Case narrative and deliverables compliance

According to the laboratory, the following criteria were reviewed as a part of the laboratory's NVLAP, NYELAP, and AIHA accreditations for asbestos identification methods:

- Microscope Alignment
- Refractive Index Liquid Calibration
- Blank Analysis
- Reference Sample Analysis
- Replicate Analysis

As part of this review, the sample receipt and the point counting results were reviewed.

The items listed above were in compliance with DOD QSM, Version 5.3 and project-specific QAPP criteria and protocols with exceptions discussed in the text below. The data have been verified according to the procedures outlined above and qualified accordingly.

GENERAL NOTES:

BLANKS

Whenever blanks, including method, ambient, equipment, and trip, contained low levels of contaminants (between the DL and LOQ), the laboratory qualified the subject results with a “J” flag. Since no qualification of associated field samples are required for blank concentrations less than half the LOQ, no further action was taken in such instances.

SAMPLE LABELING/CHAIN-OF-CUSTODY

No errors in the chain-of-custody were noted. There were no discrepancies noted between the sample labels and the chain-of-custody, or the cooler contents and the chain-of-custody.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

For metals, the laboratory performed MS/MSD analysis for an internal quality control sample. These were not requested by FPM and were performed for batch control; no action was taken for the MS/MSD criterion for these samples.

METALS

- Field duplicate samples, which are collected at the same location and at the same time using identical collection, handling, and analytical procedures, are used to assess precision of the sample collection process. The QAPP requires qualification of data for field duplicates criterion if the duplicate samples contain detected compounds with concentrations above 5x the LOQ and the relative percent differences (RPDs) between the duplicate sample results exceed RPD control limits (50% for soil samples). If either the parent or the duplicate sample is less than 5x the LOQ, then the difference between the parent and duplicate sample must be less than 2x the LOQ. “J” flags for detects and “UJ” flags for non-detects are required per the QAPP for any exceedances.

The following table summarizes the RPDs/total differences of field duplicate sample sets field duplicate sample sets FSS-056-081721/FSS-256-081721, FSS-057-081721/FSS-257-081721, and FSS-058-081721/PC-258-081721:

Normal sample ID	Field duplicate sample ID	Analyte	Normal Result (mg/kg [Pb] or µg/kg [Hg])	Field Dup Result (mg/kg [Pb] or µg/kg [Hg])	LOQ	RPD or ±difference	Flag Applied	Rationale
FSS-056-081721	FSS-256-081721	Lead	4.9	5.1	0.25, 0.22	4.0	None	RPD < 50%
FSS-056-081721	FSS-256-081721	Mercury	58	54	21, 19	4	None	Difference < 2x LOQ
FSS-057-081721	FSS-257-081721	Lead	3.1	2.7	0.29, 0.25	14	None	RPD < 50%
FSS-057-081721	FSS-257-081721	Mercury	34	25	19, 18	9	None	Difference < 2x LOQ
FSS-058-081721	FSS-258-081721	Lead	1.4	1.6	0.24, 0.27	13	None	RPD < 50%
FSS-058-081721	FSS-258-081721	Mercury	6.0 J	17 U	18, 22	11	None	Difference < 2x LOQ

Corrective Action: The RPD or total difference was within control limits for field duplicate sample sets FSS-056-081721/FSS-256-081721, FSS-057-081721/FSS-257-081721, and FSS-058-081721/PC-258-081721; no “J” flags were deemed required.

- The following blank sample analyses indicated blank contaminants present at concentrations equal to or greater than the DL but less than the LOQ. The Blank ID, detected contaminant, and concentration are listed.

Blank ID	Analyte	Concentration (mg/kg)	LOQ (mg/kg)	Samples Affected
Method blank 280-548182/1-A	Total Lead	0.0584 J	0.4	None; blank concentration < ½ LOQ and associated field sample concentrations > 5x blank concentration

The purpose of laboratory, equipment or trip blank analysis is to determine the existence and magnitude of contamination resulting from lab or field activities. If contamination is found in blanks the associated sample results for these analytes may be considered suspect. As per the

UFP QAPP, based on the blank contaminants present above half the RL, results for the specific analytes in the associated environmental samples are qualified with a “U” flag, for only those sample results that are less than five times (5x) the blank concentration.

Corrective Action: No “U” flags were applied since the associated field sample results were more than 5x the blank concentration.

- The following table summarizes QC exceedances of the matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and/or RPDs for parent sample FSS-001-081121. The spike analytes, MS recoveries, MSD recoveries, spike recovery QC limits, and RPDs and their QC limit between the MS and MSD are listed.

MS/MSD Results Job Number/Spike Analytes	Spike	MS %Rec	MSD %Rec	QC Limits (%) (DOD QSM Limits)	RPD	Flag Applied	Rationale
Parent sample FSS-001-081121							
Lead		68	147	84-118	38	J	%Rec and RPD outside control limits

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices. Generally, these data alone cannot be used to evaluate the precision and accuracy of individual samples. A matrix spike and matrix spike duplicate analysis is an aliquot of sample spiked with known concentrations of all the analytes in the method. Using professional judgment, exceedances of either percent recovery (%Rec) control limits of spike concentrations or relative percent difference (RPD) control limits between the MS and MSD results may require flagging (“J”) for the specific analyte in the parent sample, and the results considered estimated. Due to the varied nature of environmental samples, such as locations, depths, physical characteristics (dissolved and suspended solids, turbidity, pH, organic content, etc.), it is difficult to assign one matrix spike sample analysis as truly representative of an entire site matrix. Therefore, using professional judgment it is deemed inappropriate to qualify more than the actual parent sample due to an MS/MSD exceedance. This approach is in accordance with the EPA National Functional guidelines, which states that the MS/MSD results are not used alone to qualify the entire data package, however, can be used in conjunction with other QC criteria to determine the need for some qualification of the data. Using professional judgment, no corrective action and/or flagging is deemed required for minimal exceedances (i.e., within 1% of the %Rec control limits).

Corrective Action: In parent sample FSS-001-081121, a “J” qualifier was assigned to indicate the results be considered estimated since a matrix effect is indicated.

ASBESTOS

- There were no quality control exceedances associated with the asbestos analyses.

DATA USABILITY RESULTS

For each analysis performed, the following data parameters were assessed:

- laboratory analytical precision,
- accuracy,
- representativeness,
- completeness, and
- comparability (PARCC).

Data qualifier results from this review are summarized in Table 2.

METALS

Based on the evaluation of all information in the analytical data groups, the results for metals are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable.

ASBESTOS

Based on the evaluation of all information in the analytical data groups, the results for asbestos are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable.

**TABLE 2
SUMMARY OF QUALIFIED DATA
BNL DECOMMISSIONING**

Sample ID	Lab Sample ID	Analyte	Lab Flag	Validation Flag	Reason
FSS-001-081121	160-43079-1	Lead	J1	J	Matrix effect indicated; %Rec and RPD outside control limits

*Data Usability Qualifier based on project QAPP data validation and data usability considerations.

DATA USABILITY SUMMARY

All data in Jobs # 160-43079-1 and 160-43113-1 are valid and usable with qualifications as noted in the data review.

Signed: Concordia van Hoesel Date: 9/27/2021

ATTACHMENTS

- Chain of Custody
- Laboratory's Case Narrative
- Qualified final data verification results on annotated Lab Sheet 2s

Sample Summary

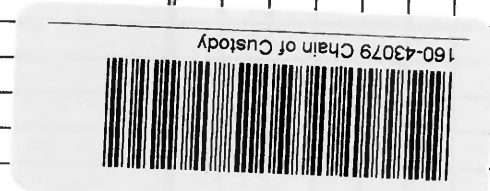
Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43079-1	FSS-001-081121	Solid	08/11/21 09:00	08/13/21 08:45
160-43079-2	FSS-002-081121	Solid	08/11/21 09:00	08/13/21 08:45
160-43079-3	FSS-003-081121	Solid	08/11/21 09:00	08/13/21 08:45
160-43079-4	FSS-004-081121	Solid	08/11/21 09:00	08/13/21 08:45
160-43079-5	FSS-005-081121	Solid	08/11/21 11:00	08/13/21 08:45
160-43079-6	FSS-006-081121	Solid	08/11/21 11:00	08/13/21 08:45
160-43079-7	FSS-007-081121	Solid	08/11/21 11:00	08/13/21 08:45
160-43079-8	FSS-008-081121	Solid	08/11/21 11:00	08/13/21 08:45
160-43079-9	FSS-009-081121	Solid	08/11/21 13:30	08/13/21 08:45
160-43079-10	FSS-010-081121	Solid	08/11/21 13:30	08/13/21 08:45
160-43079-11	FSS-011-081121	Solid	08/11/21 13:30	08/13/21 08:45
160-43079-12	FSS-012-081121	Solid	08/11/21 13:30	08/13/21 08:45
160-43079-13	FSS-013-081221	Solid	08/12/21 08:00	08/13/21 08:45
160-43079-14	FSS-014-081221	Solid	08/12/21 08:00	08/13/21 08:45
160-43079-15	FSS-015-081221	Solid	08/12/21 08:00	08/13/21 08:45
160-43079-16	FSS-016-081221	Solid	08/12/21 08:00	08/13/21 08:45

Regulatory Program: DW NPDES RCRA Other:

Client Contact		Project Manager: Dan Ours	
Email: d.ours@tpr-remediations.com		Site Contact: Doug Beard	
Address 181 Kenwood Avenue		Date: 08-12-21	
Oneida, NY 13421		Carrier: Fed Ex	
(315) 336-7721 ext. 218		TALS Project #:	
Fax (315) 336-7722		Sampler: B. Gaudette	
Project Name: BNL 705 Stack Demo		For Lab Use Only:	
Site: BNL		Walk-in Client:	
P O # 1085-20-01-01		Lab Sampling:	
		Job / SDG No.:	
		Sample Specific Notes:	
		Asphalt A SU-7D	
		Ground surface below Asphalt A 0-6"	
		Ground surface below Asphalt A 6" -12"	
		Ground surface below Asphalt A 18" -24"	
		Asphalt B SU-7D	
		Ground surface below Asphalt B 0-6"	
		Ground surface below Asphalt B 6" -12"	
		Ground surface below Asphalt B 18" -24"	
		Asphalt C SU-7D	
		Ground surface below Asphalt C 0-6"	
		Ground surface below Asphalt C 6" -12"	
		Ground surface below Asphalt C 18" -24"	



Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client Disposal by Lab Archive for _____ Months

Received by: *MYCHA KENNEDY* Company: *ETA STL*

Received in Laboratory by: _____ Company: _____

Date: *8-13-2021* Date/Time: *08:45*

Date: _____ Date/Time: _____



Regulatory Program: DW NPDES RCRA Other:

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact FPM Address 181 Kenwood Avenue Oneida, NY 13421 Phone (315) 336-7721 ext. 218 FAX (315) 336-7722 Project Name: BNL 705 Stack Demo Site: BNL P O # 1085-20-01-01		Project Manager: Dan Ours Email: d.ours@fpm-remediations.com Tell/Fax: (315) 336-7721 ext. 218 Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below: <u>30</u> Days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: Doug Beard Date: 08-12-21 Carrier: Fed Ex		COC No: 2 of 2 COCs TALS Project #:									
Lab Contact: Ivan Vania		Sampler: B. Gaudette For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:		Sample Specific Notes: Asphalt D SU-7D Ground surface below Asphalt D 0-6" Ground surface below Asphalt D 6" -12" Ground surface below Asphalt D 18" -24"											
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Gamma Spec: Ra-226+detects	Strontium-90 (GFP)	Asbestos - EPA600 R-93	Lead (ICP/MS) - 6020B	Mercury - EPA 7470A	Ni-63	Tritium	C-14
FSS-013-081221	12-Aug	8:00	C	S	4	N	N	1	1	1	1	1	1	1	1
FSS-014-081221	12-Aug	8:00	C	S	3	N	N	1	1	1	1	1	1	1	1
FSS-015-081221	12-Aug	8:00	C	S	3	N	N	1	1	1	1	1	1	1	1
FSS-016-081221	12-Aug	8:00	C	S	3	N	N	1	1	1	1	1	1	1	1
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Possible Hazard Identification: _____ Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.															
Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-212, Pb-212, Ac-228, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40 <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Polson B <input type="checkbox"/> Unknown <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months															
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months															
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Relinquished by: Douglas Beard Relinquished by: _____ Relinquished by: _____		Custody Seal No.: _____ Company: Cabrera Services, Inc. Company: _____ Company: _____		Cooler Temp. (°C): Obs'd: _____ Received by: Fed Ex Received by: <i>Mina Kevinings</i> Received in Laboratory by: _____		Therm ID No.: _____ Date/Time: 21/17:00 Date/Time: _____ Date/Time: _____									

Chain of Custody Record



Client Information (Sub Contract Lab)
 Client Contact: Vania, Ivan H
 Shipping/Receiving: Ivan.Vania@Eurofinset.com
 Company: TestAmerica Laboratories, Inc.
 Address: 4955 Yarrow Street, City: Arvada
 State, Zip: CO, 80002
 Phone: 303-736-0100(Tel) 303-431-7171(Fax)
 Email:
 Project Name: BNL Decommissioning Project
 Site:

Lab PM: Vania, Ivan H
 Carrier Tracking No(s):
 State of Origin: New York
 E-Mail: Ivan.Vania@Eurofinset.com
 Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York
 COC No: 160-217526-1
 Page: Page 1 of 2
 Job #: 160-43079-1

Due Date Requested: 9/12/2021
 TAT Requested (days):
 PO #:
 WO #:
 Project #: 16009147
 SSOW#:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Solid, On-slab, BT-Issue, Aas)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Moisture	7471B_DDS57471B_Prep Mercury	Total Number of Containers	Special Instructions/Note:
FSS-001-081121 (160-43079-1)	8/11/21	09:00 Eastern	Solid	Solid	X	X	X	X	1	
FSS-002-081121 (160-43079-2)	8/11/21	09:00 Eastern	Solid	Solid	X	X	X	X	1	
FSS-003-081121 (160-43079-3)	8/11/21	09:00 Eastern	Solid	Solid	X	X	X	X	1	
FSS-004-081121 (160-43079-4)	8/11/21	09:00 Eastern	Solid	Solid	X	X	X	X	1	
FSS-005-081121 (160-43079-5)	8/11/21	11:00 Eastern	Solid	Solid	X	X	X	X	1	
FSS-006-081121 (160-43079-6)	8/11/21	11:00 Eastern	Solid	Solid	X	X	X	X	1	
FSS-007-081121 (160-43079-7)	8/11/21	11:00 Eastern	Solid	Solid	X	X	X	X	1	
FSS-008-081121 (160-43079-8)	8/11/21	11:00 Eastern	Solid	Solid	X	X	X	X	1	
FSS-009-081121 (160-43079-9)	8/11/21	13:30 Eastern	Solid	Solid	X	X	X	X	1	

Preservation Codes:
 A - HCL
 B - NaOH
 C - Zn Acetate
 D - Nitric Acid
 E - Nitric Acid
 F - MeOH
 G - Amchlor
 H - Ascorbic Acid
 I - Ice
 J - DI Water
 K - EDTA
 L - EDA
 Other:
 M - Hexane
 N - None
 O - AsNaO2
 P - Na2O4S
 Q - Na2SO3
 R - Na2SO3
 S - H2SO4
 T - TSP Dodecahydrate
 U - Acetone
 V - MCAA
 W - pH 4-5
 Z - other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements:

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
 Empty Kit Relinquished by:
 Date: _____ Time: _____
 Relinquished by: *MICHA KENIGHING*
 Date/Time: 8/13/2021 17:00
 Company: STAS
 Received by: *[Signature]*
 Date/Time: 8/14/21 09:40
 Company: ETADEN
 Relinquished by:
 Date/Time: _____
 Company: _____
 Received by:
 Date/Time: _____
 Company: _____
 Cooler Temperature(s) °C and Other Remarks: 39.10°C F706
 Custody Seal No.: NA
 Yes Δ No

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/main being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Chain of Custody Record

Client Information (Sub Contract Lab)		Lab PM: Vania, Ivan H		Carrier Tracking No(s):		COC No: 160-217526-2	
Client Contact: Shipping/Receiving		E-Mail: Ivan.Vania@Eurofinset.com		State of Origin: New York		Page: Page 2 of 2	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Job #: 160-43079-1		Preservation Codes:	
Address: 4955 Yarrow Street, Arvada		Due Date Requested: 9/12/2021		TAT Requested (days):		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecylhydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA Y - EDA Z - other (specify)	
City: Arvada		PO #:		WG #:		Other:	
State, Zip: CO, 80002		Project #: 16009147		Project Name: BNL Decommissioning Project			
Phone: 303-736-0100(Tel) 303-431-7171(Fax)		SSOW#:					
Email:							
Analysis Requested							
		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		Moisture	
		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
		74718_DDS574718_Prep Mercury					
Sample Identification - Client ID (Lab ID)							
Sample ID	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=soil, B=biological, T=tissue, A=air)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)
FSS-010-081121 (160-43079-10)	8/11/21	13:30 Eastern	Solid	Solid		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FSS-011-081121 (160-43079-11)	8/11/21	13:30 Eastern	Solid	Solid		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FSS-012-081121 (160-43079-12)	8/11/21	13:30 Eastern	Solid	Solid		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FSS-013-081121 (160-43079-13)	8/12/21	08:00 Eastern	Solid	Solid		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FSS-014-081121 (160-43079-14)	8/12/21	08:00 Eastern	Solid	Solid		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FSS-015-081121 (160-43079-15)	8/12/21	08:00 Eastern	Solid	Solid		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FSS-016-081121 (160-43079-16)	8/12/21	08:00 Eastern	Solid	Solid		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Number of Containers							
Special Instructions/Note:							
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.							
Possible Hazard Identification							
Unconfirmed							
Deliverable Requested: I, II, III, IV, Other (specify)							
Empty Kit Relinquished by:							
Primary Deliverable Rank: 2							
Date: Time:							
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months							
Special Instructions/QC Requirements:							
Relinquished by: <i>Michael Koninkings</i>		Date/Time: 8/13/2021 17:00		Received by: <i>[Signature]</i>		Date/Time: 8/12/2021 0940	
Relinquished by:		Date/Time:		Received by:		Date/Time:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		Company: ETAVEN	

Eurofins TestAmerica, St. Louis

13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8566 Fax: 314-298-8757

Chain of Custody Record



Environment Testing
 America

A0410632300

Client Information (Sub Contract Lab)		Sampler:		Lab PM: Vania, Ivan H		Carrier Tracking No(s):		COC No: 160-218033.1						
Client Contact: Shipping/Receiving		Phone:		E-Mail: Ivan.Vania@Eurofinset.com		State of Origin: New York		Page: Page 1 of 2						
Company: RJ Lee Group, Inc		Address: 350 Hochberg Rd, City: Monroeville State, Zip: PA, 15146 Phone: Email:		Due Date Requested: 9/13/2021 TAT Requested (days):		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Job #: 160-43079-1						
Project Name: BNL Decommissioning Project Site:		Project #: 16009147 SSOW#:		Analysis Requested		Preservation Codes:		Other:						
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT= tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform M/MSD (Yes or No)	SUB (Asbestos/ Asbestos)	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03)	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03)	Total Number of containers	Special Instructions/Note:		
FSS-001-081121 (160-43079-1)		8/11/21	09:00 Eastern	Solid				X			1			
FSS-002-081121 (160-43079-2)		8/11/21	09:00 Eastern	Solid					X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03		
FSS-003-081121 (160-43079-3)		8/11/21	09:00 Eastern	Solid					X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03		
FSS-004-081121 (160-43079-4)		8/11/21	09:00 Eastern	Solid					X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03		
FSS-005-081121 (160-43079-5)		8/11/21	11:00 Eastern	Solid				X			1			
FSS-006-081121 (160-43079-6)		8/11/21	11:00 Eastern	Solid				X			1			
FSS-007-081121 (160-43079-7)		8/11/21	11:00 Eastern	Solid					X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03		
FSS-008-081121 (160-43079-8)		8/11/21	11:00 Eastern	Solid					X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03		
FSS-009-081121 (160-43079-9)		8/11/21	13:30 Eastern	Solid				X			1			
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>														
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)								
Unconfirmed						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months								
Deliverable Requested: I, II, III, IV, Other (specify)						Primary Deliverable Rank: 2								
Empty Kit Relinquished by:						Special Instructions/QC Requirements:								
Date:			Time:			Date:			Time:			Method of Shipment:		
Relinquished by: <i>Michael Karimking</i>			Date/Time: <i>8/13/2021 17:00</i>			Company: <i>ETA ST</i>			Received by: <i>Indira Mangru</i>			Date/Time: <i>8/24/2021 2:51 PM</i>		
Relinquished by:			Date/Time:			Company:			Received by:			Date/Time:		
Relinquished by:			Date/Time:			Company:			Received by:			Date/Time:		
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks.										

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Eurofins TestAmerica, St. Louis

13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8566 Fax: 314-298-8757

Chain of Custody Record



A01410632300

Client Information (Sub Contract Lab)		Sampler Vania, Ivan H	Lab PM: Vania, Ivan H	Carrier Tracking No(s)	COC No: 160-218033.2																								
Client Contact: Shipping/Receiving		Phone:	E-Mail: Ivan.Vania@Eurofinset.com	State of Origin New York	Page: Page 2 of 2																								
Company RJ Lee Group, Inc			Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Job #: 160-43079-1																								
Address: 350 Hochberg Rd.		Due Date Requested: 9/13/2021	<table border="1"> <tr> <th colspan="12">Analysis Requested</th> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>			Analysis Requested																							
Analysis Requested																													
City: Monroeville		TAT Requested (days):																											
State, Zip: PA, 15146																													
Phone:		PO #:																											
Email:		WO #:																											
Project Name: BNL Decommissioning Project		Project #: 16009147	<table border="1"> <tr> <td>Field Filtered Sample (Yes or No)</td> <td>Perform MS/MSD (Yes or No)</td> <td>SUB (Asbestos) / Asbestos</td> <td>SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03)</td> <td>SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>			Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Asbestos) / Asbestos	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03)	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03)																			
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Site:		SSOW#	<table border="1"> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>																										
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=organic, BT=Trace, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Asbestos) / Asbestos	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03)	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03)	Total Number of containers	Special Instructions/Note:																	
				Preservation Code:																									
FSS-010-081121 (160-43079-10)		8/11/21	13:30 Eastern		Solid			X			1	Asbestos - PLM-EPA600-R-93/LAP-080.03																	
FSS-011-081121 (160-43079-11)		8/11/21	13:30 Eastern		Solid			X			1	Asbestos - PLM-EPA600-R-93/LAP-080.03																	
FSS-012-081121 (160-43079-12)		8/11/21	13:30 Eastern		Solid			X			1	Asbestos - PLM-EPA600-R-93/LAP-080.03																	
FSS-013-081221 (160-43079-13)		8/12/21	08:00 Eastern		Solid		X				1																		
FSS-014-081221 (160-43079-14)		8/12/21	08:00 Eastern		Solid			X			1	Asbestos - PLM-EPA600-R-93/LAP-080.03																	
FSS-015-081221 (160-43079-15)		8/12/21	08:00 Eastern		Solid			X			1	Asbestos - PLM-EPA600-R-93/LAP-080.03																	
FSS-016-081221 (160-43079-16)		8/12/21	08:00 Eastern		Solid			X			1	Asbestos - PLM-EPA600-R-93/LAP-080.03																	
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>																													
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)																							
Unconfirmed						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months																							
Deliverable Requested: I, II, III, IV, Other (specify)			Primary Deliverable Rank: 2			Special Instructions/QC Requirements:																							
Empty Kit Relinquished by:			Date:			Time:			Method of Shipment:																				
Relinquished by: <i>Michaela Kenning</i>			Date/Time: <i>8/13/2021 17:00</i>			Company: <i>ETA ST</i>			Received by: <i>Linda Naugus</i>																				
Relinquished by:			Date/Time:			Company:			Received by:																				
Relinquished by:			Date/Time:			Company:			Received by:																				
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No			Custody Seal No.:			Cooler Temperature(s) °C and Other Remarks:																							

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43079-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/13/2021 8:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 1.5° C, 23.4° C, 23.6° C and 24.7° C.

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis.

METALS (ICP/MS)

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081121 (160-43079-13), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 09/07/2021 and analyzed on 09/08/2021.

Analytical Batch 280-549084:

Lead was detected in method blank MB 280-548182/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Lead failed the recovery criteria low for the MS/MSD of sample FSS-001-081121MS/MSD (160-43079-1). Lead exceeded the RPD limit.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081121 (160-43079-13), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B_DoD5. The samples were prepared and analyzed on 09/01/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081121 (160-43079-13), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 08/25/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 08/16/2021, prepared on 08/27/2021 and analyzed on 09/07/2021.

Samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9) and FSS-013-081121 (160-43079-13) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were prepared on 08/27/2021 and analyzed on 09/07/2021.

Preparation Batch 160-524352:

The bracketing daily background, analyzed the day after the sample was analyzed, was outside the upper QC acceptance limit indicating a potential high bias. The sample analysis on that detector had activity below the MDC indicating no adverse effect from the potential bias. In addition, the daily check and background analyzed on the day of sample analysis passed as did the bracketing daily check: FSS-010-081121 (160-43079-10).

The sample duplicate (DUP) precision (RER/DER) was outside control limits. Sample non-homogeneity and a matrix effect was observed and noted during preparation. In addition, the original sample and sample duplicate both had activity below the RL: (160-43079-A-2-F DU).

The following samples could not be thoroughly homogenized before sub-sampling was performed due to sample matrix: FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081121 (160-43079-13), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15), FSS-016-081121 (160-43079-16), and (160-43079-A-2-A DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081121 (160-43079-13), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 08/27/2021 and analyzed on 09/01/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 08/19/2021, prepared on 08/29/2021 and analyzed on 09/09/2021.

Samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9) and FSS-013-081121 (160-43079-13) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with DOE A01R_Pu. The samples were prepared on 08/31/2021 and analyzed on 09/10/2021.

Preparation Batch 160-524624:

Detectors 131-142 were calibrated in August; therefore, the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-002-081121 (160-43079-2), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15), FSS-016-081121 (160-43079-16), (LCS 160-524624/2-A), (MB 160-524624/1-A), and (160-43079-A-2-H DU).

Detectors 131-146 were calibrated in August therefore the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-013-081121 (160-43079-13).

The samples exhibited a negative result greater in magnitude than the 3 sigma TPU. This occurrence was evaluated and determined to be random in nature. Sporadic occurrences such as this are statistically expected: FSS-003-081121 (160-43079-3) and FSS-004-081121 (160-43079-4).

The sample was counted on detector AV126 which failed the pulser resolution check the day after (closing bracket) the sample count. However, the sample tracer resolution was well within QC limits the day of the count. The laboratory does not believe this excursion adversely affects the data: FSS-004-081121 (160-43079-4).

Preparation Batch 160-524992:

The sample results were based on as received weight. The samples were not dried and ground due to the nature of the sample matrices: FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9), and FSS-013-081121 (160-43079-13).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/19/2021, prepared on 08/29/2021 and analyzed on 09/08/2021 and 09/09/2021.

Samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9) and FSS-013-081121 (160-43079-13) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE A01R_U. The samples were prepared on 08/31/2021 and analyzed on 09/10/2021.

Preparation Batch 160-524626:

The sample was counted on detector AV199 which failed the pulser energy check the day after (closing bracket) the sample count. However, the sample tracer energy centroid was well within QC limits the day of the count. The laboratory does not believe this excursion adversely affects the data: FSS-007-081121 (160-43079-7).

The sample was counted on detector AV75 which failed the pulser efficiency check (low) the day after (closing bracket) the sample count. The sample pulser efficiency the day of the count as well as the tracer recovery was within QC limits the day of the count. While the lower efficiency may lead to a higher MDC, it would not affect the sample activity result (the efficiency effectively "cancels out" due to the tracer). Further, the MDC achieved is below the client requested limit. The laboratory does not believe this excursion adversely affects the data: FSS-014-081121 (160-43079-14).

Preparation Batch 160-524999:

The sample results were based on as received weight. The samples were not dried and ground due to the nature of the sample matrices: FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9), and FSS-013-081121 (160-43079-13).

Detectors 95, 96, 97, and 161 were calibrated in August therefore the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: (160-43124-D-6-K).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081221 (160-43079-13), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15) and FSS-016-081221 (160-43079-16) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 09/09/2021 and analyzed on 09/10/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15) and FSS-016-081221 (160-43079-16) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/16/2021, prepared on 08/18/2021 and analyzed on 09/11/2021 and 09/13/2021.

Samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9) and FSS-013-081221 (160-43079-13) were analyzed for Radium 226 (21 day ingrowth) in accordance with DOE GA-01-R. The samples were prepared on 08/20/2021 and analyzed on 09/11/2021.

Preparation Batch 160-523357:

The replicate precision for Pb-212 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (160-43079-A-13-B DU).

For samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9), FSS-013-081221 (160-43079-13), (LCS 160-523357/2-A), (MB 160-523357/1-A), and (160-43079-A-13-B DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

Preparation Batch 160-523157:

The method blank z-score for Eu-152 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (MB 160-523157/1-A).

The method blank z-score for Eu-154 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (MB 160-523357/1-A).

For samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15), FSS-016-081221 (160-43079-16), (LCS 160-523157/2-A), (MB 160-523157/1-A), and (160-43079-A-16-C DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from Reported to Analyte

Inferred	Reported
From	to
Nuclide	Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15) and FSS-016-081221 (160-43079-16) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 08/16/2021, prepared on 08/26/2021 and analyzed on 09/18/2021 and 09/19/2021.

Samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9) and FSS-013-081221 (160-43079-13) were analyzed for Nickel 59/63 in accordance with LSC-Nickel. The samples were prepared on 08/26/2021 and analyzed on 09/18/2021.

Preparation Batch 160-524237:

The carrier recovery for the sample failed below the lower QC limit at 35% (40%), indicating a potential high bias for analysis results. However, the sample final result was below the MDC and reporting limit (RL): FSS-005-081121 (160-43079-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081221 (160-43079-13), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15) and FSS-016-081221 (160-43079-16) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared on 08/29/2021 and 08/31/2021 and analyzed on 09/15/2021 and 09/16/2021.

Preparation Batch 160-525000:

The sample results were based on as received weight. The samples were not dried and ground due to the nature of the sample matrices: FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9), and FSS-013-081221 (160-43079-13).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-001-081121

Lab Sample ID: 160-43079-1

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0667	U	0.158	0.158	3.00	0.278	pCi/g	08/27/21 13:56	09/07/21 16:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.4		40 - 110					08/27/21 13:56	09/07/21 16:54	1
Y Carrier	95.3		40 - 110					08/27/21 13:56	09/07/21 16:54	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.127	U	0.237	0.237	1.00	0.413	pCi/g	08/27/21 08:28	09/01/21 09:35	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0125	U	0.0208	0.0208	1.00	0.0734	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.00417	U	0.0252	0.0252	1.00	0.0626	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	88.5		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-234	0.127		0.0714	0.0722	1.00	0.0807	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-235	-0.0127	U	0.0111	0.0112	1.00	0.0723	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.104		0.0578	0.0584	1.00	0.0395	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	77.0		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.467	U	0.835	0.836	5.00	1.42	pCi/g	09/09/21 09:41	09/10/21 16:34	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.110	U	0.292	0.293		0.370	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Americium-241	0.0720	U	0.127	0.127		0.216	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Bismuth-212	-0.752	U	1.01	1.01		1.71	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Bismuth-214	0.0698	U	0.246	0.246		0.416	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Cesium-137	-0.00571	U	0.0747	0.0747		0.135	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Cobalt-60	0.00362	U	0.00227	0.00230		0.117	pCi/g	08/20/21 09:48	09/11/21 07:41	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-001-081121

Date Collected: 08/11/21 09:00

Date Received: 08/13/21 08:45

Lab Sample ID: 160-43079-1

Matrix: Solid

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-152	0.164		0.0656	0.0677		0.145	pCi/g	08/20/21 09:48	09/11/21 07:41	
Europium-154	0.0469	U	0.0980	0.0981		0.0982	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Europium-155	0.0990	U	0.348	0.348		0.592	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Lead-212	0.282		0.106	0.111		0.105	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Lead-214	0.0232	U	0.0572	0.0573		0.364	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Potassium-40	3.71		1.47	1.51		1.33	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Radium-226	0.0698	U	0.246	0.246	1.00	0.416	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Radium-228	0.110	U	0.292	0.293		0.370	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Sodium-22	0.00974	U	0.0434	0.0434		0.0844	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Zinc-65	-0.158	U	0.132	0.133		0.438	pCi/g	08/20/21 09:48	09/11/21 07:41	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.563	U	0.885	0.887	5.00	1.51	pCi/g	08/26/21 10:56	09/18/21 08:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	87.1		40 - 110					08/26/21 10:56	09/18/21 08:25	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-0.284	U	1.11	1.11	5.00	2.01	pCi/g	08/31/21 14:29	09/15/21 15:07	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	88.5		30 - 110					08/31/21 14:29	09/15/21 15:07	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			08/19/21 16:11	1

Client Sample ID: FSS-001-081121

Date Collected: 08/11/21 09:00

Date Received: 08/13/21 08:45

Lab Sample ID: 160-43079-1

Matrix: Solid

Percent Solids: 97.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	14	J J	0.39	0.018	mg/Kg	*	09/07/21 07:45	09/08/21 03:47	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	20	6.4	ug/Kg	*	09/01/21 15:10	09/01/21 17:27	1

WA
9/27/2021

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-002-081121

Lab Sample ID: 160-43079-2

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.117	U	0.165	0.165	3.00	0.282	pCi/g	08/27/21 13:56	09/07/21 16:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.5		40 - 110					08/27/21 13:56	09/07/21 16:55	1
Y Carrier	94.2		40 - 110					08/27/21 13:56	09/07/21 16:55	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.193	U	0.241	0.242	1.00	0.407	pCi/g	08/27/21 08:28	09/01/21 09:57	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00720	U	0.00998	0.00999	1.00	0.0806	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	0.00721	U	0.0300	0.0300	1.00	0.0807	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	48.9		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00468	U	0.00917	0.00917	1.00	0.0905	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Uranium-238	0.113		0.0900	0.0905	1.00	0.113	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	48.6		30 - 110					08/29/21 20:35	09/08/21 13:49	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.491	U	0.860	0.861	5.00	1.47	pCi/g	09/09/21 09:41	09/10/21 16:57	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.285		0.137	0.140		0.250	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Americium-241	0.0589	U	0.147	0.147		0.253	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Bismuth-212	0.351	U	0.605	0.606		1.05	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Bismuth-214	0.336		0.0953	0.101		0.0807	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Cesium-137	-0.0163	U	0.0550	0.0550		0.118	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Cobalt-60	0.0337	U	0.0250	0.0252		0.0355	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Europium-152	0.0466	U	0.0698	0.0700		0.157	pCi/g	08/18/21 14:03	09/11/21 18:21	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-002-081121

Lab Sample ID: 160-43079-2

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0117	U	0.0749	0.0749		0.131	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Europium-155	-0.0939	U	0.220	0.220		0.459	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Lead-212	0.272		0.0794	0.0866		0.0999	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Lead-214	0.364		0.109	0.115		0.107	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Potassium-40	4.30		1.05	1.14		0.890	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Radium-226	0.336		0.0953	0.101	1.00	0.0807	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Sodium-22	0.0217	U	0.0357	0.0358		0.0627	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Thorium-232	0.285		0.137	0.140		0.250	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Zinc-65	-0.0173	U	0.116	0.116		0.234	pCi/g	08/18/21 14:03	09/11/21 18:21	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.404	U	0.868	0.869	5.00	1.49	pCi/g	08/26/21 10:56	09/18/21 09:31	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	88.8		40 - 110					08/26/21 10:56	09/18/21 09:31	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.80	U	2.21	2.21	5.00	3.96	pCi/g	08/29/21 20:28	09/15/21 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	48.9		30 - 110					08/29/21 20:28	09/15/21 15:44	1

Client Sample ID: FSS-002-081121

Lab Sample ID: 160-43079-2

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 91.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.9		0.39	0.018	mg/Kg	☼	09/07/21 07:45	09/08/21 04:04	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.6	ug/Kg	☼	09/01/21 15:10	09/01/21 17:40	1

Client Sample ID: FSS-003-081121

Lab Sample ID: 160-43079-3

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.166	U	0.172	0.172	3.00	0.340	pCi/g	08/27/21 13:56	09/07/21 17:20	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-003-081121

Lab Sample ID: 160-43079-3

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	84.3		40 - 110	08/27/21 13:56	09/07/21 17:20	1
Y Carrier	94.6		40 - 110	08/27/21 13:56	09/07/21 17:20	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0115	U	0.229	0.229	1.00	0.422	pCi/g	08/27/21 08:28	09/01/21 10:20	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0278	U	0.0173	0.0174	1.00	0.0982	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	-0.00557	U	0.0256	0.0256	1.00	0.0836	pCi/g	08/29/21 18:19	09/09/21 13:00	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	69.8		30 - 110	08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0205	U	0.0390	0.0391	1.00	0.0765	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Uranium-238	0.255		0.106	0.108	1.00	0.0678	pCi/g	08/29/21 20:35	09/08/21 13:49	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	60.5		30 - 110	08/29/21 20:35	09/08/21 13:49	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.289	U	0.856	0.856	5.00	1.56	pCi/g	09/09/21 09:41	09/10/21 17:42	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.132	U	0.152	0.152		0.224	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Americium-241	0.0511	U	0.113	0.113		0.193	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Bismuth-212	0.452	U	0.799	0.800		1.37	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Bismuth-214	0.359		0.102	0.108		0.0916	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Cesium-137	-0.0190	U	0.0564	0.0564		0.0989	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Cobalt-60	-0.0297	U	0.0734	0.0735		0.0815	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Europium-152	0.0499	U	0.114	0.114		0.140	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Europium-154	0.0455	U	0.0706	0.0708		0.0978	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Europium-155	-0.00779	U	0.132	0.132		0.364	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Lead-212	0.0396	U	0.0941	0.0942		0.161	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Lead-214	0.358		0.0891	0.0963		0.0989	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Potassium-40	4.42		0.856	0.964		0.603	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Radium-226	0.359		0.102	0.108	1.00	0.0916	pCi/g	08/18/21 14:03	09/11/21 18:21	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-003-081121

Lab Sample ID: 160-43079-3

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Sodium-22	0.00838	U	0.0260	0.0260		0.0495	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Thorium-232	0.132	U	0.152	0.152		0.224	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Zinc-65	0.000	U	0.0177	0.0177		0.185	pCi/g	08/18/21 14:03	09/11/21 18:21	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.321	U	0.824	0.825	5.00	1.47	pCi/g	08/26/21 10:56	09/18/21 10:38	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ni	85.4		40 - 110					08/26/21 10:56	09/18/21 10:38	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-2.09	U	1.48	1.49	5.00	2.73	pCi/g	08/29/21 20:28	09/15/21 17:56	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Pu-242 (T)	69.8		30 - 110					08/29/21 20:28	09/15/21 17:56	1

Client Sample ID: FSS-003-081121

Lab Sample ID: 160-43079-3

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 86.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.6		0.41	0.019	mg/Kg	☼	09/07/21 07:45	09/08/21 04:15	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	18	U	23	7.4	ug/Kg	☼	09/01/21 15:10	09/01/21 17:42	1

Client Sample ID: FSS-004-081121

Lab Sample ID: 160-43079-4

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0553	U	0.177	0.177	3.00	0.314	pCi/g	08/27/21 13:56	09/07/21 17:21	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Sr Carrier	82.0		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	93.1		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-004-081121

Lab Sample ID: 160-43079-4

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.222	U	0.244	0.245	1.00	0.407	pCi/g	08/27/21 08:28	09/01/21 10:43	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0530	U	0.0227	0.0231	1.00	0.115	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	-0.0228	U	0.0149	0.0150	1.00	0.0861	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.7		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00282	U	0.00552	0.00553	1.00	0.0546	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Uranium-238	0.165		0.0776	0.0788	1.00	0.0559	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.1		30 - 110					08/29/21 20:35	09/08/21 13:49	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.296	U	0.906	0.907	5.00	1.58	pCi/g	09/09/21 09:41	09/10/21 18:27	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.540		0.156	0.165		0.0865	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Americium-241	0.0632	U	0.157	0.158		0.270	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Bismuth-212	0.333	U	0.703	0.704		1.22	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Bismuth-214	0.382		0.108	0.115		0.100	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Cesium-137	0.0214	U	0.0442	0.0442		0.0775	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Cobalt-60	0.00544	U	0.0255	0.0255		0.0614	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-152	0.0784	U	0.190	0.190		0.186	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-154	0.0263	U	0.0677	0.0677		0.117	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-155	0.00198	U	0.00374	0.00375		0.372	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Lead-212	0.306		0.104	0.111		0.116	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Lead-214	0.232		0.117	0.119		0.177	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Potassium-40	3.51		0.864	0.933		0.708	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Radium-226	0.382		0.108	0.115	1.00	0.100	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Sodium-22	0.0103	U	0.0420	0.0420		0.0790	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Thorium-232	0.540		0.156	0.165		0.0865	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Zinc-65	-0.000370	U	0.121	0.121		0.225	pCi/g	08/18/21 14:03	09/11/21 18:57	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-004-081121

Lab Sample ID: 160-43079-4

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.00647	U	0.873	0.873	5.00	1.53	pCi/g	08/26/21 10:56	09/18/21 11:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	85.0		40 - 110					08/26/21 10:56	09/18/21 11:44	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-2.37	U	1.30	1.32	5.00	2.49	pCi/g	08/29/21 20:28	09/15/21 19:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.7		30 - 110					08/29/21 20:28	09/15/21 19:02	1

Client Sample ID: FSS-004-081121

Lab Sample ID: 160-43079-4

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 93.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.3		0.31	0.014	mg/Kg	☼	09/07/21 07:45	09/08/21 04:18	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	20	6.4	ug/Kg	☼	09/01/21 15:10	09/01/21 17:50	1

Client Sample ID: FSS-005-081121

Lab Sample ID: 160-43079-5

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0981	U	0.185	0.185	3.00	0.321	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	89.7		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	94.2		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0802	U	0.234	0.235	1.00	0.418	pCi/g	08/27/21 08:28	09/01/21 11:05	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-005-081121

Lab Sample ID: 160-43079-5

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	0.00406	U	0.0245	0.0245	1.00	0.0609	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.00609	U	0.0164	0.0164	1.00	0.0393	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-234	0.135		0.0738	0.0746	1.00	0.0698	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-235	-0.00289	U	0.00567	0.00568	1.00	0.0560	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.225		0.0913	0.0932	1.00	0.0574	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	71.2		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.986	U	0.935	0.941	5.00	1.53	pCi/g	09/09/21 09:41	09/10/21 18:50	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.192		0.140	0.142		0.185	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Americium-241	0.0676	U	0.169	0.169		0.290	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Bismuth-212	-0.582	U	0.960	0.962		1.65	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Bismuth-214	0.287		0.116	0.120		0.114	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Cesium-137	-0.0204	U	0.0626	0.0627		0.138	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Cobalt-60	-0.0507	U	0.106	0.106		0.120	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Europium-152	0.112	U	0.0810	0.0818		0.331	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Europium-154	0.0867	U	0.122	0.122		0.112	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Europium-155	0.0663	U	0.102	0.103		0.230	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Lead-212	0.217		0.0768	0.0816		0.0982	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Lead-214	0.279		0.0886	0.0931		0.104	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Potassium-40	3.89		1.02	1.09		0.875	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Radium-226	0.287		0.116	0.120	1.00	0.114	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Radium-228	0.192		0.140	0.142		0.185	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Sodium-22	-0.00182	U	0.0354	0.0354		0.0734	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Zinc-65	0.137	U	0.104	0.105		0.153	pCi/g	08/20/21 09:48	09/11/21 07:40	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	-1.44	U	1.90	1.90	5.00	3.41	pCi/g	08/26/21 10:56	09/18/21 12:50	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-005-081121

Lab Sample ID: 160-43079-5

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	35.1	Q	40 - 110	08/26/21 10:56	09/18/21 12:50	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.469	U	1.01	1.01	5.00	1.75	pCi/g	08/31/21 14:29	09/15/21 16:13	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110	08/31/21 14:29	09/15/21 16:13	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			08/19/21 16:11	1

Client Sample ID: FSS-005-081121

Lab Sample ID: 160-43079-5

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 98.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.6		0.40	0.018	mg/Kg	☼	09/07/21 07:45	09/08/21 04:22	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.7	ug/Kg	☼	09/01/21 15:10	09/01/21 17:52	1

Client Sample ID: FSS-006-081121

Lab Sample ID: 160-43079-6

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.139	U	0.237	0.237	1.00	0.411	pCi/g	08/27/21 08:28	09/01/21 11:28	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00471	U	0.0285	0.0285	1.00	0.0708	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	-0.00236	U	0.00462	0.00463	1.00	0.0457	pCi/g	08/29/21 18:19	09/09/21 13:00	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.9		30 - 110	08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0191	U	0.0389	0.0389	1.00	0.0775	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Uranium-238	0.155		0.0776	0.0787	1.00	0.0744	pCi/g	08/29/21 20:35	09/08/21 13:49	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-006-081121

Lab Sample ID: 160-43079-6

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	78.4		30 - 110	08/29/21 20:35	09/08/21 13:49	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.44	U	1.20	1.21	5.00	2.21	pCi/g	08/29/21 20:28	09/15/21 20:08	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.9		30 - 110	08/29/21 20:28	09/15/21 20:08	1

Client Sample ID: FSS-006-081121

Lab Sample ID: 160-43079-6

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 95.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.2		0.34	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 04:25	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/01/21 15:10	09/01/21 17:55	1

Client Sample ID: FSS-007-081121

Lab Sample ID: 160-43079-7

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0998	U	0.193	0.193	3.00	0.335	pCi/g	08/27/21 13:56	09/07/21 17:21	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	83.2		40 - 110	08/27/21 13:56	09/07/21 17:21	1
Y Carrier	96.1		40 - 110	08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0976	U	0.240	0.240	1.00	0.426	pCi/g	08/27/21 08:28	09/01/21 11:50	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00292	U	0.0262	0.0262	1.00	0.0831	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.00292	U	0.0250	0.0250	1.00	0.0724	pCi/g	08/29/21 18:19	09/09/21 13:00	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	63.3		30 - 110	08/29/21 18:19	09/09/21 13:00	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-007-081121

Lab Sample ID: 160-43079-7

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-235	0.00289	U	0.0354	0.0354	1.00	0.0910	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Uranium-238	0.165		0.0799	0.0810	1.00	0.0660	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.1		30 - 110					08/29/21 20:35	09/08/21 13:49	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.635	U	0.826	0.829	5.00	1.39	pCi/g	09/09/21 09:41	09/10/21 19:12	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.384		0.120	0.126		0.0725	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Americium-241	-0.0402	U	0.0751	0.0752		0.169	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Bismuth-212	0.000	U	0.404	0.404		1.17	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Bismuth-214	0.311		0.100	0.105		0.102	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Cesium-137	0.0179	U	0.0346	0.0346		0.0607	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Cobalt-60	0.0338	U	0.0177	0.0180		0.0709	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-152	0.102	U	0.212	0.212		0.318	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-154	0.0362	U	0.0360	0.0362		0.119	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-155	0.0649	U	0.223	0.223		0.381	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Lead-212	0.342		0.0707	0.0829		0.0765	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Lead-214	0.341		0.0793	0.0865		0.0771	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Potassium-40	5.24		0.942	1.08		0.625	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Radium-226	0.311		0.100	0.105	1.00	0.102	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Sodium-22	-0.0335	U	0.0478	0.0479		0.0816	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Thorium-232	0.384		0.120	0.126		0.0725	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Zinc-65	0.0547	U	0.117	0.117		0.205	pCi/g	08/18/21 14:03	09/11/21 18:57	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.150	U	0.862	0.862	5.00	1.49	pCi/g	08/26/21 10:56	09/18/21 13:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	86.1		40 - 110					08/26/21 10:56	09/18/21 13:56	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-2.69	U	1.72	1.74	5.00	3.23	pCi/g	08/29/21 20:28	09/15/21 21:15	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-007-081121

Lab Sample ID: 160-43079-7

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	63.3		30 - 110	08/29/21 20:28	09/15/21 21:15	1

Client Sample ID: FSS-007-081121

Lab Sample ID: 160-43079-7

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 90.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.9		0.32	0.014	mg/Kg	☼	09/07/21 07:45	09/08/21 04:29	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	17	U	21	6.9	ug/Kg	☼	09/01/21 15:10	09/01/21 17:57	1

Client Sample ID: FSS-008-081121

Lab Sample ID: 160-43079-8

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0228	U	0.205	0.205	3.00	0.376	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.4		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	94.2		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0474	U	0.220	0.220	1.00	0.418	pCi/g	08/27/21 08:28	09/01/21 12:13	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00309	U	0.00607	0.00607	1.00	0.0599	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	-0.00310	U	0.00607	0.00608	1.00	0.0600	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	54.7		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00673	U	0.00932	0.00934	1.00	0.0753	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.248		0.101	0.103	1.00	0.0324	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	70.4		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-008-081121

Lab Sample ID: 160-43079-8

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.245	U	0.823	0.823	5.00	1.42	pCi/g	09/09/21 09:41	09/10/21 19:35	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.305		0.101	0.105		0.0642	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Americium-241	-0.0549	U	0.124	0.124		0.211	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Bismuth-212	-0.0234	U	0.511	0.511		0.931	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Bismuth-214	0.238		0.0785	0.0821		0.0815	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Cesium-137	-0.0176	U	0.0508	0.0508		0.0890	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Cobalt-60	-0.0148	U	0.0545	0.0545		0.0627	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Europium-152	0.0687	U	0.110	0.110		0.306	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Europium-154	0.0292	U	0.0587	0.0588		0.0892	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Europium-155	-0.0315	U	0.202	0.202		0.347	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Lead-212	0.358		0.0646	0.0790		0.0630	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Lead-214	0.284		0.0963	0.101		0.0928	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Potassium-40	4.98		0.811	0.953		0.253	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Radium-226	0.238		0.0785	0.0821	1.00	0.0815	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Sodium-22	0.00548	U	0.0318	0.0318		0.0605	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Thorium-232	0.305		0.101	0.105		0.0642	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Zinc-65	0.000	U	0.0324	0.0324		0.218	pCi/g	08/18/21 14:03	09/11/21 18:58	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.110	U	0.876	0.876	5.00	1.53	pCi/g	08/26/21 10:56	09/18/21 16:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	84.9		40 - 110					08/26/21 10:56	09/18/21 16:08	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.34	U	1.99	1.99	5.00	3.56	pCi/g	08/29/21 20:28	09/15/21 22:21	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	54.7		30 - 110					08/29/21 20:28	09/15/21 22:21	1

Client Sample ID: FSS-008-081121

Lab Sample ID: 160-43079-8

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 95.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.9		0.36	0.016	mg/Kg	☼	09/07/21 07:45	09/08/21 04:32	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-008-081121

Lab Sample ID: 160-43079-8

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 95.3

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.4	ug/Kg	☼	09/01/21 15:10	09/01/21 18:00	1

Client Sample ID: FSS-009-081121

Lab Sample ID: 160-43079-9

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.174	U	0.214	0.215	3.00	0.362	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	72.3		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	94.2		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0938	U	0.231	0.232	1.00	0.409	pCi/g	08/27/21 08:28	09/01/21 12:36	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00195	U	0.0176	0.0176	1.00	0.0556	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00587	U	0.00664	0.00666	1.00	0.0484	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.1		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-234	0.148		0.0688	0.0698	1.00	0.0569	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-235	0.0165	U	0.0266	0.0266	1.00	0.0457	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.0530		0.0426	0.0429	1.00	0.0506	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	87.2		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.187	U	0.740	0.740	5.00	1.28	pCi/g	09/09/21 09:41	09/10/21 19:58	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-009-081121

Lab Sample ID: 160-43079-9

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.332		0.152	0.155		0.193	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Americium-241	0.0489	U	0.104	0.104		0.137	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Bismuth-212	-0.527	U	0.800	0.802		1.36	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Bismuth-214	0.373		0.112	0.118		0.107	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Cesium-137	0.00344	U	0.0602	0.0602		0.0751	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Cobalt-60	0.000	U	0.00850	0.00850		0.0319	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Europium-152	0.159		0.0971	0.0984		0.115	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Europium-154	0.0197	U	0.0286	0.0287		0.110	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Europium-155	0.0715	U	0.254	0.254		0.434	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Lead-212	0.265		0.0658	0.0739		0.0719	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Lead-214	0.414		0.0876	0.0973		0.0849	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Potassium-40	3.62		0.998	1.06		0.887	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Radium-226	0.373		0.112	0.118	1.00	0.107	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Radium-228	0.332		0.152	0.155		0.193	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Sodium-22	0.0335		0.0232	0.0234		0.0308	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Zinc-65	0.00506	U	0.116	0.116		0.214	pCi/g	08/20/21 09:48	09/11/21 07:03	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.0723	U	0.903	0.903	5.00	1.58	pCi/g	08/26/21 10:56	09/18/21 17:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	79.9		40 - 110					08/26/21 10:56	09/18/21 17:15	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.0957	U	1.11	1.11	5.00	1.96	pCi/g	08/31/21 14:29	09/15/21 17:19	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.1		30 - 110					08/31/21 14:29	09/15/21 17:19	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			08/19/21 16:11	1

Client Sample ID: FSS-009-081121

Lab Sample ID: 160-43079-9

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 98.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7		0.38	0.017	mg/Kg	☼	09/07/21 07:45	09/08/21 04:36	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-009-081121

Lab Sample ID: 160-43079-9

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 98.6

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/01/21 15:10	09/01/21 18:02	1

Client Sample ID: FSS-010-081121

Lab Sample ID: 160-43079-10

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0605	U	0.191	0.191	3.00	0.338	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.9		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	95.0		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.146	U	0.241	0.242	1.00	0.419	pCi/g	08/27/21 08:28	09/01/21 12:58	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00238	U	0.00466	0.00466	1.00	0.0460	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	0.000	U	0.00466	0.00466	1.00	0.0285	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.8		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0236	U	0.0327	0.0328	1.00	0.0354	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.421		0.125	0.129	1.00	0.0530	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	83.4		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0944	U	0.852	0.852	5.00	1.51	pCi/g	09/09/21 09:41	09/10/21 20:20	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-010-081121

Lab Sample ID: 160-43079-10

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.886		0.175	0.196		0.158	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Americium-241	0.0770	U	0.202	0.202		0.346	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Bismuth-212	0.461	U	0.851	0.852		1.47	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Bismuth-214	0.581		0.145	0.157		0.117	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Cesium-137	0.000928	U	0.0576	0.0576		0.107	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Cobalt-60	0.0123	U	0.0394	0.0395		0.0737	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Europium-152	0.231		0.115	0.118		0.178	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Europium-154	0.0479	U	0.0600	0.0602		0.164	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Europium-155	0.0919	U	0.269	0.269		0.460	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Lead-212	0.738		0.132	0.162		0.153	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Lead-214	0.749		0.152	0.170		0.133	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Potassium-40	5.26		1.14	1.25		0.849	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Radium-226	0.581		0.145	0.157	1.00	0.117	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Sodium-22	0.000	U	0.0104	0.0104		0.0390	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Thorium-232	0.886		0.175	0.196		0.158	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Zinc-65	-0.00525	U	0.138	0.138		0.328	pCi/g	08/18/21 14:03	09/11/21 19:42	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.163	U	0.960	0.960	5.00	1.67	pCi/g	08/26/21 10:56	09/18/21 18:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	84.9		40 - 110					08/26/21 10:56	09/18/21 18:21	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.184	U	1.81	1.81	5.00	3.24	pCi/g	08/29/21 20:28	09/15/21 23:27	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.8		30 - 110					08/29/21 20:28	09/15/21 23:27	1

Client Sample ID: FSS-010-081121

Lab Sample ID: 160-43079-10

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 94.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.2		0.36	0.017	mg/Kg	☼	09/07/21 07:45	09/08/21 04:39	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	6.7	J	18	6.0	ug/Kg	☼	09/01/21 15:10	09/01/21 18:05	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-011-081121

Lab Sample ID: 160-43079-11

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.218	U	0.197	0.198	3.00	0.324	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.7		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	92.3		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0852	U	0.218	0.218	1.00	0.422	pCi/g	08/27/21 08:28	09/01/21 13:21	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00729	U	0.00825	0.00828	1.00	0.0602	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00487	U	0.00675	0.00676	1.00	0.0545	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	71.2		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.000	U	0.00583	0.00583	1.00	0.0357	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.327		0.111	0.114	1.00	0.0590	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	65.7		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.279	U	0.917	0.918	5.00	1.58	pCi/g	09/09/21 09:41	09/10/21 20:43	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.43		0.207	0.252		0.110	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Americium-241	-0.0939	U	0.0722	0.0728		0.244	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Bismuth-212	0.391	U	0.793	0.794		1.37	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Bismuth-214	0.843		0.141	0.165		0.104	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Cesium-137	-0.0134	U	0.0794	0.0794		0.139	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Cobalt-60	0.0277	U	0.0458	0.0459		0.0736	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Europium-152	0.137	U	0.271	0.271		0.423	pCi/g	08/18/21 14:03	09/11/21 19:42	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-011-081121

Lab Sample ID: 160-43079-11

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0751	U	0.121	0.121		0.131	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Europium-155	-0.000927	U	0.0851	0.0851		0.597	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Lead-212	1.30		0.126	0.207		0.0970	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Lead-214	0.836		0.120	0.147		0.126	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Potassium-40	4.56		0.905	1.01		0.649	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Radium-226	0.843		0.141	0.165	1.00	0.104	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Sodium-22	-0.0386	U	0.0514	0.0515		0.0869	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Thorium-232	1.43		0.207	0.252		0.110	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Zinc-65	0.000	U	0.0329	0.0329		0.256	pCi/g	08/18/21 14:03	09/11/21 19:42	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.0332	U	0.853	0.853	5.00	1.49	pCi/g	08/26/21 10:56	09/18/21 19:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	86.1		40 - 110					08/26/21 10:56	09/18/21 19:27	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.86	U	1.61	1.62	5.00	3.06	pCi/g	08/29/21 20:28	09/16/21 00:33	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	71.2		30 - 110					08/29/21 20:28	09/16/21 00:33	1

Client Sample ID: FSS-011-081121

Lab Sample ID: 160-43079-11

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 93.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.6		0.33	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 04:43	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.1	ug/Kg	☼	09/01/21 15:10	09/01/21 18:07	1

Client Sample ID: FSS-012-081121

Lab Sample ID: 160-43079-12

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0588	U	0.186	0.186	3.00	0.330	pCi/g	08/27/21 13:56	09/07/21 17:21	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-012-081121

Lab Sample ID: 160-43079-12

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	79.5		40 - 110	08/27/21 13:56	09/07/21 17:21	1
Y Carrier	93.5		40 - 110	08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0376	U	0.228	0.228	1.00	0.415	pCi/g	08/27/21 08:28	09/01/21 13:43	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00699	U	0.0188	0.0188	1.00	0.0451	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00233	U	0.00457	0.00458	1.00	0.0452	pCi/g	08/29/21 18:19	09/09/21 21:38	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	73.8		30 - 110	08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0418	U	0.0475	0.0476	1.00	0.0668	pCi/g	08/29/21 20:35	09/08/21 14:04	1
Uranium-238	0.684		0.159	0.169	1.00	0.0536	pCi/g	08/29/21 20:35	09/08/21 14:04	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	71.5		30 - 110	08/29/21 20:35	09/08/21 14:04	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.405	U	0.855	0.856	5.00	1.47	pCi/g	09/09/21 09:41	09/10/21 21:05	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.14		0.168	0.203		0.259	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Americium-241	-0.0891	U	0.185	0.185		0.314	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Bismuth-212	1.26		0.601	0.615		0.569	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Bismuth-214	0.744		0.130	0.150		0.0902	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Cesium-137	0.0315	U	0.0648	0.0649		0.112	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Cobalt-60	-0.000303	U	0.000472	0.000473		0.0787	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Europium-152	0.0604	U	0.107	0.107		0.164	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Europium-154	0.0153	U	0.0263	0.0264		0.123	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Europium-155	0.000	U	0.111	0.111		0.536	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Lead-212	1.09		0.109	0.176		0.0863	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Lead-214	0.673		0.0989	0.120		0.100	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Potassium-40	6.05		0.918	1.10		0.267	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Radium-226	0.744		0.130	0.150	1.00	0.0902	pCi/g	08/18/21 14:03	09/11/21 19:41	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-012-081121

Lab Sample ID: 160-43079-12

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Sodium-22	-0.0116	U	0.0480	0.0481		0.0874	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Thorium-232	1.14		0.168	0.203		0.259	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Zinc-65	0.000	U	0.0296	0.0296		0.267	pCi/g	08/18/21 14:03	09/11/21 19:41	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.0926	U	1.08	1.08	5.00	1.90	pCi/g	08/26/21 10:56	09/18/21 20:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	67.8		40 - 110					08/26/21 10:56	09/18/21 20:33	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.13	U	1.50	1.50	5.00	2.71	pCi/g	08/29/21 20:28	09/16/21 01:40	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	73.8		30 - 110					08/29/21 20:28	09/16/21 01:40	1

Client Sample ID: FSS-012-081121

Lab Sample ID: 160-43079-12

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 93.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	4.3		0.33	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 04:53	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/01/21 15:10	09/01/21 18:10	1

Client Sample ID: FSS-013-081221

Lab Sample ID: 160-43079-13

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0888	U	0.204	0.204	3.00	0.357	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	74.7		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	93.8		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-013-081221

Lab Sample ID: 160-43079-13

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0547	U	0.225	0.225	1.00	0.405	pCi/g	08/27/21 08:28	09/01/21 14:06	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00219	U	0.00429	0.00430	1.00	0.0424	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00219	U	0.00430	0.00430	1.00	0.0424	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	78.0		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-234	0.597		0.146	0.154	1.00	0.0518	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-235	0.0576		0.0505	0.0507	1.00	0.0345	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.573		0.143	0.150	1.00	0.0277	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	71.9		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.392	U	0.854	0.855	5.00	1.46	pCi/g	09/09/21 09:41	09/10/21 21:28	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.138	U	0.120	0.120		0.142	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Americium-241	-0.0499	U	0.125	0.125		0.215	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Bismuth-212	-0.482	U	0.784	0.786		1.34	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Bismuth-214	0.355		0.0968	0.103		0.0905	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Cesium-137	0.150		0.0448	0.0473		0.0304	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Cobalt-60	0.00377	U	0.0105	0.0105		0.0777	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Europium-152	0.00949	U	0.0265	0.0266		0.144	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Europium-154	0.0664	U	0.0465	0.0470		0.0994	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Europium-155	-0.000494	U	0.00122	0.00122		0.357	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Lead-212	0.144		0.0444	0.0480		0.0439	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Lead-214	0.372		0.0832	0.0914		0.113	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Potassium-40	5.02		0.907	1.04		0.314	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Radium-226	0.355		0.0968	0.103	1.00	0.0905	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Radium-228	0.138	U	0.120	0.120		0.142	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Sodium-22	0.00543	U	0.0284	0.0284		0.0562	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Zinc-65	-0.109	U	0.165	0.165		0.280	pCi/g	08/20/21 09:48	09/11/21 07:05	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-013-081221

Lab Sample ID: 160-43079-13

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.404	U	0.786	0.787	5.00	1.35	pCi/g	08/26/21 10:56	09/18/21 21:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	92.6		40 - 110					08/26/21 10:56	09/18/21 21:40	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.167	U	1.32	1.32	5.00	2.37	pCi/g	08/31/21 14:29	09/15/21 18:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	78.0		30 - 110					08/31/21 14:29	09/15/21 18:25	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			08/19/21 16:11	1

Client Sample ID: FSS-013-081221

Lab Sample ID: 160-43079-13

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 98.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.4		0.41	0.018	mg/Kg	☼	09/07/21 07:45	09/08/21 04:57	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	10	J	19	6.0	ug/Kg	☼	09/01/21 15:10	09/01/21 18:13	1

Client Sample ID: FSS-014-081221

Lab Sample ID: 160-43079-14

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.138	U	0.205	0.206	3.00	0.352	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.0		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	93.1		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.211	U	0.246	0.246	1.00	0.414	pCi/g	08/27/21 08:28	09/01/21 14:29	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-014-081221

Lab Sample ID: 160-43079-14

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	-0.00946	U	0.00927	0.00930	1.00	0.0632	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00237	U	0.00464	0.00464	1.00	0.0458	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	75.4		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-235	-0.00281	U	0.00551	0.00552	1.00	0.0545	pCi/g	08/29/21 20:35	09/08/21 14:04	1
Uranium-238	0.142		0.0736	0.0745	1.00	0.0642	pCi/g	08/29/21 20:35	09/08/21 14:04	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Uranium-232</i>	90.9		30 - 110					08/29/21 20:35	09/08/21 14:04	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.0466	U	0.766	0.766	5.00	1.35	pCi/g	09/09/21 09:41	09/10/21 21:51	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.140	U	0.233	0.233		0.385	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Americium-241	-0.0588	U	0.180	0.180		0.308	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Bismuth-212	-0.535	U	0.839	0.840		1.43	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Bismuth-214	0.340		0.121	0.126		0.109	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Cesium-137	-0.000289	U	0.0624	0.0624		0.0470	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Cobalt-60	0.0253	U	0.0150	0.0152		0.0354	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Europium-152	0.143	U	0.195	0.196		0.318	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Europium-154	0.119		0.0624	0.0636		0.113	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Europium-155	-0.0249	U	0.167	0.167		0.418	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Lead-212	0.277		0.0870	0.0938		0.117	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Lead-214	0.334		0.0959	0.102		0.0767	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Potassium-40	3.50		0.889	0.956		0.745	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Radium-226	0.340		0.121	0.126	1.00	0.109	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Sodium-22	-0.0658	U	0.0747	0.0750		0.124	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Thorium-232	0.140	U	0.233	0.233		0.385	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Zinc-65	-0.00460	U	0.121	0.121		0.252	pCi/g	08/18/21 14:03	09/11/21 20:20	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.463	U	0.865	0.867	5.00	1.49	pCi/g	08/26/21 10:56	09/18/21 22:46	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-014-081221

Lab Sample ID: 160-43079-14

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	85.9		40 - 110	08/26/21 10:56	09/18/21 22:46	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.19	U	1.48	1.49	5.00	2.67	pCi/g	08/29/21 20:28	09/16/21 02:46	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.4		30 - 110	08/29/21 20:28	09/16/21 02:46	1

Client Sample ID: FSS-014-081221

Lab Sample ID: 160-43079-14

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 95.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.6		0.35	0.016	mg/Kg	☼	09/07/21 07:45	09/08/21 05:00	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/01/21 15:10	09/01/21 18:20	1

Client Sample ID: FSS-015-081221

Lab Sample ID: 160-43079-15

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.101	U	0.175	0.175	3.00	0.303	pCi/g	08/27/21 13:56	09/07/21 17:24	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	84.0		40 - 110	08/27/21 13:56	09/07/21 17:24	1
Y Carrier	95.7		40 - 110	08/27/21 13:56	09/07/21 17:24	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0524	U	0.216	0.216	1.00	0.409	pCi/g	08/27/21 08:28	09/01/21 14:51	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00433	U	0.0180	0.0180	1.00	0.0485	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	0.00650	U	0.0258	0.0258	1.00	0.0616	pCi/g	08/29/21 18:19	09/09/21 21:38	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.2		30 - 110	08/29/21 18:19	09/09/21 21:38	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-015-081221

Lab Sample ID: 160-43079-15

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00257	U	0.00505	0.00505	1.00	0.0498	pCi/g	08/29/21 20:35	09/08/21 14:04	1
Uranium-238	0.147		0.0711	0.0721	1.00	0.0587	pCi/g	08/29/21 20:35	09/08/21 14:04	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	91.5		30 - 110					08/29/21 20:35	09/08/21 14:04	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.553	U	0.896	0.898	5.00	1.52	pCi/g	09/09/21 09:41	09/10/21 22:13	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.462		0.114	0.123		0.0691	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Americium-241	-0.0265	U	0.114	0.114		0.197	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Bismuth-212	0.242	U	0.400	0.401		0.692	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Bismuth-214	0.281		0.0910	0.0954		0.0909	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Cesium-137	-0.00473	U	0.0415	0.0415		0.0756	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Cobalt-60	0.0257	U	0.0190	0.0192		0.0270	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Europium-152	0.0414	U	0.0552	0.0553		0.0932	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Europium-154	0.0764	U	0.0529	0.0535		0.0795	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Europium-155	0.0424	U	0.108	0.108		0.327	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Lead-212	0.359		0.0618	0.0768		0.0460	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Lead-214	0.253		0.0690	0.0737		0.0642	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Potassium-40	3.37		0.692	0.770		0.273	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Radium-226	0.281		0.0910	0.0954	1.00	0.0909	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Sodium-22	0.000	U	0.0139	0.0139		0.0330	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Thorium-232	0.462		0.114	0.123		0.0691	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Zinc-65	-0.000974	U	0.0960	0.0960		0.178	pCi/g	08/18/21 14:03	09/11/21 20:23	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.0979	U	0.945	0.945	5.00	1.68	pCi/g	08/26/21 10:56	09/18/21 23:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	76.8		40 - 110					08/26/21 10:56	09/18/21 23:52	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.971	U	1.46	1.46	5.00	2.63	pCi/g	08/29/21 20:28	09/16/21 03:52	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-015-081221

Lab Sample ID: 160-43079-15

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.2		30 - 110	08/29/21 20:28	09/16/21 03:52	1

Client Sample ID: FSS-015-081221

Lab Sample ID: 160-43079-15

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 96.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.5		0.38	0.017	mg/Kg	☼	09/07/21 07:45	09/08/21 05:04	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.8	ug/Kg	☼	09/01/21 15:10	09/01/21 18:23	1

Client Sample ID: FSS-016-081221

Lab Sample ID: 160-43079-16

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0820	U	0.177	0.177	3.00	0.310	pCi/g	08/27/21 13:56	09/07/21 17:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.9		40 - 110					08/27/21 13:56	09/07/21 17:24	1
Y Carrier	93.8		40 - 110					08/27/21 13:56	09/07/21 17:24	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.204	U	0.241	0.242	1.00	0.404	pCi/g	08/27/21 08:28	09/01/21 15:14	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00478	U	0.0303	0.0303	1.00	0.0842	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00717	U	0.00812	0.00814	1.00	0.0591	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.8		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.000	U	0.00552	0.00552	1.00	0.0338	pCi/g	08/29/21 20:35	09/09/21 12:16	1
Uranium-238	0.108		0.0613	0.0619	1.00	0.0271	pCi/g	08/29/21 20:35	09/09/21 12:16	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	70.9		30 - 110					08/29/21 20:35	09/09/21 12:16	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-016-081221

Lab Sample ID: 160-43079-16

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.587	U	0.856	0.859	5.00	1.45	pCi/g	09/09/21 09:41	09/10/21 22:36	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.425		0.124	0.132		0.126	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Americium-241	0.0260	U	0.122	0.122		0.212	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Bismuth-212	-0.0207	U	0.366	0.366		0.693	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Bismuth-214	0.245		0.0903	0.0936		0.0980	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Cesium-137	-0.0183	U	0.0591	0.0591		0.104	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Cobalt-60	0.000	U	0.0181	0.0181		0.0278	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Europium-152	-0.0522	U	0.0928	0.0930		0.158	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Europium-154	0.0507	U	0.0888	0.0890		0.101	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Europium-155	0.0257	U	0.139	0.139		0.240	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Lead-212	0.360		0.0700	0.0836		0.0722	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Lead-214	0.269		0.0729	0.0779		0.0661	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Potassium-40	4.29		0.851	0.954		0.611	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Radium-226	0.245		0.0903	0.0936	1.00	0.0980	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Sodium-22	-0.0461	U	0.0543	0.0545		0.0905	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Thorium-232	0.425		0.124	0.132		0.126	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Zinc-65	-0.0171	U	0.138	0.138		0.247	pCi/g	08/18/21 14:03	09/13/21 15:00	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.0726	U	1.03	1.03	5.00	1.82	pCi/g	08/26/21 10:56	09/19/21 01:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	79.9		40 - 110					08/26/21 10:56	09/19/21 01:01	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.85	U	1.52	1.53	5.00	2.81	pCi/g	08/29/21 20:28	09/16/21 04:59	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.8		30 - 110					08/29/21 20:28	09/16/21 04:59	1

Client Sample ID: FSS-016-081221

Lab Sample ID: 160-43079-16

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 96.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.96		0.40	0.018	mg/Kg	☼	09/07/21 07:45	09/08/21 05:07	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-016-081221

Lab Sample ID: 160-43079-16

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 96.8

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.8	ug/Kg	☼	09/01/21 15:10	09/01/21 18:25	1

Laboratory Report

Eurofins TestAmerica, St. Louis
13715 Rider Trail North
Earth City, MO 63045
United States
Attention: Ivan H Vania
Telephone: 314-298-8566

Report Date 09/21/2021
Sample Receipt Date 08/25/2021
RJ Lee Group Job No. AOH1063230-0
Authorization/P.O. No.
Client Job No./Name 160-43079-1

Analysis: Asbestos in Bulk Samples by Point Count

Method: NYELAP Method 198.6 NOB
NYELAP Method 198.1

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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546418.HPL	FSS-001-081121 (160-43079-1)	Yes	1	ND		100.00	Q, AM, F, OP, MI, M	EAF-09/21/2021
Description:		Grey Residue 4 Slides Scanned. Inconclusive- No Asbestos Detected. NY ELAP Method 198.6.						
Weight Loss:		12.05%						
10546419.HPL	FSS-002-081121 (160-43079-2)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss:		0.0%						

Client Job No./Name: 160-43079-1

RJ Lee Group Job No: AOH1063230-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546420.HPL	FSS-003-081121 (160-43079-3)	Yes	1	ND		100.00	Q, CA, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546421.HPL	FSS-004-081121 (160-43079-4)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546422.HPL	FSS-005-081121 (160-43079-5)	Yes	1	ND		100.00	Q, AM, F, OP, M	EAF-09/21/2021
Description:		Grey Residue 4 Slides Scanned. Inconclusive- No Asbestos Detected. NY ELAP Method 198.6.						
Weight Loss: 72.28%								
10546423.HPL	FSS-006-081121 (160-43079-6)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								

Client Job No./Name: 160-43079-1

RJ Lee Group Job No: AOH1063230-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546424.HPL	FSS-007-081121 (160-43079-7)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	AC-09/16/2021
Description:		Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546425.HPL	FSS-008-081121 (160-43079-8)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/16/2021
Description:		Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546426.HPL	FSS-009-081121 (160-43079-9)	Yes	1	ND		100.00	Q, AM, F, OP, M	EAF-09/21/2021
Description:		Grey Residue 4 Slides Scanned. Inclusive- No Asbestos Detected. NY ELAP Method 198.6.						
Weight Loss: 0.0%								
10546426.HPL	FSS-009-081121 (160-43079-9)	Yes	1	ND		100.00	Q, AM, F, OP, M	EAF-09/21/2021
Description:		Grey Residue 4 Slides Scanned. Inconclusive- No Asbestos Detected. NY ELAP Method 198.6.						
Weight Loss: 69.76%								

Client Job No./Name: 160-43079-1

RJ Lee Group Job No: AOH1063230-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546427.HPL	FSS-010-081121 (160-43079-10)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/16/2021
Description:	Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss:	0.0%							
10546428.HPL	FSS-011-081121 (160-43079-11)	Yes	1	ND		100.00	Q, CA, CL, F, OP, M	AC-09/16/2021
Description:	Yellow Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss:	0.0%							
10546429.HPL	FSS-012-081121 (160-43079-12)	Yes	1	ND		100.00	Q, CL, AM, CA, F, OP, MI, M	AC-09/16/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss:	0.0%							
10546430.HPL	FSS-013-081121 (160-43079-13)	Yes	1	ND		100.00	Q, AM, F, OP, M,	EAF-09/21/2021
Description:	Grey Powder 4 Slides Scanned. Inconclusive- No Asbestos Detected. NY ELAP Method 198.6.							
Weight Loss:	56.19%							

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Client Job No./Name: 160-43079-1

RJ Lee Group Job No: AOH1063230-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546431.HPL	FSS-014-081121 (160-43079-14)	Yes	1	ND		100.00	Q, CL, F, OP, MI, M	AC-09/16/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546432.HPL	FSS-015-081121 (160-43079-15)	Yes	1	ND		100.00	Q, CL, AM, F, OP, MI, M	AC-09/16/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546433.HPL	FSS-016-081121 (160-43079-16)	Yes	1	ND		100.00	Q, CA, CL, F, OP, M	AC-09/16/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								

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Client Job No./Name: 160-43079-1

RJ Lee Group Job No: AOH1063230-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
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Authorized Signature: _____

Alexandra Cheek, Microscopist

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ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- | | | |
|-----------------|---------------------|-----------------|
| AM = Amphibole | HY = Hydromagnesite | Q = Quartz |
| B = Binder | M = Miscellaneous | T = Tar |
| CA = Carbonates | MI = Mica | V = Vermiculite |
| CL = Clay | OP = Opaque | |
| F = Feldspar | OR = Organic | |
| G = Gypsum | P = Perlite | |

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43113-1	FSS-044-081721	Solid	08/17/21 08:30	08/18/21 13:02
160-43113-2	FSS-045-081721	Solid	08/17/21 08:30	08/18/21 13:02
160-43113-3	FSS-046-081721	Solid	08/17/21 08:30	08/18/21 13:02
160-43113-4	FSS-047-081721	Solid	08/17/21 08:45	08/18/21 13:02
160-43113-5	FSS-048-081721	Solid	08/17/21 08:45	08/18/21 13:02
160-43113-6	FSS-049-081721	Solid	08/17/21 08:45	08/18/21 13:02
160-43113-7	FSS-050-081721	Solid	08/17/21 10:30	08/18/21 13:02
160-43113-8	FSS-051-081721	Solid	08/17/21 10:30	08/18/21 13:02
160-43113-9	FSS-052-081721	Solid	08/17/21 10:30	08/18/21 13:02
160-43113-10	FSS-053-081721	Solid	08/17/21 10:00	08/18/21 13:02
160-43113-11	FSS-054-081721	Solid	08/17/21 10:00	08/18/21 13:02
160-43113-12	FSS-055-081721	Solid	08/17/21 10:00	08/18/21 13:02
160-43113-13	FSS-056-081721	Solid	08/17/21 08:00	08/18/21 13:02
160-43113-14	FSS-256-081721	Solid	08/17/21 08:00	08/18/21 13:02
160-43113-15	FSS-057-081721	Solid	08/17/21 08:00	08/18/21 13:02
160-43113-16	FSS-257-081721	Solid	08/17/21 08:00	08/18/21 13:02
160-43113-17	FSS-058-081721	Solid	08/17/21 08:00	08/18/21 13:02
160-43113-18	FSS-258-081721	Solid	08/17/21 08:00	08/18/21 13:02

Chain of Custody Record



160-43113 Chain of Custody

DW NPDES RCRA Other:

Project Manager: Dan Ours
 Email: d.ours@pm-remediations.com
 Tel/Fax: (315) 336-7721 ext. 218
 CALENDAR DAYS WORKING DAYS
 Analysis Turnaround Time
 TAT if different from Below 30 Days
 2 weeks
 1 week
 2 days
 1 day

Client Contact
 Address 181 Kenwood Avenue
 Oneida, NY 13421
 (315) 336-7721 ext. 218 Phone
 Fax (315) 336-7722 FAX
 Project Name: BNL 705 Stack Demo
 Site: BNL
 P O # 1085-20-01-01

Site Contact: Doug Beard		Date: 08-17-21	COC No: 1 of 2 COCs	
Lab Contact: Ivan Vania		Carrier: Fed Ex	TALS Project #:	
Gamma Spec: Ra-226+detecs		Alpha Spec Pu 238, 239, 240	Sampler: J. Gollhofer	
Strontium-90 (GFPC)		Alpha Spec U 234, 235, 238	For Lab Use Only:	
Asbestos - EPA600 R-93		C-14	Walk-in Client:	
Lead (ICP/MS) - 6020B		Tritium	Lab Sampling:	
Mercury - EPA 7470A		Ni-63	Job / SDG No.:	
Ni-63			Sample Specific Notes:	
Pu 241 by LSC			SU 7B - SS02 0"-6"	
			SU 7B - SS02 6"-12"	
			SU 7B - SS02 18"-24"	
			SU 7B - SS03 0"-6"	
			SU 7B - SS03 6"-12"	
			SU 7B - SS03 18"-24"	
			SU 7B - SS04 0"-6"	
			SU 7B - SS04 6"-12"	
			SU 7B - SS04 18"-24"	
			SU 7B - SS05 0"-6"	
			SU 7B - SS05 6"-12"	
			SU 7B - SS05 18"-24"	

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return to Client Disposal by Lab Archive for Months

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other
Possible Hazard Identification: Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
 Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu154, Eu155

Custody Seal No.:
 Relinquished by: Douglas Beard
 Relinquished by: **FED EX**
 Relinquished by:

Received by: **Michael Remington**
 Date/Time: **AUG 18 2021 09:01**
 Date/Time:

Company:
 Received in Laboratory by:
 Company:

Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

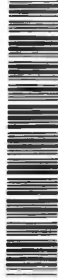
Client Contact		Project Manager: Dan Ours		Site Contact: Doug Beard		Date: 08-17-21		COC No: 2 of 2 COCs	
Email: d.ours@fpm-remediations.com		Tel/Fax: (315) 336-7721 ext. 218		Lab Contact: Ivan Vania		Carrier: Fed Ex		TALS Project #:	
<input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT: if different from Below <u>30</u> Days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Analysis Turnaround Time		Asbestos - EPA600 R-93		Alpha Spec Pu 238,239,240		Sampler: J. Gollifer	
Sample Date		Sample Time		Sample Type (C=Comp, G=Grab)		Matrix		# of Cont.	
FSS-053-081721 ms/msd		10:00		C		S		1	
FSS-054-081721 ms/msd		10:00		C		S		1	
FSS-055-081721 ms/msd		10:00		C		S		1	
FSS-056-081721		8:00		C		S		3	
FSS-256-081721		8:00		C		S		3	
FSS-057-081721		8:00		C		S		3	
FSS-257-081721		8:00		C		S		3	
FSS-058-081721		8:00		C		S		3	
FSS-258-081721		8:00		C		S		3	

Preservation Used: 1=Ice, 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6=Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown
 Return to Client Disposal by Lab Archive for _____ Months

Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____		Therm ID No.: _____	
Relinquished by: Douglas Beard		Received by: Fed Ex		Date/Time: 8-17-21/17:00	
Relinquished by: <i>AB</i>		Received by: <i>Michael Kenning</i>		Date/Time: 8-17-21/09:01	
Relinquished by: FED EX		Received in Laboratory by: _____		Date/Time: _____	



Client Information (Sub Contract Lab)		Sampler:	Lab P#:	Carrier Tracking No(s):	COC No:						
Shipping/Receiving		Vania, Ivan H	Vania, Ivan H		160-217816.1						
Company:		E-Mail:	Ivan.Vania@Eurofins.com	State of Origin:	Page:						
TestAmerica Laboratories, Inc.		DoD - A2LA; DoD - ANAB; NELAP - New York		New York	Page 1 of 3						
Address:		Accreditations Required (See note):		Job #:	160-43113-1						
4955 Yarrow Street,		DoD - A2LA; DoD - ANAB; NELAP - New York		Preservation Codes:							
City:		Analysis Requested		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:							
State, Zip:		Due Date Requested:		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - MCAA V - pH 4-5 W - EDTA Z - other (specify)							
CO, 80002		9/15/2021		Total Number of containers							
Phone:		TAT Requested (days):									
303-736-0100(Tel) 303-431-7171(Fax)		9									
Email:		PO #:									
		WO #:									
Project Name:		Project #:									
BNL Decommissioning Project		16009147									
Site:		SSOW#:									
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=washsol, BT=issue, A=AK)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020B DDS/3050B (MOD) ICPMS Metals Pb Only	7471B DDD5/7471B Prep Mercury	Moisture	Special Instructions/Note:
FSS-044-081721 (160-43113-1)	8/17/21	08:30 Eastern	Solid	Solid		X	X	X	X	X	
FSS-045-081721 (160-43113-2)	8/17/21	08:30 Eastern	Solid	Solid		X	X	X	X	X	
FSS-046-081721 (160-43113-3)	8/17/21	08:30 Eastern	Solid	Solid		X	X	X	X	X	
FSS-047-081721 (160-43113-4)	8/17/21	08:45 Eastern	Solid	Solid		X	X	X	X	X	
FSS-048-081721 (160-43113-5)	8/17/21	08:45 Eastern	Solid	Solid		X	X	X	X	X	
FSS-049-081721 (160-43113-6)	8/17/21	08:45 Eastern	Solid	Solid		X	X	X	X	X	
FSS-050-081721 (160-43113-7)	8/17/21	10:30 Eastern	Solid	Solid		X	X	X	X	X	
FSS-051-081721 (160-43113-8)	8/17/21	10:30 Eastern	Solid	Solid		X	X	X	X	X	
FSS-052-081721 (160-43113-9)	8/17/21	10:30 Eastern	Solid	Solid		X	X	X	X	X	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
 Level 1 radioactive

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Empty Kit Relinquished by: _____ Date: _____

Relinquished by: *Michaela Kerviningsa* Date/Time: 8/19/21 17:30 Company: *ETA SN*

Relinquished by: _____ Date/Time: _____ Company: _____

Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: Yes No Custody Seal No.: _____

Cooler Temperature(s) °C and Other Remarks: 1.2 IR2111.0

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/QC Requirements: _____

Method of Shipment: _____

Date/Time: 08/20/2021 0935 Company: *ETA DEN*

Date/Time: _____ Company: _____

Date/Time: _____ Company: _____

Client Information (Sub Contract Lab)				Lab PM: Vania, Ivan H				Carrier Tracking No(s):				COC No: 160-217816.2															
Shipping/Receiving				Phone: Ivan Vania@Eurofinset.com				State of Origin: New York				Page: Page 2 of 3															
TestAmerica Laboratories, Inc.				E-Mail: Ivan.Vania@Eurofinset.com				Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York				Job #: 160-43113-1															
Address: 4955 Yarrow Street,				Due Date Requested: 9/15/2021				Analysis Requested:				Preservation Codes: A-HCL, B-NaOH, C-Zn Acetate, D-Nitric Acid, E-NaHSO4, F-MeOH, G-Amchlor, H-Ascorbic Acid, I-Ice, J-DI Water, K-EDTA, L-EDA, Other:															
City: Anvada				TAT Requested (days):				Moisture				M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)															
State, Zip: CO, 80002				FO #:				60208_POD5/3050B (MD) ICPMS Metals Pb Only				Total Number of Containers															
Phone: 303-736-0100(Tel) 303-431-7171(Fax)				WO #:				74718_POD5/74718_Prep Mercury				<input checked="" type="checkbox"/> <input type="checkbox"/>															
Email:				Project #: 16009147				Field Filtered Sample (Yes or No)				<input checked="" type="checkbox"/> <input type="checkbox"/>															
Project Name: BNL Decommissioning Project				SSOW#:				Perform MS/MSD (Yes or No)				<input checked="" type="checkbox"/> <input type="checkbox"/>															
Site:				Sample Date				Sample Time				Sample Type (C=Comp, G=grab)				Matrix (W=water, S=sols, O=oil, BT=base, AA=sk)				Preservation Code:							
				8/17/21				10:00 Eastern				Solid				Solid											
				8/17/21				10:00 Eastern				MS				Solid				MS							
				8/17/21				10:00 Eastern				MSD				Solid				MSD							
				8/17/21				10:00 Eastern				Solid				Solid				Solid							
				8/17/21				10:00 Eastern				MS				Solid				MS							
				8/17/21				10:00 Eastern				MSD				Solid				MSD							
				8/17/21				10:00 Eastern				Solid				Solid				Solid							
				8/17/21				10:00 Eastern				MS				Solid				MS							
				8/17/21				10:00 Eastern				MSD				Solid				MSD							
				8/17/21				10:00 Eastern				Solid				Solid				Solid							

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately.

Possible Hazard Identification

Level: I, II, III, IV, Other (specify):

Deliverable Requested: Return To Client, Disposal By Lab, Archive For _____ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Empty Kit Relinquished by: _____ Date: _____

Relinquished by: *Mina Kemnig* Date: *8/19/21 17:30*

Relinquished by: _____ Date: _____

Relinquished by: _____ Date: _____

Relinquished by: _____ Date: _____

Custody Seal No.: _____

Cooler Temperature(s) °C and Other Remarks: _____

Method of Shipment: _____

Received by: *[Signature]* Date/Time: *08/20/2021 09:35* Company: *ETA NEW*

Client Information (Sub Contract Lab)		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:							
Shipping/Receiving		Phone:	Vania, Ivan H		160-217816.3							
Company		E-Mail:	Ivan.Vania@Eurofinset.com	State of Origin:	Page 3 of 3							
TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #:	160-43113-1							
Address:		DoD - AZLA; DoD - ANAB; NELAP - New York		Preservation Codes:								
City:		Due Date Requested:	A - HCL									
Arvada		9/15/2021	M - Hexane									
State, Zip:		TAT Requested (days):	N - None									
CO, 80002			O - AsNaO2									
Phone:		PO #:	P - Na2O4S									
303-736-0100(Tel) 303-431-7171(Fax)		WO #:	Q - NaHSO4									
Email:		Project #:	R - Na2SO3									
BNL Decommissioning Project		16009147	S - H2SO4									
Site:		SSOW#:	T - TSP Dodecahydrate									
			U - Acetone									
			V - MCAA									
			W - pH 4-5									
			X - EDTA									
			Y - EDA									
			Z - other (specify)									
			Other:									
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=organic)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	7471B DDD5/7471B Prep Mercury	6020B DDD5/3050B (MOD) CPMS Metals Pb Only	Moisture	Total Number of Containers	Special Instructions/Note:
FSS-056-081721 (160-43113-13)		8/17/21	08:00 Eastern	Solid	Solid	X	X	X	X		1	
FSS-256-081721 (160-43113-14)		8/17/21	08:00 Eastern	Solid	Solid	X	X	X	X		1	
FSS-057-081721 (160-43113-15)		8/17/21	08:00 Eastern	Solid	Solid	X	X	X	X		1	
FSS-257-081721 (160-43113-16)		8/17/21	08:00 Eastern	Solid	Solid	X	X	X	X		1	
FSS-058-081721 (160-43113-17)		8/17/21	08:00 Eastern	Solid	Solid	X	X	X	X		1	
FSS-258-081721 (160-43113-18)		8/17/21	08:00 Eastern	Solid	Solid	X	X	X	X		1	
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>												
Possible Hazard Identification												
Level 1 radioactive												
Deliverable Requested: I, II, III, IV, Other (specify)												
Empty Kit Relinquished by:												
Primary Deliverable Rank: 2												
Date: Time: Method of Shipment:												
Relinquished by: <i>Micha Kervinkings</i> Date/Time: 8/19/21 17:30												
Relinquished by: <i>ETA</i> Company: <i>ETA</i> Date/Time: 08/20/2021 0935												
Relinquished by: <i>ETA</i> Company: <i>ETA</i> Date/Time: <i>ETA</i>												
Custody Seals Intact: <i>ETA</i> Company: <i>ETA</i> Date/Time: <i>ETA</i>												
Cooler Temperature(s) °C and Other Remarks:												

Client Information (Sub Contract Lab)

Client Contact: **Shipping/Receiving**

Company: **RJ Lee Group, Inc**

Address: **350 Hootberg Rd,**

City: **Monroeville**

State, Zip: **PA, 15146**

Phone:

Email:

Project Name: **BNL Decommissioning Project**

Site:

Sampler: **ADH06 3 191-0**

Lab File: **Vanis, Ivan H**

E-Mail: **Ivan.Vanis@Eurofins.com**

Center Tracking No(s):

State of Origin: **New York**

Job #: **180-43113-1**

Preservation Codes:

Analysis Requested:

GOC No: **180-217817.1**

Page: **Page 1 of 2**

Job #: **180-43113-1**

Preservation Codes:

A - HCl

M - Hexane

N - None

O - Nitric Acid

P - Nitrogen

Q - Nitric Acid

R - Nitrogen

S - Nitrogen

T - TSP Dodecylsulfate

U - Acetone

V - MCAA

W - pH 4.5

X - Other (specify)

Other:

Total Number of Containers

Special Instructions/Notes:

Sample ID (Lab ID)	Sample Date	Sample Time	Sample Type (C-Comp, Gr-Grat)	Matrix (Inerts, Swabs, Oils, etc.)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Sub (Acetone/ Acetone)	Special Instructions/Notes
FSS-044-081721 (160-43113-1)	8/17/21	08:30 Eastern	Solid	Solid	X	X		
FSS-045-081721 (160-43113-2)	8/17/21	08:30 Eastern	Solid	Solid	X	X		
FSS-046-081721 (160-43113-3)	8/17/21	08:30 Eastern	Solid	Solid	X	X		
FSS-047-081721 (160-43113-4)	8/17/21	08:45 Eastern	Solid	Solid	X	X		
FSS-048-081721 (160-43113-5)	8/17/21	08:45 Eastern	Solid	Solid	X	X		
FSS-049-081721 (160-43113-6)	8/17/21	08:45 Eastern	Solid	Solid	X	X		
FSS-050-081721 (160-43113-7)	8/17/21	10:30 Eastern	Solid	Solid	X	X		
FSS-051-081721 (160-43113-8)	8/17/21	10:30 Eastern	Solid	Solid	X	X		
FSS-052-081721 (160-43113-9)	8/17/21	10:30 Eastern	Solid	Solid	X	X		

Note: Since laboratory accreditation is subject to change, Eurofins TestAmerica places the ownership of method, analysis & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification

Level 1 radioactive

Deliverable Requested: I, II, III, IV, Other (specify)

Primary Deliverable Rank: 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Months

Special Instructions/CC Requirements:

Empty KR Reinquished by:

Date:

Time:

Method of Shipment:

Received by:

Date/Time:

Company:

Received by:

Date/Time:

Company:

Custody Seal Intact: Yes No

Custody Seal No.:

Cooler Temperature (°C) and Other Remarks:

Chain of Custody Record

Client Information (Sub Contract Lab)		Lab PIC: Vanla, Ivan H	Carrier Tracking No(s):	DOC No: 160-217817.2		
Client Contact: RJ Lee Group, Inc		E-Mail: Ivan.Vanla@Eurofins.com	State of Origin: New York	Page: Page 2 of 2		
Shipping/Receiving		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York	Job #: 160-43113-1	Preservation Codes: M - Hexane N - None O - Air/NO2 P - NaOH Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - HCAA W - BH 4.5 X - EDTA Y - Other:		
Address: 350 Hochberg Rd, Monroeville PA, 15146		Due Date Requested: 8/16/2021	Analysis Requested			
City: Monroeville		TAT Requested (days):	Total Number of Containers			
State, Zip: PA, 15146		PO #: _____	US (Asbestos)/ Asbestos			
Phone: _____		WO #: _____	Perform MS/MSD (Yes or No)			
Email: _____		Project #: 16009147	Field Filtered Sample (Yes or No)			
Project Name: BNL Decommissioning Project		SSOW#: _____	Preparation Codes:			
Site: _____		Sample ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix (W=Water, S=Soil, O=Organic, A=Asbestos)
Site: _____		FSS-053-081721 (160-43113-10)	8/17/21	10:00 Eastern	Solid	Solid
Site: _____		FSS-054-081721 (160-43113-11)	8/17/21	10:00 Eastern	Solid	Solid
Site: _____		FSS-055-081721 (160-43113-12)	8/17/21	10:00 Eastern	Solid	Solid
Site: _____		FSS-056-081721 (160-43113-13)	8/17/21	08:00 Eastern	Solid	Solid
Site: _____		FSS-256-081721 (160-43113-14)	8/17/21	08:00 Eastern	Solid	Solid
Site: _____		FSS-057-081721 (160-43113-15)	8/17/21	08:00 Eastern	Solid	Solid
Site: _____		FSS-257-081721 (160-43113-16)	8/17/21	08:00 Eastern	Solid	Solid
Site: _____		FSS-058-081721 (160-43113-17)	8/17/21	08:00 Eastern	Solid	Solid
Site: _____		FSS-258-081721 (160-43113-18)	8/17/21	08:00 Eastern	Solid	Solid
<p>Note: Since laboratory accreditation is subject to change, Eurofins TestAmerica places the ownership of method, analysis & accreditation compliance upon our subcontracted laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/methods being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>						
Possible Hazard Identification						
Level 1 radioactive						
Deliverable Requested: I, II, III, IV, Other (specify)						
Empty KIT Refrignished by:						
Special Instructions/OC Requirements:						
<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months						
Method of Shipment:						
Company: CRASH M. Carver		Received by:	Date/Time: 08-20-21 9:00 AM	Company: CRASH M. Carver	Company: CRASH M. Carver	
Company: CRASH M. Carver		Received by:	Date/Time: 08-23-21 7:00 AM	Company: CRASH M. Carver	Company: CRASH M. Carver	
Company: CRASH M. Carver		Received by:	Date/Time:	Company: CRASH M. Carver	Company: CRASH M. Carver	
Custody Seals Intact: A Yes A No		Custody Seal No.:				

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43113-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/18/2021 1:02 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.5° C, 26.3° C and 26.8° C.

Receipt Exceptions

The sample was received in a broken 8oz container. The plastic bag included more than sufficient volume for all requested analyses; therefore, a new 8oz container was subsampled from the plastic bag: FSS-057-081721 (160-43113-15).

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis.

METALS (ICP/MS)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721

(160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 09/08/2021 and analyzed on 09/09/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B_ DoD5. The samples were prepared and analyzed on 09/10/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 08/27/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 08/20/2021, prepared on 09/04/2021 and analyzed on 09/20/2021.

Preparation Batch 160-525601:

Method DPS-7: The following samples could not be thoroughly homogenized before sub-sampling was performed due to sample matrix. The samples had large rocks >2mm: FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17), and FSS-258-081721 (160-43113-18).

The sample was counted on a detector that failed the closing daily check slightly low. The detector passed the day the sample counted. The lab does not believe that the 3% low result for the closing daily check significantly affects the sample results. Therefore, the data was reported: FSS-054-081721 (160-43113-11).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 09/03/2021 and analyzed on 09/08/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 08/20/2021, prepared on 08/29/2021 and 08/31/2021 and analyzed on 09/09/2021 and 09/10/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/20/2021, prepared on 08/29/2021 and 08/31/2021 and analyzed on 09/08/2021, 09/09/2021 and 09/10/2021.

Preparation Batch 160-524626:

Detectors AV83, AV86 AV95, and AV96 were calibrated in August, therefore; the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-047-081721 (160-43113-4), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), and FSS-051-081721 (160-43113-8).

Preparation Batch 160-524624:

Detectors AV131-AV142 were calibrated in August, therefore; the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: (LCS 160-524624/2-A), (MB 160-524624/1-A), (160-43079-A-2-G), and (160-43079-A-2-H DU).

Preparation Batch 160-524992:

Detectors AV131-AV146 were calibrated in August, therefore; the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17), and FSS-258-081721 (160-43113-18).

Preparation Batch 160-424999:

Detectors AV95, AV96, AV97 and V161 were calibrated in August, therefore; the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), and FSS-058-081721 (160-43113-17).

Preparation Batch 160-523941:

The detection goal of 0.200 pCi/g was not met for Ra-226 for the following sample. An elevated MDC can occur when higher background counts are applied to a peak ROI. This is due to the relatively small size of the peak or subsequent "force-fit" of the non-existent peak which resulted in higher than normal background counts due to statistical fluctuations in the Compton background. The laboratory does not believe this adversely affects the data, as the Ra-226 result is below the RL and MDC: FSS-257-081721 (160-43113-16).

The sample exhibited a negative result greater in magnitude than the 3 sigma TPU for Am-241. This occurrence was evaluated and determined to be random in nature. Sporadic occurrences such as this are statistically expected: FSS-257-081721 (160-43113-16).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 09/16/2021 and 09/17/2021 and analyzed on 09/17/2021 and 09/18/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/20/2021, prepared on 08/24/2021 and analyzed on 09/16/2021 and 09/17/2021.

Preparation Batch 160-523941:

For samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17), and FSS-258-081721 (160-43113-18).

(160-43113-16), FSS-058-081721 (160-43113-17), FSS-258-081721 (160-43113-18), (LCS 160-523941/2-A), (MB 160-523941/1-A), and (160-43113-D-18-D DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 08/20/2021, prepared on 09/08/2021 and analyzed on 09/17/2021 and 09/18/2021.

Preparation Batch 160-526025:

The nickel carrier recoveries were outside the upper acceptance limit. The carrier recoveries have been truncated to minimize any potential bias a high carrier may have on the results: FSS-044-081721 (160-43113-1) and (MB 160-526025/1-A).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared on 08/29/2021 and 08/31/2021 and analyzed on 09/15/2021 and 09/16/2021.

Preparation Batch 160-525000:

The samples were switched during the original analysis then recounted. All samples in the batch have results below the MDC and reporting limit (RL). Therefore the data was not adversely affected: FSS-257-081721 (160-43113-16) and (LCS 160-525000/2-A).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-044-081721

Lab Sample ID: 160-43113-1

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.232	U	0.183	0.184	3.00	0.295	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.8		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	87.9		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0330	U	0.221	0.221	1.00	0.407	pCi/g	09/03/21 13:48	09/08/21 10:20	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00950	U	0.0298	0.0298	1.00	0.0996	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	0.00951	U	0.0256	0.0256	1.00	0.0614	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	54.2		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0246	U	0.0395	0.0396	1.00	0.0680	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.0704		0.0592	0.0595	1.00	0.0697	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	61.0		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.191	U	0.450	0.450	5.00	0.774	pCi/g	09/17/21 06:21	09/17/21 23:26	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.258		0.130	0.132		0.217	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Americium-241	0.0417	U	0.152	0.152		0.262	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Bismuth-212	0.271	U	0.528	0.529		0.922	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Bismuth-214	0.297		0.0836	0.0889		0.0703	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Cesium-137	-0.0347	U	0.0483	0.0484		0.104	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Cobalt-60	0.0293	U	0.0217	0.0219		0.0309	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Europium-152	0.0613	U	0.161	0.161		0.147	pCi/g	08/24/21 16:40	09/16/21 10:20	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-044-081721

Lab Sample ID: 160-43113-1

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0103	U	0.0131	0.0131		0.108	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Europium-155	0.145		0.0923	0.0936		0.112	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Lead-212	0.321		0.0731	0.0837		0.0811	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Lead-214	0.305		0.0766	0.0827		0.0796	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Potassium-40	2.51		0.717	0.760		0.651	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Radium-226	0.297		0.0836	0.0889	0.200	0.0703	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Sodium-22	-0.0284	U	0.0496	0.0497		0.0865	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Thorium-232	0.258		0.130	0.132		0.217	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Zinc-65	-0.00402	U	0.0788	0.0788		0.186	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	<i>0.113</i>		<i>0.0392</i>	<i>0.0409</i>		<i>0.0326</i>	<i>pCi/g</i>	<i>08/24/21 16:40</i>	<i>09/16/21 10:20</i>	<i>1</i>

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.11	U	0.884	0.891	5.00	1.49	pCi/g	09/08/21 16:09	09/17/21 06:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	<i>123</i>	<i>Q</i>	<i>40 - 110</i>					<i>09/08/21 16:09</i>	<i>09/17/21 06:24</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-4.47	U	1.95	1.99	5.00	3.82	pCi/g	08/29/21 20:28	09/16/21 06:05	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	<i>54.2</i>		<i>30 - 110</i>					<i>08/29/21 20:28</i>	<i>09/16/21 06:05</i>	<i>1</i>

Client Sample ID: FSS-044-081721

Lab Sample ID: 160-43113-1

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 97.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.9		0.21	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 19:22	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	25		19	6.3	ug/Kg	☼	09/10/21 17:45	09/10/21 20:33	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-045-081721

Lab Sample ID: 160-43113-2

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0262	U	0.189	0.189	3.00	0.341	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.1		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	89.0		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.179	U	0.251	0.251	1.00	0.428	pCi/g	09/03/21 13:48	09/08/21 10:43	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00925	U	0.00907	0.00910	1.00	0.0618	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00232	U	0.00454	0.00454	1.00	0.0448	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.3		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0334	U	0.0416	0.0417	1.00	0.0587	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.107		0.0668	0.0674	1.00	0.0650	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	71.7		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0656	U	0.397	0.397	5.00	0.674	pCi/g	09/17/21 06:21	09/18/21 01:06	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.205		0.164	0.166		0.177	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Americium-241	0.0430	U	0.101	0.101		0.173	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Bismuth-212	0.116	U	0.548	0.548		0.976	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Bismuth-214	0.254		0.0800	0.0840		0.0803	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Cesium-137	0.0865		0.0275	0.0289		0.0168	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Cobalt-60	0.000	U	0.00926	0.00926		0.0246	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Europium-152	0.0626	U	0.114	0.114		0.120	pCi/g	08/24/21 16:40	09/16/21 10:59	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-045-081721

Lab Sample ID: 160-43113-2

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	-0.00190	U	0.0445	0.0445		0.0790	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Europium-155	0.0303	U	0.198	0.198		0.339	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Lead-212	0.315		0.0579	0.0703		0.0511	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Lead-214	0.310		0.0707	0.0774		0.0634	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Potassium-40	2.35		0.619	0.662		0.542	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Radium-226	0.254		0.0800	0.0840	0.200	0.0803	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Sodium-22	-0.0323	U	0.0419	0.0421		0.0707	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Thorium-232	0.205		0.164	0.166		0.177	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Zinc-65	0.000	U	0.0112	0.0112		0.158	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	<i>0.0767</i>		<i>0.0341</i>	<i>0.0350</i>		<i>0.0369</i>	<i>pCi/g</i>	<i>08/24/21 16:40</i>	<i>09/16/21 10:59</i>	<i>1</i>

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.949	U	0.899	0.904	5.00	1.51	pCi/g	09/08/21 16:09	09/17/21 07:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	<i>94.9</i>		<i>40 - 110</i>					<i>09/08/21 16:09</i>	<i>09/17/21 07:30</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.293	U	1.51	1.51	5.00	2.65	pCi/g	08/29/21 20:28	09/16/21 07:11	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	<i>75.3</i>		<i>30 - 110</i>					<i>08/29/21 20:28</i>	<i>09/16/21 07:11</i>	<i>1</i>

Client Sample ID: FSS-045-081721

Lab Sample ID: 160-43113-2

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 96.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.3		0.22	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 19:25	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	J	20	6.6	ug/Kg	☼	09/10/21 17:45	09/10/21 20:35	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-046-081721

Lab Sample ID: 160-43113-3

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.291	U	0.220	0.221	3.00	0.353	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.9		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	81.1		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	11.3		0.733	1.22	1.00	0.409	pCi/g	09/03/21 13:48	09/08/21 11:06	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00867	U	0.0272	0.0272	1.00	0.0909	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00289	U	0.00567	0.00567	1.00	0.0560	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	59.3		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0379		0.0429	0.0430	1.00	0.0379	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.142		0.0743	0.0752	1.00	0.0304	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.0		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.357	U	0.604	0.605	5.00	1.05	pCi/g	09/17/21 06:21	09/18/21 01:40	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.428		0.156	0.162		0.234	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Americium-241	0.0427	U	0.161	0.161		0.278	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Bismuth-212	0.330	U	0.585	0.586		1.02	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Bismuth-214	0.364		0.108	0.115		0.0946	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Cesium-137	-0.0210	U	0.0613	0.0614		0.106	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Cobalt-60	0.0256	U	0.0510	0.0511		0.0608	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Europium-152	0.0547	U	0.0591	0.0594		0.184	pCi/g	08/24/21 16:40	09/17/21 13:13	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-046-081721

Lab Sample ID: 160-43113-3

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0764	U	0.125	0.125		0.129	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Europium-155	-0.0763	U	0.126	0.127		0.340	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Lead-212	0.428		0.0821	0.0985		0.0800	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Lead-214	0.299		0.0863	0.0915		0.0780	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Potassium-40	1.57		0.632	0.651		0.701	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Radium-226	0.364		0.108	0.115	0.200	0.0946	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Sodium-22	-0.0160	U	0.0428	0.0428		0.0783	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Thorium-232	0.428		0.156	0.162		0.234	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Zinc-65	-0.0162	U	0.0427	0.0427		0.217	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Other Detected										
Radionuclides	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide	None						pCi/g	08/24/21 16:40	09/17/21 13:13	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	13.0		1.24	1.81	5.00	1.36	pCi/g	09/08/21 16:09	09/17/21 08:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	105		40 - 110					09/08/21 16:09	09/17/21 08:37	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.92	U	1.76	1.77	5.00	3.19	pCi/g	08/29/21 20:28	09/16/21 08:17	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	59.3		30 - 110					08/29/21 20:28	09/16/21 08:17	1

Client Sample ID: FSS-046-081721

Lab Sample ID: 160-43113-3

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 96.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.86		0.23	0.014	mg/Kg	☼	09/08/21 14:58	09/09/21 19:29	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	7.0	J	18	5.8	ug/Kg	☼	09/10/21 17:45	09/10/21 20:38	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-047-081721

Lab Sample ID: 160-43113-4

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.161	U	0.186	0.187	3.00	0.314	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.3		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	92.3		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0711	U	0.210	0.211	1.00	0.389	pCi/g	09/03/21 13:48	09/08/21 11:28	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0111	U	0.0291	0.0291	1.00	0.0854	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.00222	U	0.0189	0.0189	1.00	0.0549	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	83.8		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00595	U	0.00824	0.00826	1.00	0.0666	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Uranium-238	0.277		0.105	0.107	1.00	0.0783	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	72.3		30 - 110					08/29/21 20:35	09/08/21 14:01	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.180	U	0.562	0.562	5.00	0.960	pCi/g	09/17/21 06:21	09/18/21 02:13	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.333		0.155	0.158		0.243	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Americium-241	-0.00436	U	0.160	0.160		0.279	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Bismuth-212	0.0261	U	0.570	0.570		1.06	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Bismuth-214	0.408		0.123	0.130		0.118	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Cesium-137	0.190		0.0745	0.0770		0.0652	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Cobalt-60	0.0328	U	0.0243	0.0245		0.0345	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Europium-152	0.0324	U	0.110	0.110		0.190	pCi/g	08/24/21 16:40	09/16/21 11:00	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-047-081721

Lab Sample ID: 160-43113-4

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0346	U	0.0787	0.0788		0.135	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Europium-155	0.0434	U	0.135	0.135		0.330	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Lead-212	0.407		0.0852	0.0996		0.0910	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Lead-214	0.382		0.107	0.114		0.0989	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Potassium-40	3.37		0.863	0.927		0.727	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Radium-226	0.408		0.123	0.130	0.200	0.118	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Sodium-22	0.0362		0.0251	0.0253		0.0334	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Thorium-232	0.333		0.155	0.158		0.243	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Zinc-65	-0.00449	U	0.140	0.140		0.261	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			(1.96σ+/-)	(1.96σ+/-)						
	0.234		0.0633	0.0676		0.0485	pCi/g	08/24/21 16:40	09/16/21 11:00	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.540	U	0.858	0.860	5.00	1.48	pCi/g	09/08/21 16:09	09/17/21 09:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	101		40 - 110					09/08/21 16:09	09/17/21 09:43	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-1.59	U	1.35	1.35	5.00	2.51	pCi/g	08/29/21 20:28	09/16/21 09:24	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	83.8		30 - 110					08/29/21 20:28	09/16/21 09:24	1

Client Sample ID: FSS-047-081721

Lab Sample ID: 160-43113-4

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 95.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	7.6		0.29	0.018	mg/Kg	☼	09/08/21 14:58	09/09/21 19:33	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	85		18	5.9	ug/Kg	☼	09/10/21 17:45	09/10/21 20:40	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-048-081721

Lab Sample ID: 160-43113-5

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.159	U	0.203	0.204	3.00	0.345	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	75.9		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	87.5		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0175	U	0.222	0.222	1.00	0.409	pCi/g	09/03/21 13:48	09/08/21 11:51	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0119	U	0.0287	0.0287	1.00	0.0979	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.0209	U	0.0336	0.0337	1.00	0.0578	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.2		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0447		0.0506	0.0507	1.00	0.0447	pCi/g	08/29/21 20:35	09/09/21 12:17	1
Uranium-238	0.191		0.0937	0.0950	1.00	0.0359	pCi/g	08/29/21 20:35	09/09/21 12:17	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	58.0		30 - 110					08/29/21 20:35	09/09/21 12:17	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0735	U	0.442	0.442	5.00	0.750	pCi/g	09/17/21 06:21	09/18/21 02:47	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.336		0.0945	0.100		0.117	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Americium-241	0.0470	U	0.108	0.108		0.184	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Bismuth-212	0.0288	U	0.434	0.434		0.802	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Bismuth-214	0.162		0.0682	0.0701		0.0805	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Cesium-137	0.0256	U	0.0445	0.0445		0.0766	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Cobalt-60	-0.0186	U	0.0563	0.0564		0.0643	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Europium-152	0.0188	U	0.0488	0.0488		0.126	pCi/g	08/24/21 16:40	09/16/21 11:30	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-048-081721

Lab Sample ID: 160-43113-5

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0538	U	0.0863	0.0865		0.0774	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Europium-155	0.0206	U	0.0702	0.0702		0.426	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Lead-212	0.254		0.0640	0.0717		0.0792	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Lead-214	0.208		0.0891	0.0916		0.129	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Potassium-40	2.64		0.665	0.716		0.567	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Radium-226	0.162		0.0682	0.0701	0.200	0.0805	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Sodium-22	0.0270		0.0187	0.0189		0.0249	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Thorium-232	0.336		0.0945	0.100		0.117	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Zinc-65	-0.0176	U	0.103	0.103		0.186	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
TI-208	0.103		0.0327	0.0344		0.0278	pCi/g	08/24/21 16:40	09/16/21 11:30	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.890	U	0.953	0.958	5.00	1.63	pCi/g	09/08/21 16:09	09/17/21 10:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	92.0		40 - 110					09/08/21 16:09	09/17/21 10:49	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.788	U	1.81	1.81	5.00	3.30	pCi/g	08/29/21 20:28	09/16/21 10:30	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.2		30 - 110					08/29/21 20:28	09/16/21 10:30	1

Client Sample ID: FSS-048-081721

Lab Sample ID: 160-43113-5

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 97.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.0		0.21	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 19:36	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	39		18	5.8	ug/Kg	☼	09/10/21 17:45	09/10/21 20:43	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-049-081721

Lab Sample ID: 160-43113-6

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0702	U	0.232	0.232	3.00	0.410	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.9		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	79.6		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.143	U	0.213	0.213	1.00	0.411	pCi/g	09/03/21 13:48	09/08/21 12:14	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00446	U	0.00618	0.00619	1.00	0.0499	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.0156	U	0.0251	0.0252	1.00	0.0432	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	80.1		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00271	U	0.00531	0.00532	1.00	0.0525	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Uranium-238	0.215		0.0874	0.0892	1.00	0.0619	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	76.7		30 - 110					08/29/21 20:35	09/08/21 14:01	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.680	U	0.585	0.589	5.00	1.05	pCi/g	09/17/21 06:21	09/18/21 03:20	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.436		0.125	0.132		0.0683	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Americium-241	0.0250	U	0.101	0.102		0.135	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Bismuth-212	0.167	U	0.404	0.404		0.719	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Bismuth-214	0.381		0.0890	0.0970		0.0763	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Cesium-137	0.0266	U	0.0497	0.0498		0.0858	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Cobalt-60	0.00121	U	0.0400	0.0400		0.0501	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Europium-152	0.0609	U	0.162	0.162		0.134	pCi/g	08/24/21 16:40	09/16/21 12:06	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-049-081721

Lab Sample ID: 160-43113-6

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0491	U	0.0788	0.0790		0.0833	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Europium-155	0.0244	U	0.0886	0.0886		0.359	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Lead-212	0.388		0.0707	0.0861		0.0709	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Lead-214	0.410		0.0917	0.101		0.0775	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Potassium-40	2.05		0.616	0.649		0.589	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Radium-226	0.381		0.0890	0.0970	0.200	0.0763	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Sodium-22	-0.00351	U	0.0407	0.0407		0.0769	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Thorium-232	0.436		0.125	0.132		0.0683	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Zinc-65	0.000	U	0.0173	0.0173		0.189	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			0.0423	0.0461		0.0289	pCi/g	08/24/21 16:40	09/16/21 12:06	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.337	U	0.900	0.901	5.00	1.58	pCi/g	09/08/21 16:09	09/17/21 11:55	1
Carrier	%Yield	Qualifier	Limits							
Ni	104		40 - 110							
								Prepared	Analyzed	Dil Fac
								09/08/21 16:09	09/17/21 11:55	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-2.09	U	1.27	1.28	5.00	2.36	pCi/g	08/29/21 20:28	09/16/21 11:36	1
Tracer	%Yield	Qualifier	Limits							
Pu-242 (T)	80.1		30 - 110							
								Prepared	Analyzed	Dil Fac
								08/29/21 20:28	09/16/21 11:36	1

Client Sample ID: FSS-049-081721

Lab Sample ID: 160-43113-6

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 94.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.3		0.24	0.014	mg/Kg	☼	09/08/21 14:58	09/09/21 19:40	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	12	J	19	6.3	ug/Kg	☼	09/10/21 17:45	09/10/21 20:46	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-050-081721

Lab Sample ID: 160-43113-7

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.179	U	0.180	0.181	3.00	0.363	pCi/g	09/04/21 14:31	09/20/21 14:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	76.1		40 - 110					09/04/21 14:31	09/20/21 14:50	1
Y Carrier	83.4		40 - 110					09/04/21 14:31	09/20/21 14:50	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0318	U	0.218	0.218	1.00	0.385	pCi/g	09/03/21 13:48	09/08/21 12:36	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00563	U	0.00780	0.00781	1.00	0.0631	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.000	U	0.0247	0.0247	1.00	0.0753	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	68.0		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0360		0.0408	0.0409	1.00	0.0360	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Uranium-238	0.0867		0.0604	0.0609	1.00	0.0643	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	72.3		30 - 110					08/29/21 20:35	09/08/21 14:01	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.369	U	0.562	0.563	5.00	0.960	pCi/g	09/16/21 08:54	09/17/21 22:41	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.223		0.0694	0.0729		0.107	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Americium-241	0.0357	U	0.0788	0.0789		0.136	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Bismuth-212	0.211	U	0.345	0.346		0.598	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Bismuth-214	0.0372	U	0.0660	0.0661		0.156	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Cesium-137	0.0138	U	0.0276	0.0276		0.0486	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Cobalt-60	0.00426	U	0.0357	0.0357		0.0441	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Europium-152	0.0920	U	0.146	0.147		0.246	pCi/g	08/24/21 16:40	09/16/21 12:07	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-050-081721

Lab Sample ID: 160-43113-7

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0340	U	0.0639	0.0640		0.0753	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Europium-155	0.0198	U	0.0732	0.0732		0.296	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Lead-212	0.277		0.0587	0.0684		0.0651	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Lead-214	0.179		0.0572	0.0601		0.120	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Potassium-40	2.35		0.756	0.792		0.608	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Radium-226	0.0372	U	0.0660	0.0661	0.200	0.156	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Sodium-22	-0.00412	U	0.0483	0.0483		0.0568	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Thorium-232	0.223		0.0694	0.0729		0.107	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Zinc-65	0.0369	U	0.0736	0.0737		0.129	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/24/21 16:40	09/16/21 12:07	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.824	U	0.851	0.855	5.00	1.44	pCi/g	09/08/21 16:09	09/17/21 13:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	103		40 - 110					09/08/21 16:09	09/17/21 13:01	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.88	U	1.67	1.67	5.00	3.11	pCi/g	08/29/21 20:28	09/16/21 12:42	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	68.0		30 - 110					08/29/21 20:28	09/16/21 12:42	1

Client Sample ID: FSS-050-081721

Lab Sample ID: 160-43113-7

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 96.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.68		0.24	0.015	mg/Kg	☼	09/08/21 14:58	09/09/21 19:43	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	20	6.4	ug/Kg	☼	09/10/21 17:45	09/10/21 20:48	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-051-081721

Lab Sample ID: 160-43113-8

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0756	U	0.186	0.187	3.00	0.328	pCi/g	09/04/21 14:31	09/20/21 14:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.8		40 - 110					09/04/21 14:31	09/20/21 14:50	1
Y Carrier	90.5		40 - 110					09/04/21 14:31	09/20/21 14:50	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0804	U	0.235	0.235	1.00	0.415	pCi/g	09/03/21 13:48	09/08/21 12:59	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00306	U	0.0275	0.0275	1.00	0.0870	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.000	U	0.00600	0.00600	1.00	0.0367	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	59.7		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00652	U	0.00904	0.00905	1.00	0.0730	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Uranium-238	0.0784		0.0584	0.0588	1.00	0.0586	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.4		30 - 110					08/29/21 20:35	09/08/21 14:01	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.259	U	0.784	0.785	5.00	1.37	pCi/g	09/16/21 08:54	09/17/21 23:03	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.140	U	0.219	0.219		0.307	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Americium-241	-0.0723	U	0.193	0.193		0.330	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Bismuth-212	1.04		0.418	0.431		0.321	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Bismuth-214	0.274		0.110	0.113		0.110	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Cesium-137	0.0267	U	0.0502	0.0503		0.0876	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Cobalt-60	-0.00223	U	0.00994	0.00994		0.0935	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Europium-152	0.109	U	0.0854	0.0861		0.164	pCi/g	08/24/21 16:40	09/16/21 11:33	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-051-081721

Lab Sample ID: 160-43113-8

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0128	U	0.0165	0.0166		0.138	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Europium-155	-0.00510	U	0.236	0.236		0.411	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Lead-212	0.0188	U	0.0933	0.0934		0.163	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Lead-214	0.267		0.0845	0.0887		0.0996	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Potassium-40	2.29		0.792	0.824		0.810	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Radium-226	0.274		0.110	0.113	0.200	0.110	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Sodium-22	-0.0302	U	0.0609	0.0610		0.108	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Thorium-232	0.140	U	0.219	0.219		0.307	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Zinc-65	-0.00500	U	0.0932	0.0932		0.137	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	0.127		0.0667	0.0680		0.0605	pCi/g	08/24/21 16:40	09/16/21 11:33	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	-0.340	U	0.817	0.818	5.00	1.48	pCi/g	09/08/21 16:09	09/17/21 14:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	98.3		40 - 110					09/08/21 16:09	09/17/21 14:08	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-1.87	U	2.08	2.09	5.00	3.92	pCi/g	08/29/21 20:28	09/16/21 13:48	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	59.7		30 - 110					08/29/21 20:28	09/16/21 13:48	1

Client Sample ID: FSS-051-081721

Lab Sample ID: 160-43113-8

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 97.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.58		0.21	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 19:47	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/10/21 17:45	09/10/21 20:56	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-052-081721

Lab Sample ID: 160-43113-9

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0992	U	0.203	0.203	3.00	0.354	pCi/g	09/04/21 14:31	09/20/21 14:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	75.3		40 - 110					09/04/21 14:31	09/20/21 14:50	1
Y Carrier	85.6		40 - 110					09/04/21 14:31	09/20/21 14:50	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.147	U	0.246	0.246	1.00	0.423	pCi/g	09/03/21 13:48	09/08/21 13:21	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00211	U	0.00414	0.00414	1.00	0.0409	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.000	U	0.00414	0.00414	1.00	0.0254	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	83.4		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0216	U	0.0299	0.0300	1.00	0.0324	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.433		0.120	0.125	1.00	0.0260	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	80.4		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.128	U	0.759	0.759	5.00	1.34	pCi/g	09/16/21 08:54	09/17/21 23:26	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.655		0.170	0.182		0.0847	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Americium-241	-0.0628	U	0.154	0.154		0.263	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Bismuth-212	0.326	U	0.609	0.609		1.06	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Bismuth-214	0.335		0.106	0.111		0.0955	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Cesium-137	-0.000269	U	0.0610	0.0610		0.106	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Cobalt-60	0.0289	U	0.0510	0.0511		0.0601	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Europium-152	0.0418	U	0.0910	0.0911		0.170	pCi/g	08/24/21 16:40	09/16/21 12:13	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-052-081721

Lab Sample ID: 160-43113-9

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0264	U	0.0471	0.0471		0.125	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Europium-155	-0.0572	U	0.137	0.137		0.328	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Lead-212	0.535		0.0894	0.112		0.0820	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Lead-214	0.252		0.0776	0.0817		0.0664	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Potassium-40	2.23		0.711	0.746		0.693	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Radium-226	0.335		0.106	0.111	0.200	0.0955	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Sodium-22	-0.0187	U	0.0580	0.0580		0.105	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Thorium-232	0.655		0.170	0.182		0.0847	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Zinc-65	-0.00428	U	0.0473	0.0473		0.212	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	0.138		0.0427	0.0449		0.0348	pCi/g	08/24/21 16:40	09/16/21 12:13	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.321	U	0.846	0.846	5.00	1.51	pCi/g	09/08/21 16:09	09/17/21 15:14	1
Carrier	%Yield	Qualifier	Limits							
<i>Ni</i>	105		40 - 110					Prepared	Analyzed	Dil Fac
								09/08/21 16:09	09/17/21 15:14	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.616	U	1.17	1.17	5.00	2.11	pCi/g	08/31/21 14:29	09/15/21 19:32	1
Tracer	%Yield	Qualifier	Limits							
<i>Pu-242 (T)</i>	83.4		30 - 110					Prepared	Analyzed	Dil Fac
								08/31/21 14:29	09/15/21 19:32	1

Client Sample ID: FSS-052-081721

Lab Sample ID: 160-43113-9

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 91.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.86		0.28	0.017	mg/Kg	☼	09/08/21 14:58	09/09/21 19:57	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	21	6.8	ug/Kg	☼	09/10/21 17:45	09/10/21 20:58	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-053-081721

Lab Sample ID: 160-43113-10

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.116	U	0.218	0.218	3.00	0.378	pCi/g	09/04/21 14:31	09/20/21 14:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.5		40 - 110					09/04/21 14:31	09/20/21 14:51	1
Y Carrier	89.7		40 - 110					09/04/21 14:31	09/20/21 14:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.00906	U	0.216	0.216	1.00	0.387	pCi/g	09/03/21 13:48	09/08/21 13:44	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.176	U	0.0464	0.0486	1.00	0.188	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.263	U	0.0546	0.0588	1.00	0.221	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.9		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0186	U	0.0299	0.0299	1.00	0.0513	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.187		0.0782	0.0797	1.00	0.0255	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	87.0		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.455	U	0.724	0.725	5.00	1.24	pCi/g	09/16/21 08:54	09/17/21 23:49	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.353		0.139	0.143		0.184	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Americium-241	0.0518	U	0.124	0.124		0.212	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Bismuth-212	-0.393	U	0.839	0.840		1.46	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Bismuth-214	0.268		0.105	0.108		0.0989	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Cesium-137	-0.0198	U	0.0449	0.0449		0.113	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Cobalt-60	-0.00869	U	0.102	0.102		0.0793	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Europium-152	0.00954	U	0.0196	0.0196		0.151	pCi/g	08/24/21 16:40	09/16/21 11:42	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-053-081721

Lab Sample ID: 160-43113-10

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0133	U	0.115	0.115		0.0929	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Europium-155	-0.0760	U	0.230	0.230		0.370	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Lead-212	0.315		0.0702	0.0772		0.0703	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Lead-214	0.262		0.0784	0.0826		0.104	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Potassium-40	7.60		1.35	1.54		0.628	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Radium-226	0.268		0.105	0.108	0.200	0.0989	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Sodium-22	-0.0112	U	0.0380	0.0380		0.0734	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Thorium-232	0.353		0.139	0.143		0.184	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Zinc-65	-0.0384	U	0.161	0.161		0.290	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			0.0422	0.0444		0.0248	pCi/g	08/24/21 16:40	09/16/21 11:42	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.705	U	0.900	0.902	5.00	1.53	pCi/g	09/08/21 16:09	09/17/21 16:20	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	107		40 - 110					09/08/21 16:09	09/17/21 16:20	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	0.553	U	1.47	1.47	5.00	2.55	pCi/g	08/31/21 14:29	09/15/21 20:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.9		30 - 110					08/31/21 14:29	09/15/21 20:38	1

Client Sample ID: FSS-053-081721

Lab Sample ID: 160-43113-10

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 98.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.96		0.29	0.018	mg/Kg	☼	09/08/21 14:58	09/09/21 20:01	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.7	ug/Kg	☼	09/10/21 17:45	09/10/21 21:01	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-054-081721

Lab Sample ID: 160-43113-11

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.127	U	0.222	0.222	3.00	0.384	pCi/g	09/04/21 14:31	09/20/21 14:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	75.2		40 - 110					09/04/21 14:31	09/20/21 14:51	1
Y Carrier	90.1		40 - 110					09/04/21 14:31	09/20/21 14:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.161	U	0.253	0.253	1.00	0.435	pCi/g	09/03/21 13:48	09/08/21 14:07	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00419	U	0.00580	0.00581	1.00	0.0469	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00419	U	0.00581	0.00582	1.00	0.0469	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	81.1		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00622	U	0.00862	0.00864	1.00	0.0697	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.190		0.0853	0.0867	1.00	0.0299	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.2		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.454	U	0.706	0.708	5.00	1.21	pCi/g	09/16/21 08:54	09/18/21 00:11	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.367		0.164	0.168		0.149	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Americium-241	-0.0414	U	0.0885	0.0886		0.230	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Bismuth-212	0.293	U	0.509	0.510		0.880	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Bismuth-214	0.367		0.0986	0.105		0.0978	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Cesium-137	0.0161	U	0.0398	0.0398		0.0704	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Cobalt-60	-0.00246	U	0.0407	0.0407		0.0508	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Europium-152	0.0260	U	0.0421	0.0422		0.152	pCi/g	08/24/21 16:40	09/16/21 13:10	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-054-081721

Lab Sample ID: 160-43113-11

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0441	U	0.0743	0.0745		0.0996	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Europium-155	-0.0697	U	0.131	0.131		0.393	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Lead-212	0.313		0.0659	0.0769		0.0706	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Lead-214	0.414		0.0827	0.0928		0.0998	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Potassium-40	4.94		0.894	1.02		0.597	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Radium-226	0.367		0.0986	0.105	0.200	0.0978	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Sodium-22	-0.0142	U	0.0430	0.0430		0.0780	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Thorium-232	0.367		0.164	0.168		0.149	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Zinc-65	-0.0834	U	0.155	0.155		0.266	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
TI-208	0.106		0.0412	0.0426		0.0417	pCi/g	08/24/21 16:40	09/16/21 13:10	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.16	U	0.875	0.883	5.00	1.45	pCi/g	09/08/21 16:09	09/17/21 17:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	102		40 - 110					09/08/21 16:09	09/17/21 17:26	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.367	U	1.23	1.23	5.00	2.23	pCi/g	08/31/21 14:29	09/15/21 21:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	81.1		30 - 110					08/31/21 14:29	09/15/21 21:44	1

Client Sample ID: FSS-054-081721

Lab Sample ID: 160-43113-11

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 90.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.9		0.22	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 20:18	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	17	U	22	7.0	ug/Kg	☼	09/10/21 17:45	09/10/21 21:13	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-055-081721

Lab Sample ID: 160-43113-12

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.565	U	0.369	0.371	3.00	0.579	pCi/g	09/04/21 14:31	09/20/21 14:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	40.5		40 - 110					09/04/21 14:31	09/20/21 14:51	1
Y Carrier	90.1		40 - 110					09/04/21 14:31	09/20/21 14:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.178	U	0.242	0.243	1.00	0.412	pCi/g	09/03/21 13:48	09/08/21 14:29	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.000	U	0.00454	0.00454	1.00	0.0278	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.000	U	0.00455	0.00455	1.00	0.0278	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	72.3		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0232	U	0.0322	0.0323	1.00	0.0348	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.219		0.0897	0.0915	1.00	0.0522	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	85.5		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.0322	U	0.688	0.688	5.00	1.23	pCi/g	09/16/21 08:54	09/18/21 00:34	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.386		0.148	0.153		0.109	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Americium-241	-0.0534	U	0.141	0.142		0.243	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Bismuth-212	-0.0392	U	0.587	0.587		1.10	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Bismuth-214	0.289		0.0947	0.0990		0.0816	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Cesium-137	-0.0509	U	0.0475	0.0478		0.151	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Cobalt-60	-0.00895	U	0.0598	0.0598		0.0817	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Europium-152	0.105	U	0.137	0.137		0.115	pCi/g	08/24/21 16:40	09/17/21 13:14	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-055-081721

Lab Sample ID: 160-43113-12

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.00644	U	0.0434	0.0434		0.0887	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Europium-155	0.0422	U	0.0860	0.0862		0.223	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Lead-212	0.250		0.0677	0.0724		0.0769	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Lead-214	0.166		0.0789	0.0806		0.0903	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Potassium-40	3.86		0.996	1.07		0.648	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Radium-226	0.289		0.0947	0.0990	0.200	0.0816	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Sodium-22	0.000	U	0.0160	0.0160		0.0757	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Thorium-232	0.386		0.148	0.153		0.109	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Zinc-65	0.000	U	0.0281	0.0281		0.286	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			(1.96σ+/-)	(1.96σ+/-)						
	0.109		0.0473	0.0485		0.0404	pCi/g	08/24/21 16:40	09/17/21 13:14	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.434	U	0.837	0.838	5.00	1.44	pCi/g	09/08/21 16:09	09/17/21 18:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	106		40 - 110					09/08/21 16:09	09/17/21 18:32	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-0.650	U	1.34	1.34	5.00	2.41	pCi/g	08/31/21 14:29	09/15/21 22:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	72.3		30 - 110					08/31/21 14:29	09/15/21 22:50	1

Client Sample ID: FSS-055-081721

Lab Sample ID: 160-43113-12

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 97.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.0		0.22	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 20:36	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.1	ug/Kg	☼	09/10/21 17:45	09/10/21 21:26	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-056-081721

Lab Sample ID: 160-43113-13

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0382	U	0.166	0.166	3.00	0.299	pCi/g	09/04/21 14:31	09/20/21 14:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.6		40 - 110					09/04/21 14:31	09/20/21 14:51	1
Y Carrier	89.0		40 - 110					09/04/21 14:31	09/20/21 14:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0393	U	0.232	0.232	1.00	0.413	pCi/g	09/03/21 13:48	09/08/21 14:52	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00275	U	0.00540	0.00540	1.00	0.0533	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.000	U	0.00540	0.00540	1.00	0.0331	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	61.8		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00329	U	0.00645	0.00646	1.00	0.0637	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.290		0.110	0.112	1.00	0.0591	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	72.3		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.622	U	0.790	0.792	5.00	1.35	pCi/g	09/16/21 08:54	09/18/21 00:56	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.320		0.135	0.139		0.117	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Americium-241	0.0438	U	0.0925	0.0926		0.122	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Bismuth-212	0.160	U	0.419	0.419		0.746	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Bismuth-214	0.259		0.0876	0.0915		0.0879	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Cesium-137	0.128		0.0342	0.0366		0.0175	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Cobalt-60	-0.00581	U	0.0392	0.0392		0.0481	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Europium-152	0.0445	U	0.147	0.147		0.255	pCi/g	08/24/21 16:40	09/16/21 13:55	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-056-081721

Lab Sample ID: 160-43113-13

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0138	U	0.0536	0.0536		0.0819	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Europium-155	-0.0722	U	0.174	0.174		0.393	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Lead-212	0.344		0.0603	0.0744		0.0486	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Lead-214	0.259		0.0778	0.0821		0.0744	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Potassium-40	4.08		0.797	0.896		0.565	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Radium-226	0.259		0.0876	0.0915	0.200	0.0879	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Sodium-22	0.00785	U	0.0382	0.0382		0.0465	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Thorium-232	0.320		0.135	0.139		0.117	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Zinc-65	0.000	U	0.0166	0.0166		0.141	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			(1.96σ+/-)	(1.96σ+/-)						
	0.120		0.0406	0.0423		0.0385	pCi/g	08/24/21 16:40	09/16/21 13:55	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	1.15	U	0.881	0.888	5.00	1.47	pCi/g	09/08/21 16:09	09/17/21 19:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	99.5		40 - 110					09/08/21 16:09	09/17/21 19:38	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	0.285	U	1.62	1.62	5.00	2.81	pCi/g	08/31/21 14:29	09/15/21 23:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	61.8		30 - 110					08/31/21 14:29	09/15/21 23:56	1

Client Sample ID: FSS-056-081721

Lab Sample ID: 160-43113-13

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 93.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	4.9		0.25	0.015	mg/Kg	☼	09/08/21 14:58	09/09/21 20:46	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	58		21	6.8	ug/Kg	☼	09/10/21 17:45	09/10/21 21:34	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-256-081721

Lab Sample ID: 160-43113-14

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.189	U	0.206	0.206	3.00	0.345	pCi/g	09/04/21 14:31	09/20/21 14:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	85.6		40 - 110					09/04/21 14:31	09/20/21 14:51	1
Y Carrier	89.7		40 - 110					09/04/21 14:31	09/20/21 14:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.170	U	0.250	0.250	1.00	0.424	pCi/g	09/03/21 13:48	09/08/21 15:15	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00272	U	0.0233	0.0233	1.00	0.0673	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.0272	U	0.0378	0.0378	1.00	0.0610	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	62.4		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0251	U	0.0404	0.0405	1.00	0.0695	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-238	0.199		0.0962	0.0976	1.00	0.0712	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	63.8		30 - 110					08/31/21 14:27	09/10/21 13:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.541	U	0.539	0.542	5.00	0.957	pCi/g	09/17/21 06:21	09/18/21 03:54	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.195	U	0.0971	0.0990		0.237	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Americium-241	0.0483	U	0.103	0.103		0.176	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Bismuth-212	0.211	U	0.436	0.436		0.765	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Bismuth-214	0.274		0.0847	0.0892		0.0854	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Cesium-137	0.102		0.0309	0.0326		0.0179	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Cobalt-60	-0.0119	U	0.0567	0.0567		0.0657	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Europium-152	0.0360	U	0.0572	0.0574		0.137	pCi/g	08/24/21 16:40	09/16/21 14:06	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-256-081721

Lab Sample ID: 160-43113-14

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0407	U	0.0517	0.0519		0.0955	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Europium-155	-0.0782	U	0.232	0.232		0.395	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Lead-212	0.336		0.0635	0.0765		0.0611	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Lead-214	0.267		0.0675	0.0728		0.0866	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Potassium-40	4.07		0.750	0.854		0.265	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Radium-226	0.274		0.0847	0.0892	0.200	0.0854	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Sodium-22	-0.0345	U	0.0448	0.0449		0.0756	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Thorium-232	0.195	U	0.0971	0.0990		0.237	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Zinc-65	0.00306	U	0.0986	0.0986		0.182	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			(1.96σ+/-)	(1.96σ+/-)						
	0.141		0.0444	0.0466		0.0312	pCi/g	08/24/21 16:40	09/16/21 14:06	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.328	U	0.893	0.894	5.00	1.57	pCi/g	09/08/21 16:09	09/17/21 21:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	105		40 - 110					09/08/21 16:09	09/17/21 21:51	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	1.82	U	1.68	1.68	5.00	2.81	pCi/g	08/31/21 14:29	09/16/21 01:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	62.4		30 - 110					08/31/21 14:29	09/16/21 01:03	1

Client Sample ID: FSS-256-081721

Lab Sample ID: 160-43113-14

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 91.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.1		0.22	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 20:50	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	54		19	6.3	ug/Kg	☼	09/10/21 17:45	09/10/21 21:36	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-057-081721

Lab Sample ID: 160-43113-15

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.360		0.214	0.216	3.00	0.333	pCi/g	09/04/21 14:31	09/20/21 14:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.8		40 - 110					09/04/21 14:31	09/20/21 14:53	1
Y Carrier	90.1		40 - 110					09/04/21 14:31	09/20/21 14:53	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0449	U	0.226	0.226	1.00	0.398	pCi/g	09/03/21 13:48	09/08/21 15:37	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00778	U	0.0209	0.0210	1.00	0.0502	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.00778	U	0.0210	0.0210	1.00	0.0502	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.1		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0549		0.0538	0.0540	1.00	0.0412	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Uranium-238	0.176		0.0896	0.0908	1.00	0.0735	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	64.0		30 - 110					08/31/21 14:27	09/10/21 13:43	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.680	U	0.571	0.575	5.00	1.03	pCi/g	09/17/21 06:21	09/18/21 04:27	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.355		0.145	0.149		0.114	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Americium-241	0.0598	U	0.143	0.143		0.245	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Bismuth-212	0.0489	U	0.658	0.658		1.23	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Bismuth-214	0.295		0.107	0.111		0.108	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Cesium-137	0.256		0.0770	0.0812		0.0858	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Cobalt-60	-0.0488	U	0.0339	0.0342		0.113	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Europium-152	0.0898	U	0.186	0.187		0.162	pCi/g	08/24/21 16:40	09/16/21 14:56	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-057-081721

Lab Sample ID: 160-43113-15

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0291	U	0.0649	0.0649		0.112	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Europium-155	0.0301	U	0.0847	0.0847		0.297	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Lead-212	0.325		0.0739	0.0810		0.0743	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Lead-214	0.383		0.0872	0.0951		0.151	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Potassium-40	3.32		0.950	1.01		0.674	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Radium-226	0.295		0.107	0.111	0.200	0.108	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Sodium-22	0.0120	U	0.0407	0.0407		0.0787	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Thorium-232	0.355		0.145	0.149		0.114	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Zinc-65	0.000	U	0.0292	0.0292		0.284	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Other Detected Radionuclides			Count	Total						
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/24/21 16:40	09/16/21 14:56	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.863	U	0.880	0.884	5.00	1.48	pCi/g	09/08/21 16:09	09/17/21 22:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	96.5		40 - 110					09/08/21 16:09	09/17/21 22:57	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	1.79	U	1.67	1.67	5.00	2.81	pCi/g	08/31/21 14:29	09/16/21 02:09	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.1		30 - 110					08/31/21 14:29	09/16/21 02:09	1

Client Sample ID: FSS-057-081721

Lab Sample ID: 160-43113-15

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 94.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.1		0.29	0.018	mg/Kg	☼	09/08/21 14:58	09/09/21 20:53	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	34		19	6.0	ug/Kg	☼	09/10/21 17:45	09/10/21 21:39	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-257-081721

Lab Sample ID: 160-43113-16

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.100	U	0.198	0.198	3.00	0.343	pCi/g	09/04/21 14:31	09/20/21 14:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.0		40 - 110					09/04/21 14:31	09/20/21 14:53	1
Y Carrier	91.2		40 - 110					09/04/21 14:31	09/20/21 14:53	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0564	U	0.219	0.220	1.00	0.383	pCi/g	09/03/21 13:48	09/08/21 16:00	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0217	U	0.0383	0.0384	1.00	0.0724	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00271	U	0.00532	0.00532	1.00	0.0525	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	62.0		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00694	U	0.00962	0.00964	1.00	0.0778	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Uranium-238	0.239		0.103	0.105	1.00	0.0624	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	58.9		30 - 110					08/31/21 14:27	09/10/21 13:43	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.118	U	0.531	0.532	5.00	0.907	pCi/g	09/17/21 06:21	09/18/21 05:01	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.128	U	0.167	0.168		0.270	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Americium-241	-0.0587	U	0.0173	0.0183		0.213	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Bismuth-212	-0.0154	U	0.540	0.540		0.988	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Bismuth-214	0.0191	U	0.0913	0.0913		0.213	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Cesium-137	0.156		0.0446	0.0473		0.0302	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Cobalt-60	0.00125	U	0.0412	0.0412		0.0517	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Europium-152	0.0589	U	0.105	0.105		0.125	pCi/g	08/24/21 16:40	09/16/21 14:52	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-257-081721

Lab Sample ID: 160-43113-16

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0215	U	0.0359	0.0360		0.0747	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Europium-155	0.0473	U	0.116	0.116		0.323	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Lead-212	0.321		0.0697	0.0807		0.0791	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Lead-214	0.294		0.0716	0.0776		0.0630	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Potassium-40	3.62		0.789	0.868		0.607	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Radium-226	0.0191	U	0.0913	0.0913	0.200	0.213	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Sodium-22	0.00482	U	0.0252	0.0252		0.0499	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Thorium-232	0.128	U	0.167	0.168		0.270	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Zinc-65	0.000	U	0.0178	0.0178		0.204	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/24/21 16:40	09/16/21 14:52	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.611	U	0.853	0.855	5.00	1.44	pCi/g	09/08/21 16:09	09/18/21 00:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	95.1		40 - 110					09/08/21 16:09	09/18/21 00:03	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.000	U	1.56	1.56	5.00	2.74	pCi/g	08/31/21 14:29	09/15/21 14:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	62.0		30 - 110					08/31/21 14:29	09/15/21 14:00	1

Client Sample ID: FSS-257-081721

Lab Sample ID: 160-43113-16

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 95.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7		0.25	0.015	mg/Kg	☼	09/08/21 14:58	09/09/21 20:57	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	25		18	6.0	ug/Kg	☼	09/10/21 17:45	09/10/21 21:41	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-058-081721

Lab Sample ID: 160-43113-17

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.206	U	0.198	0.198	3.00	0.327	pCi/g	09/04/21 14:31	09/20/21 14:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.8		40 - 110					09/04/21 14:31	09/20/21 14:53	1
Y Carrier	84.5		40 - 110					09/04/21 14:31	09/20/21 14:53	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.124	U	0.234	0.234	1.00	0.401	pCi/g	09/03/21 13:48	09/08/21 16:23	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00615	U	0.00852	0.00854	1.00	0.0689	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00308	U	0.0277	0.0277	1.00	0.0876	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	51.0		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00350	U	0.00687	0.00688	1.00	0.0678	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Uranium-238	0.259		0.109	0.111	1.00	0.0751	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	55.0		30 - 110					08/31/21 14:27	09/10/21 13:43	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.446	U	0.535	0.537	5.00	0.945	pCi/g	09/17/21 06:21	09/18/21 05:35	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.127		0.0642	0.0654		0.0663	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Americium-241	-0.0227	U	0.114	0.114		0.198	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Bismuth-212	0.232	U	0.359	0.360		0.619	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Bismuth-214	0.197		0.0784	0.0809		0.0858	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Cesium-137	0.117		0.0443	0.0459		0.0381	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Cobalt-60	0.0117	U	0.0405	0.0405		0.0486	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Europium-152	0.0127	U	0.0182	0.0182		0.129	pCi/g	08/24/21 16:40	09/16/21 14:53	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-058-081721

Lab Sample ID: 160-43113-17

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.103		0.0429	0.0442		0.0932	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Europium-155	0.00632	U	0.0162	0.0162		0.378	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Lead-212	0.418		0.0948	0.109		0.129	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Lead-214	0.249		0.0673	0.0719		0.123	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Potassium-40	2.06		0.671	0.702		0.501	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Radium-226	0.197		0.0784	0.0809	0.200	0.0858	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Sodium-22	0.00453	U	0.0237	0.0237		0.0469	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Thorium-232	0.127		0.0642	0.0654		0.0663	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Zinc-65	0.0000000 0576	U	0.0946	0.0946		0.175	pCi/g	08/24/21 16:40	09/16/21 14:53	1

Other Detected			Count	Total						
Radionuclides	Result	Qualifier	Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.145		0.0444	0.0468		0.0307	pCi/g	08/24/21 16:40	09/16/21 14:53	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.740	U	0.802	0.806	5.00	1.35	pCi/g	09/08/21 16:09	09/18/21 01:09	1

Carrier	%Yield	Qualifier	Limits		Prepared	Analyzed	Dil Fac
Ni	104		40 - 110		09/08/21 16:09	09/18/21 01:09	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	1.30	U	1.94	1.94	5.00	3.30	pCi/g	08/31/21 14:29	09/16/21 04:21	1

Tracer	%Yield	Qualifier	Limits		Prepared	Analyzed	Dil Fac
Pu-242 (T)	51.0		30 - 110		08/31/21 14:29	09/16/21 04:21	1

Client Sample ID: FSS-058-081721

Lab Sample ID: 160-43113-17

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 96.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.4		0.24	0.015	mg/Kg	☼	09/08/21 14:58	09/09/21 21:00	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	6.0	J	18	5.9	ug/Kg	☼	09/10/21 17:45	09/10/21 21:44	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-258-081721

Lab Sample ID: 160-43113-18

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.555		0.245	0.249	3.00	0.361	pCi/g	09/04/21 14:31	09/20/21 14:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.7		40 - 110					09/04/21 14:31	09/20/21 14:53	1
Y Carrier	84.5		40 - 110					09/04/21 14:31	09/20/21 14:53	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.186	U	0.259	0.259	1.00	0.434	pCi/g	09/03/21 13:48	09/08/21 16:45	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0180	U	0.0507	0.0507	1.00	0.106	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.0391	U	0.0483	0.0484	1.00	0.0745	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	55.8		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0323	U	0.0448	0.0448	1.00	0.0724	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-238	0.0466	U	0.0513	0.0514	1.00	0.0778	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.1		30 - 110					08/31/21 14:27	09/10/21 13:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.170	U	0.383	0.383	5.00	0.629	pCi/g	09/17/21 06:21	09/18/21 06:08	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.533		0.112	0.124		0.0903	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Americium-241	0.0606	U	0.150	0.150		0.257	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Bismuth-212	-0.0464	U	0.851	0.851		1.53	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Bismuth-214	0.354		0.105	0.111		0.0954	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Cesium-137	0.232		0.0619	0.0663		0.0404	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Cobalt-60	-0.0270	U	0.0727	0.0728		0.0853	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Europium-152	0.0167	U	0.0220	0.0221		0.207	pCi/g	08/24/21 16:40	09/16/21 14:54	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-258-081721

Lab Sample ID: 160-43113-18

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	-0.0293	U	0.0752	0.0752		0.130	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Europium-155	-0.0963	U	0.129	0.129		0.469	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Lead-212	0.394		0.0790	0.0935		0.0728	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Lead-214	0.344		0.0943	0.101		0.0708	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Potassium-40	2.71		0.798	0.843		0.739	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Radium-226	0.354		0.105	0.111	0.200	0.0954	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Sodium-22	0.000	U	0.00901	0.00901		0.0339	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Thorium-232	0.533		0.112	0.124		0.0903	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Zinc-65	0.0446	U	0.104	0.104		0.185	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			(1.96σ+/-)	(1.96σ+/-)						
	0.169		0.0574	0.0600		0.0545	pCi/g	08/24/21 16:40	09/16/21 14:54	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.290	U	0.866	0.867	5.00	1.50	pCi/g	09/08/21 16:09	09/18/21 02:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	103		40 - 110					09/08/21 16:09	09/18/21 02:16	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	1.79	U	1.91	1.91	5.00	3.21	pCi/g	08/31/21 14:29	09/16/21 05:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	55.8		30 - 110					08/31/21 14:29	09/16/21 05:28	1

Client Sample ID: FSS-258-081721

Lab Sample ID: 160-43113-18

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 81.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.6		0.27	0.016	mg/Kg	☼	09/08/21 14:58	09/09/21 21:04	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	17	U	22	7.1	ug/Kg	☼	09/10/21 17:45	09/10/21 21:46	1

Laboratory Report

Eurofins TestAmerica, St. Louis
13715 Rider Trail North
Earth City, MO 63045
United States
Attention: Ivan H Vania
Telephone: 314-298-8566

Report Date 09/21/2021
Sample Receipt Date 08/23/2021
RJ Lee Group Job No. AOH1063198-0
Authorization/P.O. No.
Client Job No./Name 160-43113-1

Analysis: Asbestos in Bulk Samples by Point Count

Method: NYELAP Method 198.1

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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546258.HPL	FSS-044-081721 (160-43113-1)	Yes	1	ND		100.00	CA, AM, F, OP, MI, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546259.HPL	FSS-045-081721 (160-43113-2)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP 198.1.						
Weight Loss:		0.0%						
10546260.HPL	FSS-046-081721 (160-43113-3)	Yes	1	ND		100.00	Q, CA, F, M, OP	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43113-1

RJ Lee Group Job No: AOH1063198-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546261.HPL	FSS-047-081721 (160-43113-4)	Yes	1	ND		100.00	Q, CA, F, OP, OR	EAF-09/16/2021
Description:		Beige Sediment 400 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546262.HPL	FSS-048-081721 (160-43113-5)	Yes	1	ND		100.00	Q, CA, AM, F, OP, OR	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP 198.1.						
Weight Loss:		0.0%						
10546263.HPL	FSS-049-081721 (160-43113-6)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP 198.1.						
Weight Loss:		0.0%						
10546264.HPL	FSS-050-081721 (160-43113-7)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546265.HPL	FSS-051-081721 (160-43113-8)	Yes	1	ND		100.00	Q, CA, F, AM, OP, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43113-1

RJ Lee Group Job No: AOH1063198-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546266.HPL	FSS-052-081721 (160-43113-9)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-09/16/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss:	0.0%							
10546267.HPL	FSS-053-081721 (160-43113-10)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/17/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss:	0.0%							
10546268.HPL	FSS-054-081721 (160-43113-11)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-09/16/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss:	0.0%							
10546269.HPL	FSS-055-081721 (160-43113-12)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/17/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss:	0.0%							

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Client Job No./Name: 160-43113-1

RJ Lee Group Job No: AOH1063198-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546270.HPL	FSS-056-081721 (160-43113-13)	Yes	1	ND		100.00	Q, CA, CL, AM, OR, OP, MI, M	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							
10546271.HPL	FSS-256-081721 (160-43113-14)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							
10546272.HPL	FSS-057-081721 (160-43113-15)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							
10546273.HPL	FSS-257-081721 (160-43113-16)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OR, OP, MI, M	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							

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Client Job No./Name: 160-43113-1

RJ Lee Group Job No: AOH1063198-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546274.HPL	FSS-058-081721 (160-43113-17)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M, OR	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							
10546275.HPL	FSS-258-081721 (160-43113-18)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OR, OP, MI, M	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							

Client Job No./Name: 160-43113-1

RJ Lee Group Job No: AOH1063198-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
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Authorized Signature: _____

Alexandra Cheek, Microscopist

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ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- AM = Amphibole
- B = Binder
- CA = Carbonates
- CL = Clay
- F = Feldspar
- G = Gypsum
- HY = Hydromagnesite
- M = Miscellaneous
- MI = Mica
- OP = Opaque
- OR = Organic
- P = Perlite
- Q = Quartz
- T = Tar
- V = Vermiculite

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

FPM Remediations, Inc.
Data Verification and Usability Report
BNL Decommissioning
Contract No. W912DW-19-D-1025

FPM Project No. 1085-20-01-01:a

TestAmerica Jobs # 160-43079-1, 160-43113-1
RJ Lee Group Job #AOH1063230-0, AOH1063198-0

Laboratory:	Test America Laboratories, Inc. (Metals) RJ Lee Group (Asbestos only)
Sample Matrix:	Soil
Number of Samples:	34
Analytical Protocol:	DOD Quality Systems Manual (QSM) Version 5.3, as per project-specific UFP QAPP
Data Reviewer:	Connie van Hoesel
Sample Date:	August 11-12, 17, 2021

LIST OF DATA VERIFICATION SAMPLES

This verification report pertains to the following environmental samples and corresponding QC samples:

DELIVERABLES

The data deliverable report was per requirements of the DOD QSM, Version 5.3, as specified in the project-specific QAPP (FPM, 2019). The report consisted of the following major sections: lab attachment letter, case narrative, chain-of-custody, lab qualifier definitions, analytical results (sheet 2) based on analytical batch, calibration summaries, method blank summaries, laboratory control sample summaries, matrix spike/matrix spike duplicate summaries, holding time forms, performance checks, surrogate and internal standard recoveries, as applicable.

ANALYTICAL METHODS

The analytical test methods and QA/QC requirements used for the sample analyses were per methods as specified in the DOD QSM, Version 5.3, with project-specific modifications as listed in the project-specific QAPP. The analytical methods employed included metals by Method 6020B, mercury by Method 7471B, and asbestos by Method NYELAP Method 198.1.

TABLE 1
SUMMARY OF SAMPLE ANALYSES
BNL DECOMMISSIONING

Sample ID ⁽¹⁾	Sample Date	Sample Matrix/ Sample Type	Lab ID	Metals (lead only)	Mercury	Asbestos	Data Usable ⁽²⁾
FSS-001-081121	8/11/21	S/N	160-43079-1 10546418.HPL	X	X	X	Yes
FSS-002-081121	8/11/21	S/N	160-43079-2 10546419.HPL	X	X	X	Yes
FSS-003-081121	8/11/21	S/N	160-43079-3 10546420.HPL	X	X	X	Yes
FSS-004-081121	8/11/21	S/N	160-43079-4 10546421.HPL	X	X	X	Yes
FSS-005-081121	8/11/21	S/N	160-43079-5 10546422.HPL	X	X	X	Yes
FSS-006-081121	8/11/21	S/N	160-43079-6 10546423.HPL	X	X	X	Yes
FSS-007-081121	8/11/21	S/N	160-43079-7 10546424.HPL	X	X	X	Yes
FSS-008-081121	8/11/21	S/N	160-43079-8 10546425.HPL	X	X	X	Yes
FSS-009-081121	8/11/21	S/N	160-43079-9 10546426.HPL	X	X	X	Yes
FSS-010-081121	8/11/21	S/N	160-43079-10 10546427.HPL	X	X	X	Yes
FSS-011-081121	8/11/21	S/N	160-43079-11 10546428.HPL	X	X	X	Yes
FSS-012-081121	8/11/21	S/N	160-43079-12 10546429.HPL	X	X	X	Yes
FSS-013-081221	8/12/21	S/N	160-43079-13 10546430.HPL	X	X	X	Yes
FSS-014-081221	8/12/21	S/N	160-43079-14 10546431.HPL	X	X	X	Yes
FSS-015-081221	8/12/21	S/N	160-43079-15 10546432.HPL	X	X	X	Yes
FSS-016-081221	8/12/21	S/N	160-43079-16 10546433.HPL	X	X	X	Yes
FSS-044-081721	8/17/21	S/N	160-43113-1 10546258.HPL	X	X	X	Yes
FSS-045-081721	8/17/21	S/N	160-43113-2 10546259.HPL	X	X	X	Yes
FSS-046-081721	8/17/21	S/N	160-43113-3 10546260.HPL	X	X	X	Yes
FSS-047-081721	8/17/21	S/N	160-43113-4 10546261.HPL	X	X	X	Yes
FSS-048-081721	8/17/21	S/N	160-43113-5 10546262.HPL	X	X	X	Yes
FSS-049-081721	8/17/21	S/N	160-43113-6 10546263.HPL	X	X	X	Yes
FSS-050-081721	8/17/21	S/N	160-43113-7 10546264.HPL	X	X	X	Yes

Sample ID ⁽¹⁾	Sample Date	Sample Matrix/ Sample Type	Lab ID	Metals (lead only)	Mercury	Asbestos	Data Usable ⁽²⁾
FSS-051-081721	8/17/21	S/N	160-43113-8 10546265.HPL	X	X	X	Yes
FSS-052-081721	8/17/21	S/N	160-43113-9 10546266.HPL	X	X	X	Yes
FSS-053-081721	8/17/21	S/N	160-43113-10 10546267.HPL	X	X	X	Yes
FSS-054-081721	8/17/21	S/N	160-43113-11 10546268.HPL	X	X	X	Yes
FSS-055-081721	8/17/21	S/N	160-43113-12 10546269.HPL	X	X	X	Yes
FSS-056-081721	8/17/21	S/N	160-43113-13 10546270.HPL	X	X	X	Yes
FSS-256-081721	8/17/21	S/N	160-43113-14 10546271.HPL	X	X	X	Yes
FSS-057-081721	8/17/21	S/N	160-43113-15 10546272.HPL	X	X	X	Yes
FSS-257-081721	8/17/21	S/N	160-43113-16 10546273.HPL	X	X	X	Yes
FSS-058-081721	8/17/21	S/N	160-43113-17 10546274.HPL	X	X	X	Yes
FSS-258-081721	8/17/21	S/N	160-43113-18 10546275.HPL	X	X	X	Yes

WG = groundwater, WQ=water quality, TB=trip blank, AB=ambient blank, MS/MSD=matrix spike/matrix spike duplicate, N=normal, FD=field duplicate.

⁽¹⁾ "Sample ID" as shown on COC.

⁽²⁾ "Yes"- Sample analysis considered valid and usable.

VERIFICATION GUIDANCE

The analytical work was performed by Test America Laboratories, Inc. and RJ Lee Group (subcontracted for asbestos only) in accordance with the QC requirements of the respective analytical methods and of the QAPP. The data usability analysis was based on the reviewer's professional judgment and on an assessment of the criteria as listed in the QAPP.

QA/QC CRITERIA

The following QA/QC criteria were reviewed for the metals analyses, as applicable:

- LODs and LOQs
- Holding times
- GC/MS tune performance
- Initial and Continuing calibration summaries
- Method blanks
- ICP interference check sample analysis
- Field duplicate results
- Matrix spike/matrix spike duplicate (MS/MSD) analysis
- Laboratory control samples (LCS)
- ICP serial dilution analysis
- Results reported between LOD and LOQ (J-flag)
- Sample storage and preservation
- Data system printouts
- Qualitative and quantitative compound identification
- Chain-of-custody (COC)
- Case narrative and deliverables compliance

According to the laboratory, the following criteria were reviewed as a part of the laboratory's NVLAP, NYELAP, and AIHA accreditations for asbestos identification methods:

- Microscope Alignment
- Refractive Index Liquid Calibration
- Blank Analysis
- Reference Sample Analysis
- Replicate Analysis

As part of this review, the sample receipt and the point counting results were reviewed.

The items listed above were in compliance with DOD QSM, Version 5.3 and project-specific QAPP criteria and protocols with exceptions discussed in the text below. The data have been verified according to the procedures outlined above and qualified accordingly.

GENERAL NOTES:

BLANKS

Whenever blanks, including method, ambient, equipment, and trip, contained low levels of contaminants (between the DL and LOQ), the laboratory qualified the subject results with a “J” flag. Since no qualification of associated field samples are required for blank concentrations less than half the LOQ, no further action was taken in such instances.

SAMPLE LABELING/CHAIN-OF-CUSTODY

No errors in the chain-of-custody were noted. There were no discrepancies noted between the sample labels and the chain-of-custody, or the cooler contents and the chain-of-custody.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

For metals, the laboratory performed MS/MSD analysis for an internal quality control sample. These were not requested by FPM and were performed for batch control; no action was taken for the MS/MSD criterion for these samples.

METALS

- Field duplicate samples, which are collected at the same location and at the same time using identical collection, handling, and analytical procedures, are used to assess precision of the sample collection process. The QAPP requires qualification of data for field duplicates criterion if the duplicate samples contain detected compounds with concentrations above 5x the LOQ and the relative percent differences (RPDs) between the duplicate sample results exceed RPD control limits (50% for soil samples). If either the parent or the duplicate sample is less than 5x the LOQ, then the difference between the parent and duplicate sample must be less than 2x the LOQ. “J” flags for detects and “UJ” flags for non-detects are required per the QAPP for any exceedances.

The following table summarizes the RPDs/total differences of field duplicate sample sets field duplicate sample sets FSS-056-081721/FSS-256-081721, FSS-057-081721/FSS-257-081721, and FSS-058-081721/PC-258-081721:

Normal sample ID	Field duplicate sample ID	Analyte	Normal Result (mg/kg [Pb] or µg/kg [Hg])	Field Dup Result (mg/kg [Pb] or µg/kg [Hg])	LOQ	RPD or ±difference	Flag Applied	Rationale
FSS-056-081721	FSS-256-081721	Lead	4.9	5.1	0.25, 0.22	4.0	None	RPD < 50%
FSS-056-081721	FSS-256-081721	Mercury	58	54	21, 19	4	None	Difference < 2x LOQ
FSS-057-081721	FSS-257-081721	Lead	3.1	2.7	0.29, 0.25	14	None	RPD < 50%
FSS-057-081721	FSS-257-081721	Mercury	34	25	19, 18	9	None	Difference < 2x LOQ
FSS-058-081721	FSS-258-081721	Lead	1.4	1.6	0.24, 0.27	13	None	RPD < 50%
FSS-058-081721	FSS-258-081721	Mercury	6.0 J	17 U	18, 22	11	None	Difference < 2x LOQ

Corrective Action: The RPD or total difference was within control limits for field duplicate sample sets FSS-056-081721/FSS-256-081721, FSS-057-081721/FSS-257-081721, and FSS-058-081721/PC-258-081721; no “J” flags were deemed required.

- The following blank sample analyses indicated blank contaminants present at concentrations equal to or greater than the DL but less than the LOQ. The Blank ID, detected contaminant, and concentration are listed.

Blank ID	Analyte	Concentration (mg/kg)	LOQ (mg/kg)	Samples Affected
Method blank 280-548182/1-A	Total Lead	0.0584 J	0.4	None; blank concentration < ½ LOQ and associated field sample concentrations > 5x blank concentration

The purpose of laboratory, equipment or trip blank analysis is to determine the existence and magnitude of contamination resulting from lab or field activities. If contamination is found in blanks the associated sample results for these analytes may be considered suspect. As per the

UFP QAPP, based on the blank contaminants present above half the RL, results for the specific analytes in the associated environmental samples are qualified with a “U” flag, for only those sample results that are less than five times (5x) the blank concentration.

Corrective Action: No “U” flags were applied since the associated field sample results were more than 5x the blank concentration.

- The following table summarizes QC exceedances of the matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and/or RPDs for parent sample FSS-001-081121. The spike analytes, MS recoveries, MSD recoveries, spike recovery QC limits, and RPDs and their QC limit between the MS and MSD are listed.

MS/MSD Results Job Number/Spike Analytes	Spike	MS %Rec	MSD %Rec	QC Limits (%) (DOD QSM Limits)	RPD	Flag Applied	Rationale
Parent sample FSS-001-081121							
Lead		68	147	84-118	38	J	%Rec and RPD outside control limits

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices. Generally, these data alone cannot be used to evaluate the precision and accuracy of individual samples. A matrix spike and matrix spike duplicate analysis is an aliquot of sample spiked with known concentrations of all the analytes in the method. Using professional judgment, exceedances of either percent recovery (%Rec) control limits of spike concentrations or relative percent difference (RPD) control limits between the MS and MSD results may require flagging (“J”) for the specific analyte in the parent sample, and the results considered estimated. Due to the varied nature of environmental samples, such as locations, depths, physical characteristics (dissolved and suspended solids, turbidity, pH, organic content, etc.), it is difficult to assign one matrix spike sample analysis as truly representative of an entire site matrix. Therefore, using professional judgment it is deemed inappropriate to qualify more than the actual parent sample due to an MS/MSD exceedance. This approach is in accordance with the EPA National Functional guidelines, which states that the MS/MSD results are not used alone to qualify the entire data package, however, can be used in conjunction with other QC criteria to determine the need for some qualification of the data. Using professional judgment, no corrective action and/or flagging is deemed required for minimal exceedances (i.e., within 1% of the %Rec control limits).

Corrective Action: In parent sample FSS-001-081121, a “J” qualifier was assigned to indicate the results be considered estimated since a matrix effect is indicated.

ASBESTOS

- There were no quality control exceedances associated with the asbestos analyses.

DATA USABILITY RESULTS

For each analysis performed, the following data parameters were assessed:

- laboratory analytical precision,
- accuracy,
- representativeness,
- completeness, and
- comparability (PARCC).

Data qualifier results from this review are summarized in Table 2.

METALS

Based on the evaluation of all information in the analytical data groups, the results for metals are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable.

ASBESTOS

Based on the evaluation of all information in the analytical data groups, the results for asbestos are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable.

**TABLE 2
SUMMARY OF QUALIFIED DATA
BNL DECOMMISSIONING**

Sample ID	Lab Sample ID	Analyte	Lab Flag	Validation Flag	Reason
FSS-001-081121	160-43079-1	Lead	J1	J	Matrix effect indicated; %Rec and RPD outside control limits

*Data Usability Qualifier based on project QAPP data validation and data usability considerations.

DATA USABILITY SUMMARY

All data in Jobs # 160-43079-1 and 160-43113-1 are valid and usable with qualifications as noted in the data review.

Signed: Concordia van Hoesel Date: 9/27/2021

ATTACHMENTS

- Chain of Custody
- Laboratory's Case Narrative
- Qualified final data verification results on annotated Lab Sheet 2s

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43079-1	FSS-001-081121	Solid	08/11/21 09:00	08/13/21 08:45
160-43079-2	FSS-002-081121	Solid	08/11/21 09:00	08/13/21 08:45
160-43079-3	FSS-003-081121	Solid	08/11/21 09:00	08/13/21 08:45
160-43079-4	FSS-004-081121	Solid	08/11/21 09:00	08/13/21 08:45
160-43079-5	FSS-005-081121	Solid	08/11/21 11:00	08/13/21 08:45
160-43079-6	FSS-006-081121	Solid	08/11/21 11:00	08/13/21 08:45
160-43079-7	FSS-007-081121	Solid	08/11/21 11:00	08/13/21 08:45
160-43079-8	FSS-008-081121	Solid	08/11/21 11:00	08/13/21 08:45
160-43079-9	FSS-009-081121	Solid	08/11/21 13:30	08/13/21 08:45
160-43079-10	FSS-010-081121	Solid	08/11/21 13:30	08/13/21 08:45
160-43079-11	FSS-011-081121	Solid	08/11/21 13:30	08/13/21 08:45
160-43079-12	FSS-012-081121	Solid	08/11/21 13:30	08/13/21 08:45
160-43079-13	FSS-013-081221	Solid	08/12/21 08:00	08/13/21 08:45
160-43079-14	FSS-014-081221	Solid	08/12/21 08:00	08/13/21 08:45
160-43079-15	FSS-015-081221	Solid	08/12/21 08:00	08/13/21 08:45
160-43079-16	FSS-016-081221	Solid	08/12/21 08:00	08/13/21 08:45

Regulatory Program: DW NPDES RCRA Other:

Client Contact FPM Address 181 Kenwood Avenue Oneida, NY 13421 (315) 336-7721 ext. 218 Phone Fax (315) 336-7722 FAX Project Name: BNL 705 Stack Demo Site: BNL P O # 1085-20-01-01		Project Manager: Dan Ours Email: d.ours@tpr-remediations.com Tel/Fax: (315) 336-7721 ext. 218 Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below: 30 Days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: Doug Beard Date: 08-12-21 Lab Contact: Ivan Vania Carrier: Fed Ex		COC No.: 1 of 2 COCs TALS Project #: B. Gaudette Sampler: B. Gaudette For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:	
Project Manager: Dan Ours Email: d.ours@tpr-remediations.com Tel/Fax: (315) 336-7721 ext. 218 Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below: 30 Days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: Doug Beard Date: 08-12-21 Lab Contact: Ivan Vania Carrier: Fed Ex		COC No.: 1 of 2 COCs TALS Project #: B. Gaudette Sampler: B. Gaudette For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:			
Sample Identification FSS-001-081121 FSS-002-081121 FSS-003-081121 FSS-004-081121 FSS-005-081121 FSS-006-081121 FSS-007-081121 FSS-008-081121 FSS-009-081121 FSS-010-081121 FSS-011-081121 FSS-012-081121		Filtered Sample (Y/N) Perform MS/MSD (Y/N) Gamma Spec: Ra-226+detects Strontium-90 (GFPC) Asbestos - EPA600 R-93 Lead (ICP/MS) - 6020B Mercury - EPA 7470A Ni-63 Tritium C-14		Sample Specific Notes: Asphalt A SU-7D Ground surface below Asphalt A 0-6" Ground surface below Asphalt A 6" -12" Ground surface below Asphalt A 18" -24" Asphalt B SU-7D Ground surface below Asphalt B 0-6" Ground surface below Asphalt B 6" -12" Ground surface below Asphalt B 18" -24" Asphalt C SU-7D Ground surface below Asphalt C 0-6" Ground surface below Asphalt C 6" -12" Ground surface below Asphalt C 18" -24"			
Sample Date 11-Aug 11-Aug 11-Aug 11-Aug 11-Aug 11-Aug 11-Aug 11-Aug 11-Aug 11-Aug 11-Aug		Sample Type (C-Comp, G-Grab) C C C C C C C C C C		Sample Time 9:00 9:00 9:00 9:00 11:00 11:00 11:00 11:00 13:30 13:30 13:30 13:30			
Matrix S S S S S S S S S S		# of Cont. 3 3 3 3 3 3 3 3 3 3 3		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.		Custody Seal No.: Company: Cabrera Services, Inc. Company: Company:		Therm ID No.: Date/Time: Date/Time: Date/Time:			
Relinquished by: FED EX Relinquished by:		Received by: MYCHA KENNEDY Received in Laboratory by:		Date/Time: 8-12-21/17:00 Date/Time: Date/Time:			

Regulatory Program: DW NPDES RCRA Other:

Client Contact			Project Manager: Dan Ours			Site Contact: Doug Beard			Date: 08-12-21			COC No: 2 of 2 COCs		
Email: d.ours@fpm-remediations.com			Tel/Fax: (315) 336-7721 ext. 218			Lab Contact: Ivan Vania			Carrier: Fed Ex			TALS Project #:		
Address 181 Kenwood Avenue			Analysis Turnaround Time			Mercury - EPA 7470A			NI-63			Sampler: B. Gaudette		
Oneida, NY 13421			<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below: <u>30</u> Days			Lead (ICP/MS) - 6020B						For Lab Use Only:		
Phone (315) 336-7721 ext. 218			<input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day			Asbestos - EPA600 R-93						Walk-in Client:		
FAX (315) 336-7722			Sample Date			Strontium-90 (GFPC)						Lab Sampling:		
Project Name: BNL 705 Stack Demo			Sample Time			Gamma Spec: Ra-226+detects						Job / SDG No.:		
Site: BNL			Sample Type (C=Comp, G=Grab)			Perform MS / MSD (Y / N)								
P O # 1085-20-01-01			Matrix			Filtered Sample (Y / N)								
			# of Cont.											
Sample Identification			Sample Date			Sample Time			Sample Type			Sample Specific Notes:		
FSS-013-081221			12-Aug			8:00			C			Asphalt D SU-7D		
FSS-014-081221			12-Aug			8:00			C			Ground surface below Asphalt D 0-6"		
FSS-015-081221			12-Aug			8:00			C			Ground surface below Asphalt D 6" -12"		
FSS-016-081221			12-Aug			8:00			C			Ground surface below Asphalt D 18" -24"		
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Possible Hazard Identification: _____ Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.														
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Polson B <input type="checkbox"/> Unknown <input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months														
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)														
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No			Custody Seal No.:			Cooler Temp. (°C):			Obs'd:			Therm ID No.:		
Relinquished by: Douglas Beard			Company: Cabrera Services, Inc.			Received by: Fed Ex			Company:			Date/Time:		
Relinquished by:			Company:			Received by: <i>Melina Kervinings</i>			Company: <i>ETA 97</i>			Date/Time: <i>AUG 13 2021 08:45</i>		
Relinquished by:			Company:			Received in Laboratory by:			Company:			Date/Time:		

Chain of Custody Record



Client Information (Sub Contract Lab)		Lab PM: Vania, Ivan H	Carrier Tracking No(s): COC No: 160-217526-1
Client Contact: Shipping/Receiving		E-Mail: Ivan.Vania@Eurofins.com	State of Origin: New York
Company: TestAmerica Laboratories, Inc.		Page: Page 1 of 2	
Address: 4955 Yarrow Street.		Job #: 160-43079-1	
City: Arvada	Due Date Requested: 9/12/2021	Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - Nitric Acid F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
State, Zip: CO, 80002	TAT Requested (days):	Analysis Requested	
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:	Field Filtered Sample (Yes or No)	
Email:	WO #:	Perform MS/MSD (Yes or No)	
Project Name: BNL Decommissioning Project	Project #: 16009147	Moisture	
Site: SSOW#	SSOW#	7471B_DDS57471B_Prep Mercury	
Sample Identification - Client ID (Lab ID)		Total Number of Containers	
FSS-001-081121 (160-43079-1)	Sample Date 8/11/21	Sample Time 09:00 Eastern	Preservation Code: Solid
FSS-002-081121 (160-43079-2)	8/11/21	09:00 Eastern	Solid
FSS-003-081121 (160-43079-3)	8/11/21	09:00 Eastern	Solid
FSS-004-081121 (160-43079-4)	8/11/21	09:00 Eastern	Solid
FSS-005-081121 (160-43079-5)	8/11/21	11:00 Eastern	Solid
FSS-006-081121 (160-43079-6)	8/11/21	11:00 Eastern	Solid
FSS-007-081121 (160-43079-7)	8/11/21	11:00 Eastern	Solid
FSS-008-081121 (160-43079-8)	8/11/21	11:00 Eastern	Solid
FSS-009-081121 (160-43079-9)	8/11/21	13:30 Eastern	Solid
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/mainx being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>			
Possible Hazard Identification			
Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) _____ Primary Deliverable Rank: 2 Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/QC Requirements: _____			
Empty Kit Relinquished by: _____ Date: _____ Time: _____ Method of Shipment: _____			
Relinquished by: <i>MICHAEL KENIGHING</i>		Received by: <i>[Signature]</i>	
Relinquished by: _____ Date/Time: 8/13/2021 17:00		Received by: _____ Date/Time: 8/14/21 09:40	
Relinquished by: _____ Date/Time: _____		Received by: _____ Date/Time: _____	
Custody Seals Intact: <i>NA</i>		Cooler Temperature(s) °C and Other Remarks: <i>39.10°C F706</i>	

Chain of Custody Record



Environment Testing
 America

Client Information (Sub Contract Lab)		Lab PM: Vania, Ivan H		Carrier Tracking No(s): 160-217526-2						
Client Contact: Shipping/Receiving		E-Mail: Ivan.Vania@Eurofinset.com		State of Origin: New York						
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Job #: 160-43079-1						
Address: 4955 Yarrow Street, Arvada		Due Date Requested: 9/12/2021		Preservation Codes:						
City: Arvada		TAT Requested (days):		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:						
State, Zip: CO, 80002		PO #:		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecylhydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)						
Phone: 303-736-0100(Tel) 303-431-7171(Fax)		WG #:		Total Number of Containers						
Email:		Project #:		Special Instructions/Note:						
Project Name: BNL Decommissioning Project		SSOW#:								
Site:										
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=soil, B=soil, T=tissue, A=air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020B_DDS/3050B (MOD) IC/MS Metals Pb Only	7471B_DDS/7471B Prep Mercury	Moisture	Analysis Requested
FSS-010-081121 (160-43079-10)	8/11/21	13:30 Eastern	Solid	Solid	X	X	X	X	X	X
FSS-011-081121 (160-43079-11)	8/11/21	13:30 Eastern	Solid	Solid	X	X	X	X	X	X
FSS-012-081121 (160-43079-12)	8/11/21	13:30 Eastern	Solid	Solid	X	X	X	X	X	X
FSS-013-081121 (160-43079-13)	8/12/21	08:00 Eastern	Solid	Solid	X	X	X	X	X	X
FSS-014-081121 (160-43079-14)	8/12/21	08:00 Eastern	Solid	Solid	X	X	X	X	X	X
FSS-015-081121 (160-43079-15)	8/12/21	08:00 Eastern	Solid	Solid	X	X	X	X	X	X
FSS-016-081121 (160-43079-16)	8/12/21	08:00 Eastern	Solid	Solid	X	X	X	X	X	X
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>										
Possible Hazard Identification										
Unconfirmed										
Deliverable Requested: I, II, III, IV, Other (specify)										
Primary Deliverable Rank: 2										
Empty Kit Relinquished by:										
Date/Time: 8/13/2021 17:00										
Relinquished by: Michael Koninkings										
Date/Time: 8/13/2021 17:00										
Relinquished by:										
Date/Time:										
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No										
Custody Seal No.:										
Cooler Temperature(s) °C and Other Remarks:										
<p>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</p> <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months										
Special Instructions/QC Requirements:										
<p>Received by: [Signature] Date/Time: 8/13/2021 09:40 Company: ETAVEN</p> <p>Received by: [Signature] Date/Time: _____ Company: _____</p> <p>Received by: _____ Date/Time: _____ Company: _____</p>										
Method of Shipment:										

Eurofins TestAmerica, St. Louis

13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8566 Fax: 314-298-8757

Chain of Custody Record



Environment Testing
 America

A0410632300

Client Information (Sub Contract Lab)		Sampler:	Lab PM: Vania, Ivan H	Carrier Tracking No(s):	COC No: 160-218033.1							
Client Contact: Shipping/Receiving		Phone:	E-Mail: Ivan.Vania@Eurofinset.com	State of Origin: New York	Page: Page 1 of 2							
Company: RJ Lee Group, Inc		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York			Job #: 160-43079-1							
Address: 350 Hochberg Rd, City: Monroeville State, Zip: PA, 15146 Phone: Email:		Due Date Requested: 9/13/2021 TAT Requested (days):	Analysis Requested		Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify) Other:							
Project Name: BNL Decommissioning Project Site:		Project #: 16009147 SSOW#:										
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT= tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform M/MSD (Yes or No)	SUB (Asbestos/ Asbestos)	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03)	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03)	Total Number of containers	Special Instructions/Note:
FSS-001-081121 (160-43079-1)		8/11/21	09:00 Eastern	Solid				X			1	
FSS-002-081121 (160-43079-2)		8/11/21	09:00 Eastern	Solid					X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-003-081121 (160-43079-3)		8/11/21	09:00 Eastern	Solid					X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-004-081121 (160-43079-4)		8/11/21	09:00 Eastern	Solid					X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-005-081121 (160-43079-5)		8/11/21	11:00 Eastern	Solid				X			1	
FSS-006-081121 (160-43079-6)		8/11/21	11:00 Eastern	Solid				X			1	
FSS-007-081121 (160-43079-7)		8/11/21	11:00 Eastern	Solid					X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-008-081121 (160-43079-8)		8/11/21	11:00 Eastern	Solid					X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-009-081121 (160-43079-9)		8/11/21	13:30 Eastern	Solid				X			1	
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>												
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)						
Unconfirmed						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months						
Deliverable Requested: I, II, III, IV, Other (specify)						Primary Deliverable Rank: 2						
Empty Kit Relinquished by:						Special Instructions/QC Requirements:						
Date:						Time:						
Relinquished by: <i>Michael Karimkhan</i>						Date/Time: <i>8/13/2021 17:00</i>						
Relinquished by:						Company: <i>ETA ST</i>						
Relinquished by:						Received by: <i>Indira Mangru</i>						
Date/Time:						Date/Time: <i>8/24/2021 2:51 PM</i>						
Relinquished by:						Company: <i>RJ Lee Group</i>						
Date/Time:						Received by:						
Date/Time:						Date/Time:						
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No						Custody Seal No.:						
Cooler Temperature(s) °C and Other Remarks.												

Page 8562 of 8565

Eurofins TestAmerica, St. Louis

13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8566 Fax: 314-298-8757

Chain of Custody Record



A0410632300

Client Information (Sub Contract Lab)		Sampler Vania, Ivan H	Lab PM: Vania, Ivan H	Carrier Tracking No(s)	COC No: 160-218033.2						
Client Contact: Shipping/Receiving	Phone:	E-Mail: Ivan.Vania@Eurofinset.com	State of Origin: New York	Page: Page 2 of 2							
Company: RJ Lee Group, Inc			Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Job #: 160-43079-1						
Address: 350 Hochberg Rd.		Due Date Requested: 9/13/2021	Analysis Requested								
City: Monroeville	TAT Requested (days):										
State, Zip: PA, 15146	PO #:										
Phone:	WO #:										
Email:	Project #: 16009147										
Project Name: BNL Decommissioning Project		SSOW#:		Preservation Codes:							
Site:				A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify)							
Other:											
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=organic, BT=Trace, A=As)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Asbestos) / Asbestos	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03) / Asbestos - PLM-EPA600-R-93/LAP-080.03	Total Number of Containers	Special Instructions/Note:
				Preservation Code:							
FSS-010-081121 (160-43079-10)		8/11/21	13:30 Eastern		Solid			X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-011-081121 (160-43079-11)		8/11/21	13:30 Eastern		Solid			X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-012-081121 (160-43079-12)		8/11/21	13:30 Eastern		Solid			X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-013-081221 (160-43079-13)		8/12/21	08:00 Eastern		Solid		X			1	
FSS-014-081221 (160-43079-14)		8/12/21	08:00 Eastern		Solid			X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-015-081221 (160-43079-15)		8/12/21	08:00 Eastern		Solid			X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-016-081221 (160-43079-16)		8/12/21	08:00 Eastern		Solid			X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.											
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
Unconfirmed						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Deliverable Requested: I, II, III, IV, Other (specify)						Primary Deliverable Rank: 2					
Special Instructions/QC Requirements:											
Empty Kit Relinquished by:				Date:		Time:		Method of Shipment:			
Relinquished by: <i>Michelle Kenning</i>				Date/Time: <i>8/13/2021 17:00</i>		Company: <i>ETA ST</i>		Received by: <i>Linda Naugus</i>		Date/Time: <i>08/24/2021 2:51pm</i>	
Relinquished by:				Date/Time:		Company:		Received by:		Date/Time:	
Relinquished by:				Date/Time:		Company:		Received by:		Date/Time:	
Custody Seals Intact:				Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:					
Δ Yes Δ No											

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43079-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/13/2021 8:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 1.5° C, 23.4° C, 23.6° C and 24.7° C.

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis.

METALS (ICP/MS)

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081121 (160-43079-13), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 09/07/2021 and analyzed on 09/08/2021.

Analytical Batch 280-549084:

Lead was detected in method blank MB 280-548182/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Lead failed the recovery criteria low for the MS/MSD of sample FSS-001-081121MS/MSD (160-43079-1). Lead exceeded the RPD limit.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081121 (160-43079-13), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B_DoD5. The samples were prepared and analyzed on 09/01/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081121 (160-43079-13), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 08/25/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 08/16/2021, prepared on 08/27/2021 and analyzed on 09/07/2021.

Samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9) and FSS-013-081121 (160-43079-13) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were prepared on 08/27/2021 and analyzed on 09/07/2021.

Preparation Batch 160-524352:

The bracketing daily background, analyzed the day after the sample was analyzed, was outside the upper QC acceptance limit indicating a potential high bias. The sample analysis on that detector had activity below the MDC indicating no adverse effect from the potential bias. In addition, the daily check and background analyzed on the day of sample analysis passed as did the bracketing daily check: FSS-010-081121 (160-43079-10).

The sample duplicate (DUP) precision (RER/DER) was outside control limits. Sample non-homogeneity and a matrix effect was observed and noted during preparation. In addition, the original sample and sample duplicate both had activity below the RL: (160-43079-A-2-F DU).

The following samples could not be thoroughly homogenized before sub-sampling was performed due to sample matrix: FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081121 (160-43079-13), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15), FSS-016-081121 (160-43079-16), and (160-43079-A-2-A DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081121 (160-43079-13), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 08/27/2021 and analyzed on 09/01/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 08/19/2021, prepared on 08/29/2021 and analyzed on 09/09/2021.

Samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9) and FSS-013-081121 (160-43079-13) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with DOE A01R_Pu. The samples were prepared on 08/31/2021 and analyzed on 09/10/2021.

Preparation Batch 160-524624:

Detectors 131-142 were calibrated in August; therefore, the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-002-081121 (160-43079-2), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15), FSS-016-081121 (160-43079-16), (LCS 160-524624/2-A), (MB 160-524624/1-A), and (160-43079-A-2-H DU).

Detectors 131-146 were calibrated in August therefore the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-013-081121 (160-43079-13).

The samples exhibited a negative result greater in magnitude than the 3 sigma TPU. This occurrence was evaluated and determined to be random in nature. Sporadic occurrences such as this are statistically expected: FSS-003-081121 (160-43079-3) and FSS-004-081121 (160-43079-4).

The sample was counted on detector AV126 which failed the pulser resolution check the day after (closing bracket) the sample count. However, the sample tracer resolution was well within QC limits the day of the count. The laboratory does not believe this excursion adversely affects the data: FSS-004-081121 (160-43079-4).

Preparation Batch 160-524992:

The sample results were based on as received weight. The samples were not dried and ground due to the nature of the sample matrices: FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9), and FSS-013-081121 (160-43079-13).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/19/2021, prepared on 08/29/2021 and analyzed on 09/08/2021 and 09/09/2021.

Samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9) and FSS-013-081121 (160-43079-13) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE A01R_U. The samples were prepared on 08/31/2021 and analyzed on 09/10/2021.

Preparation Batch 160-524626:

The sample was counted on detector AV199 which failed the pulser energy check the day after (closing bracket) the sample count. However, the sample tracer energy centroid was well within QC limits the day of the count. The laboratory does not believe this excursion adversely affects the data: FSS-007-081121 (160-43079-7).

The sample was counted on detector AV75 which failed the pulser efficiency check (low) the day after (closing bracket) the sample count. The sample pulser efficiency the day of the count as well as the tracer recovery was within QC limits the day of the count. While the lower efficiency may lead to a higher MDC, it would not affect the sample activity result (the efficiency effectively "cancels out" due to the tracer). Further, the MDC achieved is below the client requested limit. The laboratory does not believe this excursion adversely affects the data: FSS-014-081121 (160-43079-14).

Preparation Batch 160-524999:

The sample results were based on as received weight. The samples were not dried and ground due to the nature of the sample matrices: FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9), and FSS-013-081121 (160-43079-13).

Detectors 95, 96, 97, and 161 were calibrated in August therefore the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: (160-43124-D-6-K).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081221 (160-43079-13), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15) and FSS-016-081221 (160-43079-16) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 09/09/2021 and analyzed on 09/10/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15) and FSS-016-081221 (160-43079-16) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/16/2021, prepared on 08/18/2021 and analyzed on 09/11/2021 and 09/13/2021.

Samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9) and FSS-013-081221 (160-43079-13) were analyzed for Radium 226 (21 day ingrowth) in accordance with DOE GA-01-R. The samples were prepared on 08/20/2021 and analyzed on 09/11/2021.

Preparation Batch 160-523357:

The replicate precision for Pb-212 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (160-43079-A-13-B DU).

For samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9), FSS-013-081221 (160-43079-13), (LCS 160-523357/2-A), (MB 160-523357/1-A), and (160-43079-A-13-B DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

Preparation Batch 160-523157:

The method blank z-score for Eu-152 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (MB 160-523157/1-A).

The method blank z-score for Eu-154 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (MB 160-523357/1-A).

For samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15), FSS-016-081221 (160-43079-16), (LCS 160-523157/2-A), (MB 160-523157/1-A), and (160-43079-A-16-C DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from Reported to Analyte

Inferred	Reported
From	to
Nuclide	Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15) and FSS-016-081221 (160-43079-16) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 08/16/2021, prepared on 08/26/2021 and analyzed on 09/18/2021 and 09/19/2021.

Samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9) and FSS-013-081221 (160-43079-13) were analyzed for Nickel 59/63 in accordance with LSC-Nickel. The samples were prepared on 08/26/2021 and analyzed on 09/18/2021.

Preparation Batch 160-524237:

The carrier recovery for the sample failed below the lower QC limit at 35% (40%), indicating a potential high bias for analysis results. However, the sample final result was below the MDC and reporting limit (RL): FSS-005-081121 (160-43079-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081221 (160-43079-13), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15) and FSS-016-081221 (160-43079-16) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared on 08/29/2021 and 08/31/2021 and analyzed on 09/15/2021 and 09/16/2021.

Preparation Batch 160-525000:

The sample results were based on as received weight. The samples were not dried and ground due to the nature of the sample matrices: FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9), and FSS-013-081221 (160-43079-13).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-001-081121

Lab Sample ID: 160-43079-1

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0667	U	0.158	0.158	3.00	0.278	pCi/g	08/27/21 13:56	09/07/21 16:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.4		40 - 110					08/27/21 13:56	09/07/21 16:54	1
Y Carrier	95.3		40 - 110					08/27/21 13:56	09/07/21 16:54	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.127	U	0.237	0.237	1.00	0.413	pCi/g	08/27/21 08:28	09/01/21 09:35	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0125	U	0.0208	0.0208	1.00	0.0734	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.00417	U	0.0252	0.0252	1.00	0.0626	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	88.5		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-234	0.127		0.0714	0.0722	1.00	0.0807	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-235	-0.0127	U	0.0111	0.0112	1.00	0.0723	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.104		0.0578	0.0584	1.00	0.0395	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	77.0		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.467	U	0.835	0.836	5.00	1.42	pCi/g	09/09/21 09:41	09/10/21 16:34	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.110	U	0.292	0.293		0.370	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Americium-241	0.0720	U	0.127	0.127		0.216	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Bismuth-212	-0.752	U	1.01	1.01		1.71	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Bismuth-214	0.0698	U	0.246	0.246		0.416	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Cesium-137	-0.00571	U	0.0747	0.0747		0.135	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Cobalt-60	0.00362	U	0.00227	0.00230		0.117	pCi/g	08/20/21 09:48	09/11/21 07:41	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-001-081121

Date Collected: 08/11/21 09:00

Date Received: 08/13/21 08:45

Lab Sample ID: 160-43079-1

Matrix: Solid

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-152	0.164		0.0656	0.0677		0.145	pCi/g	08/20/21 09:48	09/11/21 07:41	
Europium-154	0.0469	U	0.0980	0.0981		0.0982	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Europium-155	0.0990	U	0.348	0.348		0.592	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Lead-212	0.282		0.106	0.111		0.105	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Lead-214	0.0232	U	0.0572	0.0573		0.364	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Potassium-40	3.71		1.47	1.51		1.33	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Radium-226	0.0698	U	0.246	0.246	1.00	0.416	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Radium-228	0.110	U	0.292	0.293		0.370	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Sodium-22	0.00974	U	0.0434	0.0434		0.0844	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Zinc-65	-0.158	U	0.132	0.133		0.438	pCi/g	08/20/21 09:48	09/11/21 07:41	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.563	U	0.885	0.887	5.00	1.51	pCi/g	08/26/21 10:56	09/18/21 08:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	87.1		40 - 110					08/26/21 10:56	09/18/21 08:25	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-0.284	U	1.11	1.11	5.00	2.01	pCi/g	08/31/21 14:29	09/15/21 15:07	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	88.5		30 - 110					08/31/21 14:29	09/15/21 15:07	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			08/19/21 16:11	1

Client Sample ID: FSS-001-081121

Date Collected: 08/11/21 09:00

Date Received: 08/13/21 08:45

Lab Sample ID: 160-43079-1

Matrix: Solid

Percent Solids: 97.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	14	J J	0.39	0.018	mg/Kg	*	09/07/21 07:45	09/08/21 03:47	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	20	6.4	ug/Kg	*	09/01/21 15:10	09/01/21 17:27	1

WA
9/27/2021

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Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-002-081121

Lab Sample ID: 160-43079-2

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.117	U	0.165	0.165	3.00	0.282	pCi/g	08/27/21 13:56	09/07/21 16:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.5		40 - 110					08/27/21 13:56	09/07/21 16:55	1
Y Carrier	94.2		40 - 110					08/27/21 13:56	09/07/21 16:55	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.193	U	0.241	0.242	1.00	0.407	pCi/g	08/27/21 08:28	09/01/21 09:57	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00720	U	0.00998	0.00999	1.00	0.0806	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	0.00721	U	0.0300	0.0300	1.00	0.0807	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	48.9		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00468	U	0.00917	0.00917	1.00	0.0905	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Uranium-238	0.113		0.0900	0.0905	1.00	0.113	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	48.6		30 - 110					08/29/21 20:35	09/08/21 13:49	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.491	U	0.860	0.861	5.00	1.47	pCi/g	09/09/21 09:41	09/10/21 16:57	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.285		0.137	0.140		0.250	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Americium-241	0.0589	U	0.147	0.147		0.253	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Bismuth-212	0.351	U	0.605	0.606		1.05	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Bismuth-214	0.336		0.0953	0.101		0.0807	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Cesium-137	-0.0163	U	0.0550	0.0550		0.118	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Cobalt-60	0.0337	U	0.0250	0.0252		0.0355	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Europium-152	0.0466	U	0.0698	0.0700		0.157	pCi/g	08/18/21 14:03	09/11/21 18:21	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-002-081121

Lab Sample ID: 160-43079-2

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0117	U	0.0749	0.0749		0.131	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Europium-155	-0.0939	U	0.220	0.220		0.459	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Lead-212	0.272		0.0794	0.0866		0.0999	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Lead-214	0.364		0.109	0.115		0.107	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Potassium-40	4.30		1.05	1.14		0.890	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Radium-226	0.336		0.0953	0.101	1.00	0.0807	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Sodium-22	0.0217	U	0.0357	0.0358		0.0627	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Thorium-232	0.285		0.137	0.140		0.250	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Zinc-65	-0.0173	U	0.116	0.116		0.234	pCi/g	08/18/21 14:03	09/11/21 18:21	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.404	U	0.868	0.869	5.00	1.49	pCi/g	08/26/21 10:56	09/18/21 09:31	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	<i>88.8</i>		<i>40 - 110</i>					<i>08/26/21 10:56</i>	<i>09/18/21 09:31</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.80	U	2.21	2.21	5.00	3.96	pCi/g	08/29/21 20:28	09/15/21 15:44	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	<i>48.9</i>		<i>30 - 110</i>					<i>08/29/21 20:28</i>	<i>09/15/21 15:44</i>	<i>1</i>

Client Sample ID: FSS-002-081121

Lab Sample ID: 160-43079-2

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 91.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.9		0.39	0.018	mg/Kg	☼	09/07/21 07:45	09/08/21 04:04	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.6	ug/Kg	☼	09/01/21 15:10	09/01/21 17:40	1

Client Sample ID: FSS-003-081121

Lab Sample ID: 160-43079-3

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.166	U	0.172	0.172	3.00	0.340	pCi/g	08/27/21 13:56	09/07/21 17:20	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-003-081121

Lab Sample ID: 160-43079-3

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	84.3		40 - 110	08/27/21 13:56	09/07/21 17:20	1
Y Carrier	94.6		40 - 110	08/27/21 13:56	09/07/21 17:20	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0115	U	0.229	0.229	1.00	0.422	pCi/g	08/27/21 08:28	09/01/21 10:20	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0278	U	0.0173	0.0174	1.00	0.0982	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	-0.00557	U	0.0256	0.0256	1.00	0.0836	pCi/g	08/29/21 18:19	09/09/21 13:00	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	69.8		30 - 110	08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0205	U	0.0390	0.0391	1.00	0.0765	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Uranium-238	0.255		0.106	0.108	1.00	0.0678	pCi/g	08/29/21 20:35	09/08/21 13:49	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	60.5		30 - 110	08/29/21 20:35	09/08/21 13:49	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.289	U	0.856	0.856	5.00	1.56	pCi/g	09/09/21 09:41	09/10/21 17:42	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.132	U	0.152	0.152		0.224	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Americium-241	0.0511	U	0.113	0.113		0.193	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Bismuth-212	0.452	U	0.799	0.800		1.37	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Bismuth-214	0.359		0.102	0.108		0.0916	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Cesium-137	-0.0190	U	0.0564	0.0564		0.0989	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Cobalt-60	-0.0297	U	0.0734	0.0735		0.0815	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Europium-152	0.0499	U	0.114	0.114		0.140	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Europium-154	0.0455	U	0.0706	0.0708		0.0978	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Europium-155	-0.00779	U	0.132	0.132		0.364	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Lead-212	0.0396	U	0.0941	0.0942		0.161	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Lead-214	0.358		0.0891	0.0963		0.0989	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Potassium-40	4.42		0.856	0.964		0.603	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Radium-226	0.359		0.102	0.108	1.00	0.0916	pCi/g	08/18/21 14:03	09/11/21 18:21	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-003-081121

Lab Sample ID: 160-43079-3

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Sodium-22	0.00838	U	0.0260	0.0260		0.0495	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Thorium-232	0.132	U	0.152	0.152		0.224	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Zinc-65	0.000	U	0.0177	0.0177		0.185	pCi/g	08/18/21 14:03	09/11/21 18:21	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.321	U	0.824	0.825	5.00	1.47	pCi/g	08/26/21 10:56	09/18/21 10:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	85.4		40 - 110					08/26/21 10:56	09/18/21 10:38	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-2.09	U	1.48	1.49	5.00	2.73	pCi/g	08/29/21 20:28	09/15/21 17:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	69.8		30 - 110					08/29/21 20:28	09/15/21 17:56	1

Client Sample ID: FSS-003-081121

Lab Sample ID: 160-43079-3

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 86.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.6		0.41	0.019	mg/Kg	☼	09/07/21 07:45	09/08/21 04:15	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	18	U	23	7.4	ug/Kg	☼	09/01/21 15:10	09/01/21 17:42	1

Client Sample ID: FSS-004-081121

Lab Sample ID: 160-43079-4

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0553	U	0.177	0.177	3.00	0.314	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.0		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	93.1		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-004-081121

Lab Sample ID: 160-43079-4

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.222	U	0.244	0.245	1.00	0.407	pCi/g	08/27/21 08:28	09/01/21 10:43	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0530	U	0.0227	0.0231	1.00	0.115	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	-0.0228	U	0.0149	0.0150	1.00	0.0861	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.7		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00282	U	0.00552	0.00553	1.00	0.0546	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Uranium-238	0.165		0.0776	0.0788	1.00	0.0559	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.1		30 - 110					08/29/21 20:35	09/08/21 13:49	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.296	U	0.906	0.907	5.00	1.58	pCi/g	09/09/21 09:41	09/10/21 18:27	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.540		0.156	0.165		0.0865	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Americium-241	0.0632	U	0.157	0.158		0.270	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Bismuth-212	0.333	U	0.703	0.704		1.22	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Bismuth-214	0.382		0.108	0.115		0.100	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Cesium-137	0.0214	U	0.0442	0.0442		0.0775	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Cobalt-60	0.00544	U	0.0255	0.0255		0.0614	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-152	0.0784	U	0.190	0.190		0.186	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-154	0.0263	U	0.0677	0.0677		0.117	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-155	0.00198	U	0.00374	0.00375		0.372	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Lead-212	0.306		0.104	0.111		0.116	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Lead-214	0.232		0.117	0.119		0.177	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Potassium-40	3.51		0.864	0.933		0.708	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Radium-226	0.382		0.108	0.115	1.00	0.100	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Sodium-22	0.0103	U	0.0420	0.0420		0.0790	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Thorium-232	0.540		0.156	0.165		0.0865	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Zinc-65	-0.000370	U	0.121	0.121		0.225	pCi/g	08/18/21 14:03	09/11/21 18:57	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-004-081121

Lab Sample ID: 160-43079-4

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.00647	U	0.873	0.873	5.00	1.53	pCi/g	08/26/21 10:56	09/18/21 11:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	85.0		40 - 110					08/26/21 10:56	09/18/21 11:44	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-2.37	U	1.30	1.32	5.00	2.49	pCi/g	08/29/21 20:28	09/15/21 19:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.7		30 - 110					08/29/21 20:28	09/15/21 19:02	1

Client Sample ID: FSS-004-081121

Lab Sample ID: 160-43079-4

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 93.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.3		0.31	0.014	mg/Kg	☼	09/07/21 07:45	09/08/21 04:18	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	20	6.4	ug/Kg	☼	09/01/21 15:10	09/01/21 17:50	1

Client Sample ID: FSS-005-081121

Lab Sample ID: 160-43079-5

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0981	U	0.185	0.185	3.00	0.321	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	89.7		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	94.2		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0802	U	0.234	0.235	1.00	0.418	pCi/g	08/27/21 08:28	09/01/21 11:05	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-005-081121

Lab Sample ID: 160-43079-5

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	0.00406	U	0.0245	0.0245	1.00	0.0609	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.00609	U	0.0164	0.0164	1.00	0.0393	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-234	0.135		0.0738	0.0746	1.00	0.0698	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-235	-0.00289	U	0.00567	0.00568	1.00	0.0560	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.225		0.0913	0.0932	1.00	0.0574	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	71.2		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.986	U	0.935	0.941	5.00	1.53	pCi/g	09/09/21 09:41	09/10/21 18:50	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.192		0.140	0.142		0.185	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Americium-241	0.0676	U	0.169	0.169		0.290	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Bismuth-212	-0.582	U	0.960	0.962		1.65	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Bismuth-214	0.287		0.116	0.120		0.114	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Cesium-137	-0.0204	U	0.0626	0.0627		0.138	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Cobalt-60	-0.0507	U	0.106	0.106		0.120	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Europium-152	0.112	U	0.0810	0.0818		0.331	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Europium-154	0.0867	U	0.122	0.122		0.112	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Europium-155	0.0663	U	0.102	0.103		0.230	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Lead-212	0.217		0.0768	0.0816		0.0982	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Lead-214	0.279		0.0886	0.0931		0.104	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Potassium-40	3.89		1.02	1.09		0.875	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Radium-226	0.287		0.116	0.120	1.00	0.114	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Radium-228	0.192		0.140	0.142		0.185	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Sodium-22	-0.00182	U	0.0354	0.0354		0.0734	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Zinc-65	0.137	U	0.104	0.105		0.153	pCi/g	08/20/21 09:48	09/11/21 07:40	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	-1.44	U	1.90	1.90	5.00	3.41	pCi/g	08/26/21 10:56	09/18/21 12:50	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-005-081121

Lab Sample ID: 160-43079-5

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	35.1	Q	40 - 110	08/26/21 10:56	09/18/21 12:50	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.469	U	1.01	1.01	5.00	1.75	pCi/g	08/31/21 14:29	09/15/21 16:13	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110	08/31/21 14:29	09/15/21 16:13	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			08/19/21 16:11	1

Client Sample ID: FSS-005-081121

Lab Sample ID: 160-43079-5

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 98.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.6		0.40	0.018	mg/Kg	☼	09/07/21 07:45	09/08/21 04:22	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.7	ug/Kg	☼	09/01/21 15:10	09/01/21 17:52	1

Client Sample ID: FSS-006-081121

Lab Sample ID: 160-43079-6

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.139	U	0.237	0.237	1.00	0.411	pCi/g	08/27/21 08:28	09/01/21 11:28	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00471	U	0.0285	0.0285	1.00	0.0708	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	-0.00236	U	0.00462	0.00463	1.00	0.0457	pCi/g	08/29/21 18:19	09/09/21 13:00	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.9		30 - 110	08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0191	U	0.0389	0.0389	1.00	0.0775	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Uranium-238	0.155		0.0776	0.0787	1.00	0.0744	pCi/g	08/29/21 20:35	09/08/21 13:49	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-006-081121

Lab Sample ID: 160-43079-6

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	78.4		30 - 110	08/29/21 20:35	09/08/21 13:49	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.44	U	1.20	1.21	5.00	2.21	pCi/g	08/29/21 20:28	09/15/21 20:08	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.9		30 - 110	08/29/21 20:28	09/15/21 20:08	1

Client Sample ID: FSS-006-081121

Lab Sample ID: 160-43079-6

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 95.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.2		0.34	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 04:25	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/01/21 15:10	09/01/21 17:55	1

Client Sample ID: FSS-007-081121

Lab Sample ID: 160-43079-7

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0998	U	0.193	0.193	3.00	0.335	pCi/g	08/27/21 13:56	09/07/21 17:21	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	83.2		40 - 110	08/27/21 13:56	09/07/21 17:21	1
Y Carrier	96.1		40 - 110	08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0976	U	0.240	0.240	1.00	0.426	pCi/g	08/27/21 08:28	09/01/21 11:50	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00292	U	0.0262	0.0262	1.00	0.0831	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.00292	U	0.0250	0.0250	1.00	0.0724	pCi/g	08/29/21 18:19	09/09/21 13:00	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	63.3		30 - 110	08/29/21 18:19	09/09/21 13:00	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-007-081121

Lab Sample ID: 160-43079-7

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-235	0.00289	U	0.0354	0.0354	1.00	0.0910	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Uranium-238	0.165		0.0799	0.0810	1.00	0.0660	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.1		30 - 110					08/29/21 20:35	09/08/21 13:49	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.635	U	0.826	0.829	5.00	1.39	pCi/g	09/09/21 09:41	09/10/21 19:12	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.384		0.120	0.126		0.0725	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Americium-241	-0.0402	U	0.0751	0.0752		0.169	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Bismuth-212	0.000	U	0.404	0.404		1.17	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Bismuth-214	0.311		0.100	0.105		0.102	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Cesium-137	0.0179	U	0.0346	0.0346		0.0607	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Cobalt-60	0.0338	U	0.0177	0.0180		0.0709	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-152	0.102	U	0.212	0.212		0.318	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-154	0.0362	U	0.0360	0.0362		0.119	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-155	0.0649	U	0.223	0.223		0.381	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Lead-212	0.342		0.0707	0.0829		0.0765	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Lead-214	0.341		0.0793	0.0865		0.0771	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Potassium-40	5.24		0.942	1.08		0.625	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Radium-226	0.311		0.100	0.105	1.00	0.102	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Sodium-22	-0.0335	U	0.0478	0.0479		0.0816	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Thorium-232	0.384		0.120	0.126		0.0725	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Zinc-65	0.0547	U	0.117	0.117		0.205	pCi/g	08/18/21 14:03	09/11/21 18:57	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.150	U	0.862	0.862	5.00	1.49	pCi/g	08/26/21 10:56	09/18/21 13:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	86.1		40 - 110					08/26/21 10:56	09/18/21 13:56	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-2.69	U	1.72	1.74	5.00	3.23	pCi/g	08/29/21 20:28	09/15/21 21:15	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-007-081121

Lab Sample ID: 160-43079-7

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	63.3		30 - 110	08/29/21 20:28	09/15/21 21:15	1

Client Sample ID: FSS-007-081121

Lab Sample ID: 160-43079-7

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 90.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.9		0.32	0.014	mg/Kg	☼	09/07/21 07:45	09/08/21 04:29	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	17	U	21	6.9	ug/Kg	☼	09/01/21 15:10	09/01/21 17:57	1

Client Sample ID: FSS-008-081121

Lab Sample ID: 160-43079-8

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0228	U	0.205	0.205	3.00	0.376	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.4		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	94.2		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0474	U	0.220	0.220	1.00	0.418	pCi/g	08/27/21 08:28	09/01/21 12:13	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00309	U	0.00607	0.00607	1.00	0.0599	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	-0.00310	U	0.00607	0.00608	1.00	0.0600	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	54.7		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00673	U	0.00932	0.00934	1.00	0.0753	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.248		0.101	0.103	1.00	0.0324	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	70.4		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-008-081121

Lab Sample ID: 160-43079-8

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.245	U	0.823	0.823	5.00	1.42	pCi/g	09/09/21 09:41	09/10/21 19:35	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.305		0.101	0.105		0.0642	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Americium-241	-0.0549	U	0.124	0.124		0.211	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Bismuth-212	-0.0234	U	0.511	0.511		0.931	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Bismuth-214	0.238		0.0785	0.0821		0.0815	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Cesium-137	-0.0176	U	0.0508	0.0508		0.0890	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Cobalt-60	-0.0148	U	0.0545	0.0545		0.0627	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Europium-152	0.0687	U	0.110	0.110		0.306	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Europium-154	0.0292	U	0.0587	0.0588		0.0892	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Europium-155	-0.0315	U	0.202	0.202		0.347	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Lead-212	0.358		0.0646	0.0790		0.0630	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Lead-214	0.284		0.0963	0.101		0.0928	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Potassium-40	4.98		0.811	0.953		0.253	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Radium-226	0.238		0.0785	0.0821	1.00	0.0815	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Sodium-22	0.00548	U	0.0318	0.0318		0.0605	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Thorium-232	0.305		0.101	0.105		0.0642	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Zinc-65	0.000	U	0.0324	0.0324		0.218	pCi/g	08/18/21 14:03	09/11/21 18:58	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.110	U	0.876	0.876	5.00	1.53	pCi/g	08/26/21 10:56	09/18/21 16:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	84.9		40 - 110					08/26/21 10:56	09/18/21 16:08	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.34	U	1.99	1.99	5.00	3.56	pCi/g	08/29/21 20:28	09/15/21 22:21	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	54.7		30 - 110					08/29/21 20:28	09/15/21 22:21	1

Client Sample ID: FSS-008-081121

Lab Sample ID: 160-43079-8

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 95.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.9		0.36	0.016	mg/Kg	☼	09/07/21 07:45	09/08/21 04:32	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-008-081121

Lab Sample ID: 160-43079-8

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 95.3

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.4	ug/Kg	☼	09/01/21 15:10	09/01/21 18:00	1

Client Sample ID: FSS-009-081121

Lab Sample ID: 160-43079-9

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.174	U	0.214	0.215	3.00	0.362	pCi/g	08/27/21 13:56	09/07/21 17:21	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	72.3		40 - 110	08/27/21 13:56	09/07/21 17:21	1
Y Carrier	94.2		40 - 110	08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0938	U	0.231	0.232	1.00	0.409	pCi/g	08/27/21 08:28	09/01/21 12:36	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00195	U	0.0176	0.0176	1.00	0.0556	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00587	U	0.00664	0.00666	1.00	0.0484	pCi/g	08/31/21 13:44	09/10/21 13:25	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.1		30 - 110	08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-234	0.148		0.0688	0.0698	1.00	0.0569	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-235	0.0165	U	0.0266	0.0266	1.00	0.0457	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.0530		0.0426	0.0429	1.00	0.0506	pCi/g	08/31/21 14:27	09/10/21 13:45	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	87.2		30 - 110	08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.187	U	0.740	0.740	5.00	1.28	pCi/g	09/09/21 09:41	09/10/21 19:58	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-009-081121

Lab Sample ID: 160-43079-9

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.332		0.152	0.155		0.193	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Americium-241	0.0489	U	0.104	0.104		0.137	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Bismuth-212	-0.527	U	0.800	0.802		1.36	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Bismuth-214	0.373		0.112	0.118		0.107	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Cesium-137	0.00344	U	0.0602	0.0602		0.0751	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Cobalt-60	0.000	U	0.00850	0.00850		0.0319	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Europium-152	0.159		0.0971	0.0984		0.115	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Europium-154	0.0197	U	0.0286	0.0287		0.110	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Europium-155	0.0715	U	0.254	0.254		0.434	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Lead-212	0.265		0.0658	0.0739		0.0719	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Lead-214	0.414		0.0876	0.0973		0.0849	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Potassium-40	3.62		0.998	1.06		0.887	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Radium-226	0.373		0.112	0.118	1.00	0.107	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Radium-228	0.332		0.152	0.155		0.193	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Sodium-22	0.0335		0.0232	0.0234		0.0308	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Zinc-65	0.00506	U	0.116	0.116		0.214	pCi/g	08/20/21 09:48	09/11/21 07:03	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.0723	U	0.903	0.903	5.00	1.58	pCi/g	08/26/21 10:56	09/18/21 17:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	79.9		40 - 110					08/26/21 10:56	09/18/21 17:15	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.0957	U	1.11	1.11	5.00	1.96	pCi/g	08/31/21 14:29	09/15/21 17:19	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.1		30 - 110					08/31/21 14:29	09/15/21 17:19	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			08/19/21 16:11	1

Client Sample ID: FSS-009-081121

Lab Sample ID: 160-43079-9

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 98.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7		0.38	0.017	mg/Kg	☼	09/07/21 07:45	09/08/21 04:36	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-009-081121

Lab Sample ID: 160-43079-9

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 98.6

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/01/21 15:10	09/01/21 18:02	1

Client Sample ID: FSS-010-081121

Lab Sample ID: 160-43079-10

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0605	U	0.191	0.191	3.00	0.338	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.9		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	95.0		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.146	U	0.241	0.242	1.00	0.419	pCi/g	08/27/21 08:28	09/01/21 12:58	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00238	U	0.00466	0.00466	1.00	0.0460	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	0.000	U	0.00466	0.00466	1.00	0.0285	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.8		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0236	U	0.0327	0.0328	1.00	0.0354	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.421		0.125	0.129	1.00	0.0530	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	83.4		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0944	U	0.852	0.852	5.00	1.51	pCi/g	09/09/21 09:41	09/10/21 20:20	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-010-081121

Lab Sample ID: 160-43079-10

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.886		0.175	0.196		0.158	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Americium-241	0.0770	U	0.202	0.202		0.346	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Bismuth-212	0.461	U	0.851	0.852		1.47	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Bismuth-214	0.581		0.145	0.157		0.117	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Cesium-137	0.000928	U	0.0576	0.0576		0.107	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Cobalt-60	0.0123	U	0.0394	0.0395		0.0737	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Europium-152	0.231		0.115	0.118		0.178	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Europium-154	0.0479	U	0.0600	0.0602		0.164	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Europium-155	0.0919	U	0.269	0.269		0.460	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Lead-212	0.738		0.132	0.162		0.153	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Lead-214	0.749		0.152	0.170		0.133	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Potassium-40	5.26		1.14	1.25		0.849	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Radium-226	0.581		0.145	0.157	1.00	0.117	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Sodium-22	0.000	U	0.0104	0.0104		0.0390	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Thorium-232	0.886		0.175	0.196		0.158	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Zinc-65	-0.00525	U	0.138	0.138		0.328	pCi/g	08/18/21 14:03	09/11/21 19:42	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.163	U	0.960	0.960	5.00	1.67	pCi/g	08/26/21 10:56	09/18/21 18:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	84.9		40 - 110					08/26/21 10:56	09/18/21 18:21	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.184	U	1.81	1.81	5.00	3.24	pCi/g	08/29/21 20:28	09/15/21 23:27	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.8		30 - 110					08/29/21 20:28	09/15/21 23:27	1

Client Sample ID: FSS-010-081121

Lab Sample ID: 160-43079-10

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 94.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.2		0.36	0.017	mg/Kg	☼	09/07/21 07:45	09/08/21 04:39	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	6.7	J	18	6.0	ug/Kg	☼	09/01/21 15:10	09/01/21 18:05	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-011-081121

Lab Sample ID: 160-43079-11

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.218	U	0.197	0.198	3.00	0.324	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.7		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	92.3		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0852	U	0.218	0.218	1.00	0.422	pCi/g	08/27/21 08:28	09/01/21 13:21	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00729	U	0.00825	0.00828	1.00	0.0602	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00487	U	0.00675	0.00676	1.00	0.0545	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	71.2		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.000	U	0.00583	0.00583	1.00	0.0357	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.327		0.111	0.114	1.00	0.0590	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	65.7		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.279	U	0.917	0.918	5.00	1.58	pCi/g	09/09/21 09:41	09/10/21 20:43	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.43		0.207	0.252		0.110	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Americium-241	-0.0939	U	0.0722	0.0728		0.244	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Bismuth-212	0.391	U	0.793	0.794		1.37	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Bismuth-214	0.843		0.141	0.165		0.104	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Cesium-137	-0.0134	U	0.0794	0.0794		0.139	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Cobalt-60	0.0277	U	0.0458	0.0459		0.0736	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Europium-152	0.137	U	0.271	0.271		0.423	pCi/g	08/18/21 14:03	09/11/21 19:42	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-011-081121

Lab Sample ID: 160-43079-11

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0751	U	0.121	0.121		0.131	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Europium-155	-0.000927	U	0.0851	0.0851		0.597	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Lead-212	1.30		0.126	0.207		0.0970	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Lead-214	0.836		0.120	0.147		0.126	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Potassium-40	4.56		0.905	1.01		0.649	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Radium-226	0.843		0.141	0.165	1.00	0.104	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Sodium-22	-0.0386	U	0.0514	0.0515		0.0869	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Thorium-232	1.43		0.207	0.252		0.110	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Zinc-65	0.000	U	0.0329	0.0329		0.256	pCi/g	08/18/21 14:03	09/11/21 19:42	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.0332	U	0.853	0.853	5.00	1.49	pCi/g	08/26/21 10:56	09/18/21 19:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	86.1		40 - 110					08/26/21 10:56	09/18/21 19:27	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.86	U	1.61	1.62	5.00	3.06	pCi/g	08/29/21 20:28	09/16/21 00:33	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	71.2		30 - 110					08/29/21 20:28	09/16/21 00:33	1

Client Sample ID: FSS-011-081121

Lab Sample ID: 160-43079-11

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 93.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.6		0.33	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 04:43	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.1	ug/Kg	☼	09/01/21 15:10	09/01/21 18:07	1

Client Sample ID: FSS-012-081121

Lab Sample ID: 160-43079-12

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0588	U	0.186	0.186	3.00	0.330	pCi/g	08/27/21 13:56	09/07/21 17:21	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-012-081121

Lab Sample ID: 160-43079-12

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	79.5		40 - 110	08/27/21 13:56	09/07/21 17:21	1
Y Carrier	93.5		40 - 110	08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0376	U	0.228	0.228	1.00	0.415	pCi/g	08/27/21 08:28	09/01/21 13:43	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00699	U	0.0188	0.0188	1.00	0.0451	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00233	U	0.00457	0.00458	1.00	0.0452	pCi/g	08/29/21 18:19	09/09/21 21:38	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	73.8		30 - 110	08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0418	U	0.0475	0.0476	1.00	0.0668	pCi/g	08/29/21 20:35	09/08/21 14:04	1
Uranium-238	0.684		0.159	0.169	1.00	0.0536	pCi/g	08/29/21 20:35	09/08/21 14:04	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	71.5		30 - 110	08/29/21 20:35	09/08/21 14:04	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.405	U	0.855	0.856	5.00	1.47	pCi/g	09/09/21 09:41	09/10/21 21:05	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.14		0.168	0.203		0.259	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Americium-241	-0.0891	U	0.185	0.185		0.314	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Bismuth-212	1.26		0.601	0.615		0.569	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Bismuth-214	0.744		0.130	0.150		0.0902	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Cesium-137	0.0315	U	0.0648	0.0649		0.112	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Cobalt-60	-0.000303	U	0.000472	0.000473		0.0787	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Europium-152	0.0604	U	0.107	0.107		0.164	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Europium-154	0.0153	U	0.0263	0.0264		0.123	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Europium-155	0.000	U	0.111	0.111		0.536	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Lead-212	1.09		0.109	0.176		0.0863	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Lead-214	0.673		0.0989	0.120		0.100	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Potassium-40	6.05		0.918	1.10		0.267	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Radium-226	0.744		0.130	0.150	1.00	0.0902	pCi/g	08/18/21 14:03	09/11/21 19:41	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-012-081121

Lab Sample ID: 160-43079-12

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Sodium-22	-0.0116	U	0.0480	0.0481		0.0874	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Thorium-232	1.14		0.168	0.203		0.259	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Zinc-65	0.000	U	0.0296	0.0296		0.267	pCi/g	08/18/21 14:03	09/11/21 19:41	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.0926	U	1.08	1.08	5.00	1.90	pCi/g	08/26/21 10:56	09/18/21 20:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	67.8		40 - 110					08/26/21 10:56	09/18/21 20:33	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.13	U	1.50	1.50	5.00	2.71	pCi/g	08/29/21 20:28	09/16/21 01:40	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	73.8		30 - 110					08/29/21 20:28	09/16/21 01:40	1

Client Sample ID: FSS-012-081121

Lab Sample ID: 160-43079-12

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 93.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	4.3		0.33	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 04:53	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/01/21 15:10	09/01/21 18:10	1

Client Sample ID: FSS-013-081221

Lab Sample ID: 160-43079-13

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0888	U	0.204	0.204	3.00	0.357	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	74.7		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	93.8		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-013-081221

Lab Sample ID: 160-43079-13

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0547	U	0.225	0.225	1.00	0.405	pCi/g	08/27/21 08:28	09/01/21 14:06	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00219	U	0.00429	0.00430	1.00	0.0424	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00219	U	0.00430	0.00430	1.00	0.0424	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	78.0		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-234	0.597		0.146	0.154	1.00	0.0518	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-235	0.0576		0.0505	0.0507	1.00	0.0345	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.573		0.143	0.150	1.00	0.0277	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	71.9		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.392	U	0.854	0.855	5.00	1.46	pCi/g	09/09/21 09:41	09/10/21 21:28	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.138	U	0.120	0.120		0.142	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Americium-241	-0.0499	U	0.125	0.125		0.215	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Bismuth-212	-0.482	U	0.784	0.786		1.34	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Bismuth-214	0.355		0.0968	0.103		0.0905	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Cesium-137	0.150		0.0448	0.0473		0.0304	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Cobalt-60	0.00377	U	0.0105	0.0105		0.0777	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Europium-152	0.00949	U	0.0265	0.0266		0.144	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Europium-154	0.0664	U	0.0465	0.0470		0.0994	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Europium-155	-0.000494	U	0.00122	0.00122		0.357	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Lead-212	0.144		0.0444	0.0480		0.0439	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Lead-214	0.372		0.0832	0.0914		0.113	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Potassium-40	5.02		0.907	1.04		0.314	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Radium-226	0.355		0.0968	0.103	1.00	0.0905	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Radium-228	0.138	U	0.120	0.120		0.142	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Sodium-22	0.00543	U	0.0284	0.0284		0.0562	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Zinc-65	-0.109	U	0.165	0.165		0.280	pCi/g	08/20/21 09:48	09/11/21 07:05	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-013-081221

Lab Sample ID: 160-43079-13

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.404	U	0.786	0.787	5.00	1.35	pCi/g	08/26/21 10:56	09/18/21 21:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	92.6		40 - 110					08/26/21 10:56	09/18/21 21:40	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.167	U	1.32	1.32	5.00	2.37	pCi/g	08/31/21 14:29	09/15/21 18:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	78.0		30 - 110					08/31/21 14:29	09/15/21 18:25	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			08/19/21 16:11	1

Client Sample ID: FSS-013-081221

Lab Sample ID: 160-43079-13

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 98.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.4		0.41	0.018	mg/Kg	☼	09/07/21 07:45	09/08/21 04:57	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	10	J	19	6.0	ug/Kg	☼	09/01/21 15:10	09/01/21 18:13	1

Client Sample ID: FSS-014-081221

Lab Sample ID: 160-43079-14

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.138	U	0.205	0.206	3.00	0.352	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.0		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	93.1		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.211	U	0.246	0.246	1.00	0.414	pCi/g	08/27/21 08:28	09/01/21 14:29	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-014-081221

Lab Sample ID: 160-43079-14

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	-0.00946	U	0.00927	0.00930	1.00	0.0632	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00237	U	0.00464	0.00464	1.00	0.0458	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	75.4		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-235	-0.00281	U	0.00551	0.00552	1.00	0.0545	pCi/g	08/29/21 20:35	09/08/21 14:04	1
Uranium-238	0.142		0.0736	0.0745	1.00	0.0642	pCi/g	08/29/21 20:35	09/08/21 14:04	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Uranium-232</i>	90.9		30 - 110					08/29/21 20:35	09/08/21 14:04	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.0466	U	0.766	0.766	5.00	1.35	pCi/g	09/09/21 09:41	09/10/21 21:51	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.140	U	0.233	0.233		0.385	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Americium-241	-0.0588	U	0.180	0.180		0.308	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Bismuth-212	-0.535	U	0.839	0.840		1.43	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Bismuth-214	0.340		0.121	0.126		0.109	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Cesium-137	-0.000289	U	0.0624	0.0624		0.0470	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Cobalt-60	0.0253	U	0.0150	0.0152		0.0354	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Europium-152	0.143	U	0.195	0.196		0.318	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Europium-154	0.119		0.0624	0.0636		0.113	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Europium-155	-0.0249	U	0.167	0.167		0.418	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Lead-212	0.277		0.0870	0.0938		0.117	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Lead-214	0.334		0.0959	0.102		0.0767	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Potassium-40	3.50		0.889	0.956		0.745	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Radium-226	0.340		0.121	0.126	1.00	0.109	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Sodium-22	-0.0658	U	0.0747	0.0750		0.124	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Thorium-232	0.140	U	0.233	0.233		0.385	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Zinc-65	-0.00460	U	0.121	0.121		0.252	pCi/g	08/18/21 14:03	09/11/21 20:20	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.463	U	0.865	0.867	5.00	1.49	pCi/g	08/26/21 10:56	09/18/21 22:46	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-014-081221

Lab Sample ID: 160-43079-14

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	85.9		40 - 110	08/26/21 10:56	09/18/21 22:46	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.19	U	1.48	1.49	5.00	2.67	pCi/g	08/29/21 20:28	09/16/21 02:46	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.4		30 - 110	08/29/21 20:28	09/16/21 02:46	1

Client Sample ID: FSS-014-081221

Lab Sample ID: 160-43079-14

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 95.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.6		0.35	0.016	mg/Kg	☼	09/07/21 07:45	09/08/21 05:00	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/01/21 15:10	09/01/21 18:20	1

Client Sample ID: FSS-015-081221

Lab Sample ID: 160-43079-15

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.101	U	0.175	0.175	3.00	0.303	pCi/g	08/27/21 13:56	09/07/21 17:24	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	84.0		40 - 110	08/27/21 13:56	09/07/21 17:24	1
Y Carrier	95.7		40 - 110	08/27/21 13:56	09/07/21 17:24	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0524	U	0.216	0.216	1.00	0.409	pCi/g	08/27/21 08:28	09/01/21 14:51	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00433	U	0.0180	0.0180	1.00	0.0485	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	0.00650	U	0.0258	0.0258	1.00	0.0616	pCi/g	08/29/21 18:19	09/09/21 21:38	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.2		30 - 110	08/29/21 18:19	09/09/21 21:38	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-015-081221

Lab Sample ID: 160-43079-15

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00257	U	0.00505	0.00505	1.00	0.0498	pCi/g	08/29/21 20:35	09/08/21 14:04	1
Uranium-238	0.147		0.0711	0.0721	1.00	0.0587	pCi/g	08/29/21 20:35	09/08/21 14:04	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	91.5		30 - 110					08/29/21 20:35	09/08/21 14:04	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.553	U	0.896	0.898	5.00	1.52	pCi/g	09/09/21 09:41	09/10/21 22:13	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.462		0.114	0.123		0.0691	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Americium-241	-0.0265	U	0.114	0.114		0.197	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Bismuth-212	0.242	U	0.400	0.401		0.692	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Bismuth-214	0.281		0.0910	0.0954		0.0909	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Cesium-137	-0.00473	U	0.0415	0.0415		0.0756	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Cobalt-60	0.0257	U	0.0190	0.0192		0.0270	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Europium-152	0.0414	U	0.0552	0.0553		0.0932	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Europium-154	0.0764	U	0.0529	0.0535		0.0795	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Europium-155	0.0424	U	0.108	0.108		0.327	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Lead-212	0.359		0.0618	0.0768		0.0460	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Lead-214	0.253		0.0690	0.0737		0.0642	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Potassium-40	3.37		0.692	0.770		0.273	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Radium-226	0.281		0.0910	0.0954	1.00	0.0909	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Sodium-22	0.000	U	0.0139	0.0139		0.0330	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Thorium-232	0.462		0.114	0.123		0.0691	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Zinc-65	-0.000974	U	0.0960	0.0960		0.178	pCi/g	08/18/21 14:03	09/11/21 20:23	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.0979	U	0.945	0.945	5.00	1.68	pCi/g	08/26/21 10:56	09/18/21 23:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	76.8		40 - 110					08/26/21 10:56	09/18/21 23:52	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.971	U	1.46	1.46	5.00	2.63	pCi/g	08/29/21 20:28	09/16/21 03:52	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-015-081221

Lab Sample ID: 160-43079-15

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.2		30 - 110	08/29/21 20:28	09/16/21 03:52	1

Client Sample ID: FSS-015-081221

Lab Sample ID: 160-43079-15

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 96.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.5		0.38	0.017	mg/Kg	☼	09/07/21 07:45	09/08/21 05:04	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.8	ug/Kg	☼	09/01/21 15:10	09/01/21 18:23	1

Client Sample ID: FSS-016-081221

Lab Sample ID: 160-43079-16

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0820	U	0.177	0.177	3.00	0.310	pCi/g	08/27/21 13:56	09/07/21 17:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.9		40 - 110					08/27/21 13:56	09/07/21 17:24	1
Y Carrier	93.8		40 - 110					08/27/21 13:56	09/07/21 17:24	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.204	U	0.241	0.242	1.00	0.404	pCi/g	08/27/21 08:28	09/01/21 15:14	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00478	U	0.0303	0.0303	1.00	0.0842	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00717	U	0.00812	0.00814	1.00	0.0591	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.8		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.000	U	0.00552	0.00552	1.00	0.0338	pCi/g	08/29/21 20:35	09/09/21 12:16	1
Uranium-238	0.108		0.0613	0.0619	1.00	0.0271	pCi/g	08/29/21 20:35	09/09/21 12:16	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	70.9		30 - 110					08/29/21 20:35	09/09/21 12:16	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-016-081221

Lab Sample ID: 160-43079-16

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.587	U	0.856	0.859	5.00	1.45	pCi/g	09/09/21 09:41	09/10/21 22:36	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.425		0.124	0.132		0.126	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Americium-241	0.0260	U	0.122	0.122		0.212	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Bismuth-212	-0.0207	U	0.366	0.366		0.693	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Bismuth-214	0.245		0.0903	0.0936		0.0980	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Cesium-137	-0.0183	U	0.0591	0.0591		0.104	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Cobalt-60	0.000	U	0.0181	0.0181		0.0278	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Europium-152	-0.0522	U	0.0928	0.0930		0.158	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Europium-154	0.0507	U	0.0888	0.0890		0.101	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Europium-155	0.0257	U	0.139	0.139		0.240	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Lead-212	0.360		0.0700	0.0836		0.0722	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Lead-214	0.269		0.0729	0.0779		0.0661	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Potassium-40	4.29		0.851	0.954		0.611	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Radium-226	0.245		0.0903	0.0936	1.00	0.0980	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Sodium-22	-0.0461	U	0.0543	0.0545		0.0905	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Thorium-232	0.425		0.124	0.132		0.126	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Zinc-65	-0.0171	U	0.138	0.138		0.247	pCi/g	08/18/21 14:03	09/13/21 15:00	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.0726	U	1.03	1.03	5.00	1.82	pCi/g	08/26/21 10:56	09/19/21 01:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	79.9		40 - 110					08/26/21 10:56	09/19/21 01:01	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.85	U	1.52	1.53	5.00	2.81	pCi/g	08/29/21 20:28	09/16/21 04:59	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.8		30 - 110					08/29/21 20:28	09/16/21 04:59	1

Client Sample ID: FSS-016-081221

Lab Sample ID: 160-43079-16

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 96.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.96		0.40	0.018	mg/Kg	☼	09/07/21 07:45	09/08/21 05:07	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-016-081221

Lab Sample ID: 160-43079-16

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 96.8

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.8	ug/Kg	☼	09/01/21 15:10	09/01/21 18:25	1

Laboratory Report

Eurofins TestAmerica, St. Louis
13715 Rider Trail North
Earth City, MO 63045
United States
Attention: Ivan H Vania
Telephone: 314-298-8566

Report Date 09/21/2021
Sample Receipt Date 08/25/2021
RJ Lee Group Job No. AOH1063230-0
Authorization/P.O. No.
Client Job No./Name 160-43079-1

Analysis: Asbestos in Bulk Samples by Point Count

Method: NYELAP Method 198.6 NOB
NYELAP Method 198.1

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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546418.HPL	FSS-001-081121 (160-43079-1)	Yes	1	ND		100.00	Q, AM, F, OP, MI, M	EAF-09/21/2021
Description:		Grey Residue 4 Slides Scanned. Inconclusive- No Asbestos Detected. NY ELAP Method 198.6.						
Weight Loss: 12.05%								
10546419.HPL	FSS-002-081121 (160-43079-2)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								

Client Job No./Name: 160-43079-1

RJ Lee Group Job No: AOH1063230-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546420.HPL	FSS-003-081121 (160-43079-3)	Yes	1	ND		100.00	Q, CA, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546421.HPL	FSS-004-081121 (160-43079-4)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546422.HPL	FSS-005-081121 (160-43079-5)	Yes	1	ND		100.00	Q, AM, F, OP, M	EMF-09/21/2021
Description:		Grey Residue 4 Slides Scanned. Inconclusive- No Asbestos Detected. NY ELAP Method 198.6.						
Weight Loss: 72.28%								
10546423.HPL	FSS-006-081121 (160-43079-6)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								

Client Job No./Name: 160-43079-1

RJ Lee Group Job No: AOH1063230-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546424.HPL	FSS-007-081121 (160-43079-7)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	AC-09/16/2021
Description:		Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546425.HPL	FSS-008-081121 (160-43079-8)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/16/2021
Description:		Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546426.HPL	FSS-009-081121 (160-43079-9)	Yes	1	ND		100.00	Q, AM, F, OP, M	EAF-09/21/2021
Description:		Grey Residue 4 Slides Scanned. Inclusive- No Asbestos Detected. NY ELAP Method 198.6.						
Weight Loss: 0.0%								
10546426.HPL	FSS-009-081121 (160-43079-9)	Yes	1	ND		100.00	Q, AM, F, OP, M	EAF-09/21/2021
Description:		Grey Residue 4 Slides Scanned. Inconclusive- No Asbestos Detected. NY ELAP Method 198.6.						
Weight Loss: 69.76%								

Client Job No./Name: 160-43079-1

RJ Lee Group Job No: AOH1063230-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546427.HPL	FSS-010-081121 (160-43079-10)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/16/2021
Description:		Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546428.HPL	FSS-011-081121 (160-43079-11)	Yes	1	ND		100.00	Q, CA, CL, F, OP, M	AC-09/16/2021
Description:		Yellow Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546429.HPL	FSS-012-081121 (160-43079-12)	Yes	1	ND		100.00	Q, CL, AM, CA, F, OP, MI, M	AC-09/16/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546430.HPL	FSS-013-081121 (160-43079-13)	Yes	1	ND		100.00	Q, AM, F, OP, M,	EAF-09/21/2021
Description:		Grey Powder 4 Slides Scanned. Inconclusive- No Asbestos Detected. NY ELAP Method 198.6.						
Weight Loss: 56.19%								

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Client Job No./Name: 160-43079-1

RJ Lee Group Job No: AOH1063230-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546431.HPL	FSS-014-081121 (160-43079-14)	Yes	1	ND		100.00	Q, CL, F, OP, MI, M	AC-09/16/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546432.HPL	FSS-015-081121 (160-43079-15)	Yes	1	ND		100.00	Q, CL, AM, F, OP, MI, M	AC-09/16/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546433.HPL	FSS-016-081121 (160-43079-16)	Yes	1	ND		100.00	Q, CA, CL, F, OP, M	AC-09/16/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								

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Client Job No./Name: 160-43079-1

RJ Lee Group Job No: AOH1063230-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
--------------------	----------------------	-------------	-------------	----------------------	------------------------	--------------------------	-----------------	-------------------------



Authorized Signature: _____

Alexandra Cheek, Microscopist

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ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- | | | |
|-----------------|---------------------|-----------------|
| AM = Amphibole | HY = Hydromagnesite | Q = Quartz |
| B = Binder | M = Miscellaneous | T = Tar |
| CA = Carbonates | MI = Mica | V = Vermiculite |
| CL = Clay | OP = Opaque | |
| F = Feldspar | OR = Organic | |
| G = Gypsum | P = Perlite | |

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43113-1	FSS-044-081721	Solid	08/17/21 08:30	08/18/21 13:02
160-43113-2	FSS-045-081721	Solid	08/17/21 08:30	08/18/21 13:02
160-43113-3	FSS-046-081721	Solid	08/17/21 08:30	08/18/21 13:02
160-43113-4	FSS-047-081721	Solid	08/17/21 08:45	08/18/21 13:02
160-43113-5	FSS-048-081721	Solid	08/17/21 08:45	08/18/21 13:02
160-43113-6	FSS-049-081721	Solid	08/17/21 08:45	08/18/21 13:02
160-43113-7	FSS-050-081721	Solid	08/17/21 10:30	08/18/21 13:02
160-43113-8	FSS-051-081721	Solid	08/17/21 10:30	08/18/21 13:02
160-43113-9	FSS-052-081721	Solid	08/17/21 10:30	08/18/21 13:02
160-43113-10	FSS-053-081721	Solid	08/17/21 10:00	08/18/21 13:02
160-43113-11	FSS-054-081721	Solid	08/17/21 10:00	08/18/21 13:02
160-43113-12	FSS-055-081721	Solid	08/17/21 10:00	08/18/21 13:02
160-43113-13	FSS-056-081721	Solid	08/17/21 08:00	08/18/21 13:02
160-43113-14	FSS-256-081721	Solid	08/17/21 08:00	08/18/21 13:02
160-43113-15	FSS-057-081721	Solid	08/17/21 08:00	08/18/21 13:02
160-43113-16	FSS-257-081721	Solid	08/17/21 08:00	08/18/21 13:02
160-43113-17	FSS-058-081721	Solid	08/17/21 08:00	08/18/21 13:02
160-43113-18	FSS-258-081721	Solid	08/17/21 08:00	08/18/21 13:02

Eurofins TestAmerica, St. Louis
 13715 Rider Trail North
 Earth City, MO 63045-1205
 phone 314.298.8566 fax 314.298.8757

Chain of Custody Record



160-43113 Chain of Custody

Client Contact FPM Address 181 Kenwood Avenue Oneida, NY 13421 (315) 336-7721 ext. 218 Phone Fax (315) 336-7722 FAX Project Name: BNL 705 Stack Demo Site: BNL P O # 1085-20-01-01		Project Manager: Dan Ours Email: d.ours@pm-remediations.com Tel/Fax: (315) 336-7721 ext. 218 <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below 30 Days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: Doug Beard Date: 08-17-21 Lab Contact: Ivan Vania Carrier: Fed Ex COC No.: 1 of 2 COCs	
Sample Identification FSS-044-081721 FSS-045-081721 FSS-046-081721 FSS-047-081721 FSS-048-081721 FSS-049-081721 FSS-050-081721 FSS-051-081721 FSS-052-081721 FSS-053-081721 FSS-054-081721 FSS-055-081721		Sample Type (C=Comp, G=Grab) C S 3 C S 3 C S 3 C S 3 C S 3 C S 3 C S 3 C S 3 C S 3 C S 3 C S 3		Matrix S	
Sample Date 17-Aug 17-Aug 17-Aug 17-Aug 17-Aug 17-Aug 17-Aug 17-Aug 17-Aug 17-Aug 17-Aug 17-Aug		Sample Time 8:30 8:30 8:30 8:45 8:45 8:45 10:30 10:30 10:30 10:00 10:00 10:00		Filtered Sample (Y/N) N	
Perform MS/MSD (Y/N) N		Gamma Spec: Ra-226+detcts N		Strontium-90 (GFPC) N	
Asbestos - EPA600 R-93 N		Lead (ICP/MS) - 6020B N		Mercury - EPA 7470A N	
Ni-63 N		Tritium N		C-14 N	
Alpha Spec Pu 238, 239, 240 N		Alpha Spec U 234, 235, 238 N		Pu 241 by LSC N	
Sample Specific Notes: SU 7B - SS02 0"-6" SU 7B - SS02 6"-12" SU 7B - SS02 18"-24" SU 7B - SS03 0"-6" SU 7B - SS03 6"-12" SU 7B - SS03 18"-24" SU 7B - SS04 0"-6" SU 7B - SS04 6"-12" SU 7B - SS04 18"-24" SU 7B - SS05 0"-6" SU 7B - SS05 6"-12" SU 7B - SS05 18"-24"		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months	
Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.		Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu154, Eu155		Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu154, Eu155	
Relinquished by: Douglas Beard Date/Time: 8-17-21/17:00 Company: Cabrera Services, Inc.		Relinquished by: <i>NS</i> Date/Time: 8-17-21/17:00 Company: Cabrera Services, Inc.		Relinquished by: <i>NS</i> Date/Time: 8-17-21/17:00 Company: Cabrera Services, Inc.	
Relinquished by: <i>FED EX</i> Date/Time: 8-17-21/17:00 Company: FED EX		Relinquished by: <i>Michael Remington</i> Date/Time: 8-18-2021/01:01 Company: Michael Remington		Relinquished by: <i>ETA SL</i> Date/Time: 8-18-2021/01:01 Company: ETA SL	

Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Client Contact
 FPM
 Address 181 Kenwood Avenue
 Oneida, NY 13421
 (315) 336-7721 ext. 218 Phone
 Fax (315) 336-7722 FAX
 Project Name: BNL 705 Stack Demo
 Site: BNL
 P O # 1085-20-01-01

Project Manager: Dan Ours
 Email: d.ours@fpm-remediations.com
 Tel/Fax: (315) 336-7721 ext. 218
 CALENDAR DAYS WORKING DAYS
 TAT: if different from Below 30 Days
 2 weeks
 1 week
 2 days
 1 day

Site Contact: Doug Beard Date: 08-17-21
Lab Contact: Ivan Vania Carrier: Fed Ex

Analysis Turnaround Time
 Filtered Sample (Y/N) Perform MS/MSD (Y/N) Gamma Spec: Ra-226+detects Strontium-90 (GFC) Asbestos - EPA600 R-93 Lead (ICP/MS) - 6020B Mercury - EPA 7470A Ni-63 Tritium C-14 Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sample Specific Notes:
FSS-053-081721 ms/msd	17-Aug	10:00	C	S	1	SU 7B - SS05 0"-6"
FSS-054-081721 ms/msd	17-Aug	10:00	C	S	1	SU 7B - SS05 6"-12"
FSS-055-081721 ms/msd	17-Aug	10:00	C	S	1	SU 7B - SS05 18"-24"
FSS-056-081721	17-Aug	8:00	C	S	3	SU 7B - SS06 0"-6"
FSS-256-081721	17-Aug	8:00	C	S	3	SU 7B - SS06 0"-6"
FSS-057-081721	17-Aug	8:00	C	S	3	SU 7B - SS06 6"-12"
FSS-257-081721	17-Aug	8:00	C	S	3	SU 7B - SS06 6"-12"
FSS-058-081721	17-Aug	8:00	C	S	3	SU 7B - SS06 18"-24"
FSS-258-081721	17-Aug	8:00	C	S	3	SU 7B - SS06 18"-24"

Preservation Used: 1=Ice, 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6=Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zr95, Th 232, Eu152, Eu154, Eu155

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return to Client Disposal by Lab Archive for _____ Months

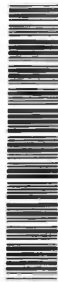
Custody Seal No.: _____
 Relinquished by: Douglas Beard
 Relinquished by: **FED EX**
 Relinquished by: _____

Received in Laboratory by: _____
 Received by: **FED EX**
 Received by: **Michelle Kervinmya**
 Date/Time: 8-17-21 09:01
 Date/Time: _____
 Date/Time: _____

Company: Cabrera Services, Inc.
Company: **FED EX**
Company: _____

Therm ID No.: _____
Date/Time: _____

Chain of Custody Record



Client Information (Sub Contract Lab)
 Client Contact: Vania, Ivan H
 Shipping/Receiving: Ivan.Vania@Eurolinset.com
 Company: TestAmerica Laboratories, Inc.
 Address: 4955 Yarrow Street,
 City: Arvada
 State, Zip: CO, 80002
 Phone: 303-736-0100(Tel) 303-431-7171(Fax)
 Email:
 Project Name: BNL Decommissioning Project
 Site:

Due Date Requested: 9/15/2021
TAT Requested (days):
PO #:
WO #:
Project #: 16009147
SSOW#:

Sample Identification - Client ID (Lab ID)

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=solid, O=wash, BI=Issue, A=As)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020B DDD/5/3050B (MOD) ICPMS Metals Pb Only	7471B DDD/5/7471B Prep Mercury	Moisture	Total Number of Containers	Special Instructions/Note:
FSS-044-081721 (160-43113-1)	8/17/21	08:30 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-045-081721 (160-43113-2)	8/17/21	08:30 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-046-081721 (160-43113-3)	8/17/21	08:30 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-047-081721 (160-43113-4)	8/17/21	08:45 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-048-081721 (160-43113-5)	8/17/21	08:45 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-049-081721 (160-43113-6)	8/17/21	08:45 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-050-081721 (160-43113-7)	8/17/21	10:30 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-051-081721 (160-43113-8)	8/17/21	10:30 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-052-081721 (160-43113-9)	8/17/21	10:30 Eastern	Solid	Solid	X	X	X	X	X	1	

Preservation Codes:
 A - HCL
 B - NaOH
 C - Zn Acetate
 D - Nitric Acid
 E - NaHSO4
 F - MeOH
 G - Amchlor
 H - Ascorbic Acid
 I - Ice
 J - DI Water
 K - EDTA
 L - EDA
 Other:
 M - Hexane
 N - None
 O - AsNaO2
 P - Na2O4S
 Q - Na2SO3
 R - Na2S2O3
 S - H2SO4
 T - TSP Dodecahydrate
 U - Acetone
 V - MCAA
 W - pH 4-5
 Z - other (specify)

Analysis Requested

Special Instructions/Note:

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For Months

Possible Hazard Identification
 Level 1 radioactive

Deliverable Requested: I, II, III, IV, Other (specify)
 Primary Deliverable Rank: 2

Empty Kit Relinquished by:
 Date:
 Time:

Relinquished by:
 Date/Time: 8/19/21 17:30
 Company: STA Inc
 Received by: [Signature]
 Date/Time:
 Company:
 Relinquished by:
 Date/Time:
 Company:

Custody Seals Intact:
 Δ Yes Δ No
 Custody Seal No.:
 Cooler Temperature(s) °C and Other Remarks:
 1. 2 IR2111.0

Received by:
 Date/Time: 08/26/2021 0935
 Company: ETADEN
 Received by:
 Date/Time:
 Company:
 Received by:
 Date/Time:
 Company:

Method of Shipment:
 Date/Time:
 Date/Time:
 Date/Time:

Method of Shipment:

13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8566 Fax: 314-298-8757

Chain of Custody Record



Environment Testing
 America

Client Information (Sub Contract Lab) Shipping/Receiving TestAmerica Laboratories, Inc. Address: 4955 Yarrow Street, City: Anvada State, Zip: CO, 80002 Phone: 303-736-0100(Tel) 303-431-7171(Fax) Email:		Sample: Lab PM: Vania, Ivan H Phone: E-Mail: Ivan.Vania@Eurofinset.com State of Origin: New York		Carrier Tracking No(s): COC No: 160-217816.2 Page: Page 2 of 3 Job #: 160-43113-1								
Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York												
Due Date Requested: 9/15/2021 TAT Requested (days): PO #: WO #: Project #: 16009147 SSO#:												
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solids, O=oil/sol, BT=base, A=alk)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	60208_PDD5/30508 (MD) ICPMS Metals Pb Only	74718_PDD5/74718_Prep Mercury	Moisture	Analysis Requested	Total Number of Containers	Special Instructions/Note:
FSS-053-081721 (160-43113-10)	8/17/21	10:00 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-053-081721 (160-43113-10MS)	8/17/21	10:00 Eastern	MS	Solid	X	X	X	X	X		1	
FSS-053-081721 (160-43113-10MSD)	8/17/21	10:00 Eastern	MSD	Solid	X	X	X	X	X		1	
FSS-054-081721 (160-43113-11)	8/17/21	10:00 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-054-081721 (160-43113-11MS)	8/17/21	10:00 Eastern	MS	Solid	X	X	X	X	X		1	
FSS-054-081721 (160-43113-11MSD)	8/17/21	10:00 Eastern	MSD	Solid	X	X	X	X	X		1	
FSS-055-081721 (160-43113-12)	8/17/21	10:00 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-055-081721 (160-43113-12MS)	8/17/21	10:00 Eastern	MS	Solid	X	X	X	X	X		1	
FSS-055-081721 (160-43113-12MSD)	8/17/21	10:00 Eastern	MSD	Solid	X	X	X	X	X		1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately.

Possible Hazard Identification
 Level 1 radioactive
 Deliverable Requested: I, II, III, IV, Other (specify)
 Primary Deliverable Rank: 2
 Empty Kit Relinquished by:
 Relinquished by: *Mirva Kenning*
 Date/Time: 8/19/21 17:30
 Relinquished by:
 Date/Time:
 Relinquished by:
 Date/Time:
 Custody Seals Intact: Yes No
 Custody Seal No.:
 Cooler Temperature(s) °C and Other Remarks:

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements:

Received by: *gpt*
 Date/Time: 08/20/2021 0935
 Company: ESTADEN
 Received by:
 Date/Time:
 Company:
 Received by:
 Date/Time:
 Company:

Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:
Shipping/Receiving		Phone:	Vania, Ivan H		160-217816.3
Company		E-Mail:	Ivan.Vania@Eurofinset.com	State of Origin:	Page 3 of 3
TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #:	160-43113-1
Address:		DoD - AZLA; DoD - ANAB; NELAP - New York		Preservation Codes:	
City:	4955 Yarrow Street,	Due Date Requested:	A - HCL		
Arvada		9/15/2021	M - Hexane		
State, Zip:		TAT Requested (days):	N - None		
CO, 80002			O - AsNaO2		
Phone:		PO #:	P - Na2O4S		
303-736-0100(Tel) 303-431-7171(Fax)		WO #:	Q - Na2SO3		
Email:		Project #:	R - H2SO4		
		16009147	S - H2SO4		
Project Name:		SSOW#:	T - TSP Dodecahydrate		
BNL Decommissioning Project			U - Acetone		
Site:			V - MCAA		
			W - pH 4-5		
			L - EDA		
			Other:		
			Total Number of containers		
			Special Instructions/Note:		
			6020B_DDS/3050B (MOD) (CPMS Metals Pb Only)		
			7471B_DDS/7471B Prep Mercury		
			Moisture		
			Field Filtered Sample (Yes or No)		
			Perform MS/MSD (Yes or No)		
			Preservation Code:		
			Sample Date		
			Sample Time		
			Sample Type (C=Comp, G=grab)		
			Matrix (W=water, S=solid, O=organic, B=issue, A=air)		
			Sample Identification - Client ID (Lab ID)		
			FSS-056-081721 (160-43113-13)		
			FSS-256-081721 (160-43113-14)		
			FSS-057-081721 (160-43113-15)		
			FSS-257-081721 (160-43113-16)		
			FSS-058-081721 (160-43113-17)		
			FSS-258-081721 (160-43113-18)		

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
 Level 1 radioactive
 Deliverable Requested: I, II, III, IV, Other (specify) _____
 Primary Deliverable Rank: 2

Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: *Micha Kervinkings* Date/Time: 8/19/21 17:30
 Relinquished by: *ETA SN* Date/Time: 08/20/2021 0935
 Relinquished by: *ETA SN* Date/Time: _____
 Relinquished by: _____ Date/Time: _____

Custody Seal No.: _____ (Custody Seal No.: Yes No)
 Cooler Temperature(s) °C and Other Remarks: _____

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements: _____

Client Information (Sub Contract Lab)

Client Contact: **Shipping/Receiving**

Company: **RJ Lee Group, Inc**

Address: **350 Hootberg Rd,
Monroeville
State, Zip:
PA, 15146**

Phone:
Email:

Project Name: **BNL Decommissioning Project**

Site:

Sampler: **ADH06 3 191-0**

Lab File: **Vanis, Ivan H**

E-Mail: **Ivan.Vanis@Eurofins.com**

Phone:

Center Tracking No(s):

State of Origin: **New York**

GOC No: **180-217817.1**

Page: **Page 1 of 2**

Job #: **180-43113-1**

Preservation Codes:

Analyses Requested

M - Hexane
N - None
O - Nitro
P - Nitro
Q - Nitro
R - Nitro
S - Nitro
T - TSP Dodecylhydrate
U - Acetone
V - MCAA
W - pH 4.5
X - other (specify)

A - HCl
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MethOH
G - Ammonia
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - BDA
Other:

Total Number of Containers

Special Instructions/Notes:

Field Filtered Sample (Yes or No)

Perform MS/MSD (Yes or No)

Sub (Acetone)/Acetone

Matrix (Inerts, Inorganic, Organic, etc.)

Sample Type (C-Comp, Gr-Comp)

Sample Time

Sample Date

Preservation Code

FSS-044-081721 (160-43113-1)

FSS-045-081721 (160-43113-2)

FSS-046-081721 (160-43113-3)

FSS-047-081721 (160-43113-4)

FSS-048-081721 (160-43113-5)

FSS-049-081721 (160-43113-6)

FSS-050-081721 (160-43113-7)

FSS-051-081721 (160-43113-8)

FSS-052-081721 (160-43113-9)

Notes: Since laboratory accreditation is subject to change, Eurofins TestAmerica places the ownership of method, analysis & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification

Level 1 radioactive

Deliverable Requested: I, II, III, IV, Other (specify)

Primary Deliverable Rank: 2

Special Instructions/CC Requirements:

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Months

Method of Shipment:

Time:

Date:

Received by:

Company:

Date/Time:

Received by:

Company:

Date/Time:

Received by:

Company:

Date/Time:

Custody Seal Intact: Yes No

Custody Seal No.:

Cooler Temperature (°C) and Other Remarks:

Chain of Custody Record

Client Information (Sub Contract Lab)		Lab PIC: Vanla, Ivan H	Carrier Tracking No(s):	DOC No: 160-217817.2
Client Contact: RJ Lee Group, Inc		E-Mail: Ivan.Vanla@Eurofins.com	State of Origin: New York	Page: Page 2 of 2
Address: 350 Hochberg Rd,		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York	Job #: 160-43113-1	Preservation Codes:
City: Monroeville		Analysis Requested		
State, Zip: PA, 15146		M - Hexane N - None O - Air/NO2 P - NaOHMS Q - Na2S2O3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - HCAA W - BH 4.5 X - EDTA Z - other (specify)		
Phone: _____		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: _____		
Email: _____		Total Number of Containers: _____		
Project Name: BNL Decommissioning Project		Special Instructions/Note: _____		
Site: _____		Special Instructions/Note: _____		
Date Requested (log): 8/16/2021		Special Instructions/Note: _____		
TAT Requested (log): _____		Special Instructions/Note: _____		
PO #: _____		Special Instructions/Note: _____		
WO #: _____		Special Instructions/Note: _____		
Project #: 16009147		Special Instructions/Note: _____		
SSOW#: _____		Special Instructions/Note: _____		
Sample Identification - Client ID (Lab ID)		Field Filtered Sample (Yes or No)	URS (Asbestos/ Asbestos)	Special Instructions/Note
FSS-053-081721 (160-43113-10)	8/17/21	X	X	
FSS-054-081721 (160-43113-11)	8/17/21	X	X	
FSS-055-081721 (160-43113-12)	8/17/21	X	X	
FSS-056-081721 (160-43113-13)	8/17/21	X	X	
FSS-256-081721 (160-43113-14)	8/17/21	X	X	
FSS-057-081721 (160-43113-15)	8/17/21	X	X	
FSS-257-081721 (160-43113-16)	8/17/21	X	X	
FSS-058-081721 (160-43113-17)	8/17/21	X	X	
FSS-258-081721 (160-43113-18)	8/17/21	X	X	

Note: Since laboratory accreditation is subject to change, Eurofins TestAmerica places the ownership of method, analysis & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/methods being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
 Level 1 radioactive
 Deliverable Requested: I, II, III, IV, Other (specify) _____ Months
 Empty KIT Refrignished by: _____ Method of Shipment: _____
 Reinspected by: **Michael Kevanings** Company: **CS&S** Date/Time: **8/19/21 18:00**
 Reinspected by: **M. Carver** Company: **CS&S** Date/Time: **08-20-21 9:00 AM**
 Reinspected by: **Michelle M. Murphy** Company: **CS&S** Date/Time: **08-23-21 7:00 AM**
 Reinspected by: _____ Company: _____ Date/Time: _____
 Custody Seals Intact: _____ Custody Seal No.: _____
 A Yes A No

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43113-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/18/2021 1:02 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.5° C, 26.3° C and 26.8° C.

Receipt Exceptions

The sample was received in a broken 8oz container. The plastic bag included more than sufficient volume for all requested analyses; therefore, a new 8oz container was subsampled from the plastic bag: FSS-057-081721 (160-43113-15).

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis.

METALS (ICP/MS)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721

(160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 09/08/2021 and analyzed on 09/09/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B_ DoD5. The samples were prepared and analyzed on 09/10/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 08/27/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 08/20/2021, prepared on 09/04/2021 and analyzed on 09/20/2021.

Preparation Batch 160-525601:

Method DPS-7: The following samples could not be thoroughly homogenized before sub-sampling was performed due to sample matrix. The samples had large rocks >2mm: FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17), and FSS-258-081721 (160-43113-18).

The sample was counted on a detector that failed the closing daily check slightly low. The detector passed the day the sample counted. The lab does not believe that the 3% low result for the closing daily check significantly affects the sample results. Therefore, the data was reported: FSS-054-081721 (160-43113-11).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 09/03/2021 and analyzed on 09/08/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 08/20/2021, prepared on 08/29/2021 and 08/31/2021 and analyzed on 09/09/2021 and 09/10/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/20/2021, prepared on 08/29/2021 and 08/31/2021 and analyzed on 09/08/2021, 09/09/2021 and 09/10/2021.

Preparation Batch 160-524626:

Detectors AV83, AV86 AV95, and AV96 were calibrated in August, therefore; the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-047-081721 (160-43113-4), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), and FSS-051-081721 (160-43113-8).

Preparation Batch 160-524624:

Detectors AV131-AV142 were calibrated in August, therefore; the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: (LCS 160-524624/2-A), (MB 160-524624/1-A), (160-43079-A-2-G), and (160-43079-A-2-H DU).

Preparation Batch 160-524992:

Detectors AV131-AV146 were calibrated in August, therefore; the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17), and FSS-258-081721 (160-43113-18).

Preparation Batch 160-424999:

Detectors AV95, AV96, AV97 and V161 were calibrated in August, therefore; the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), and FSS-058-081721 (160-43113-17).

Preparation Batch 160-523941:

The detection goal of 0.200 pCi/g was not met for Ra-226 for the following sample. An elevated MDC can occur when higher background counts are applied to a peak ROI. This is due to the relatively small size of the peak or subsequent "force-fit" of the non-existent peak which resulted in higher than normal background counts due to statistical fluctuations in the Compton background. The laboratory does not believe this adversely affects the data, as the Ra-226 result is below the RL and MDC: FSS-257-081721 (160-43113-16).

The sample exhibited a negative result greater in magnitude than the 3 sigma TPU for Am-241. This occurrence was evaluated and determined to be random in nature. Sporadic occurrences such as this are statistically expected: FSS-257-081721 (160-43113-16).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 09/16/2021 and 09/17/2021 and analyzed on 09/17/2021 and 09/18/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/20/2021, prepared on 08/24/2021 and analyzed on 09/16/2021 and 09/17/2021.

Preparation Batch 160-523941:

For samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17), and FSS-258-081721 (160-43113-18).

(160-43113-16), FSS-058-081721 (160-43113-17), FSS-258-081721 (160-43113-18), (LCS 160-523941/2-A), (MB 160-523941/1-A), and (160-43113-D-18-D DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 08/20/2021, prepared on 09/08/2021 and analyzed on 09/17/2021 and 09/18/2021.

Preparation Batch 160-526025:

The nickel carrier recoveries were outside the upper acceptance limit. The carrier recoveries have been truncated to minimize any potential bias a high carrier may have on the results: FSS-044-081721 (160-43113-1) and (MB 160-526025/1-A).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared on 08/29/2021 and 08/31/2021 and analyzed on 09/15/2021 and 09/16/2021.

Preparation Batch 160-525000:

The samples were switched during the original analysis then recounted. All samples in the batch have results below the MDC and reporting limit (RL). Therefore the data was not adversely affected: FSS-257-081721 (160-43113-16) and (LCS 160-525000/2-A).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-044-081721

Lab Sample ID: 160-43113-1

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.232	U	0.183	0.184	3.00	0.295	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.8		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	87.9		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0330	U	0.221	0.221	1.00	0.407	pCi/g	09/03/21 13:48	09/08/21 10:20	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00950	U	0.0298	0.0298	1.00	0.0996	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	0.00951	U	0.0256	0.0256	1.00	0.0614	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	54.2		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0246	U	0.0395	0.0396	1.00	0.0680	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.0704		0.0592	0.0595	1.00	0.0697	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	61.0		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.191	U	0.450	0.450	5.00	0.774	pCi/g	09/17/21 06:21	09/17/21 23:26	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.258		0.130	0.132		0.217	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Americium-241	0.0417	U	0.152	0.152		0.262	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Bismuth-212	0.271	U	0.528	0.529		0.922	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Bismuth-214	0.297		0.0836	0.0889		0.0703	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Cesium-137	-0.0347	U	0.0483	0.0484		0.104	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Cobalt-60	0.0293	U	0.0217	0.0219		0.0309	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Europium-152	0.0613	U	0.161	0.161		0.147	pCi/g	08/24/21 16:40	09/16/21 10:20	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-044-081721

Lab Sample ID: 160-43113-1

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0103	U	0.0131	0.0131		0.108	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Europium-155	0.145		0.0923	0.0936		0.112	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Lead-212	0.321		0.0731	0.0837		0.0811	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Lead-214	0.305		0.0766	0.0827		0.0796	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Potassium-40	2.51		0.717	0.760		0.651	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Radium-226	0.297		0.0836	0.0889	0.200	0.0703	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Sodium-22	-0.0284	U	0.0496	0.0497		0.0865	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Thorium-232	0.258		0.130	0.132		0.217	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Zinc-65	-0.00402	U	0.0788	0.0788		0.186	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	<i>0.113</i>		<i>0.0392</i>	<i>0.0409</i>		<i>0.0326</i>	<i>pCi/g</i>	<i>08/24/21 16:40</i>	<i>09/16/21 10:20</i>	<i>1</i>

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.11	U	0.884	0.891	5.00	1.49	pCi/g	09/08/21 16:09	09/17/21 06:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	<i>123</i>	<i>Q</i>	<i>40 - 110</i>					<i>09/08/21 16:09</i>	<i>09/17/21 06:24</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-4.47	U	1.95	1.99	5.00	3.82	pCi/g	08/29/21 20:28	09/16/21 06:05	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	<i>54.2</i>		<i>30 - 110</i>					<i>08/29/21 20:28</i>	<i>09/16/21 06:05</i>	<i>1</i>

Client Sample ID: FSS-044-081721

Lab Sample ID: 160-43113-1

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 97.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.9		0.21	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 19:22	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	25		19	6.3	ug/Kg	☼	09/10/21 17:45	09/10/21 20:33	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-045-081721

Lab Sample ID: 160-43113-2

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0262	U	0.189	0.189	3.00	0.341	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.1		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	89.0		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.179	U	0.251	0.251	1.00	0.428	pCi/g	09/03/21 13:48	09/08/21 10:43	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00925	U	0.00907	0.00910	1.00	0.0618	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00232	U	0.00454	0.00454	1.00	0.0448	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.3		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0334	U	0.0416	0.0417	1.00	0.0587	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.107		0.0668	0.0674	1.00	0.0650	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	71.7		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0656	U	0.397	0.397	5.00	0.674	pCi/g	09/17/21 06:21	09/18/21 01:06	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.205		0.164	0.166		0.177	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Americium-241	0.0430	U	0.101	0.101		0.173	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Bismuth-212	0.116	U	0.548	0.548		0.976	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Bismuth-214	0.254		0.0800	0.0840		0.0803	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Cesium-137	0.0865		0.0275	0.0289		0.0168	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Cobalt-60	0.000	U	0.00926	0.00926		0.0246	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Europium-152	0.0626	U	0.114	0.114		0.120	pCi/g	08/24/21 16:40	09/16/21 10:59	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-045-081721

Lab Sample ID: 160-43113-2

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	-0.00190	U	0.0445	0.0445		0.0790	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Europium-155	0.0303	U	0.198	0.198		0.339	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Lead-212	0.315		0.0579	0.0703		0.0511	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Lead-214	0.310		0.0707	0.0774		0.0634	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Potassium-40	2.35		0.619	0.662		0.542	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Radium-226	0.254		0.0800	0.0840	0.200	0.0803	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Sodium-22	-0.0323	U	0.0419	0.0421		0.0707	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Thorium-232	0.205		0.164	0.166		0.177	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Zinc-65	0.000	U	0.0112	0.0112		0.158	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	0.0767		0.0341	0.0350		0.0369	pCi/g	08/24/21 16:40	09/16/21 10:59	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.949	U	0.899	0.904	5.00	1.51	pCi/g	09/08/21 16:09	09/17/21 07:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	94.9		40 - 110					09/08/21 16:09	09/17/21 07:30	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.293	U	1.51	1.51	5.00	2.65	pCi/g	08/29/21 20:28	09/16/21 07:11	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	75.3		30 - 110					08/29/21 20:28	09/16/21 07:11	1

Client Sample ID: FSS-045-081721

Lab Sample ID: 160-43113-2

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 96.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.3		0.22	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 19:25	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	J	20	6.6	ug/Kg	☼	09/10/21 17:45	09/10/21 20:35	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-046-081721

Lab Sample ID: 160-43113-3

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.291	U	0.220	0.221	3.00	0.353	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.9		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	81.1		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	11.3		0.733	1.22	1.00	0.409	pCi/g	09/03/21 13:48	09/08/21 11:06	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00867	U	0.0272	0.0272	1.00	0.0909	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00289	U	0.00567	0.00567	1.00	0.0560	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	59.3		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0379		0.0429	0.0430	1.00	0.0379	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.142		0.0743	0.0752	1.00	0.0304	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.0		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.357	U	0.604	0.605	5.00	1.05	pCi/g	09/17/21 06:21	09/18/21 01:40	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.428		0.156	0.162		0.234	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Americium-241	0.0427	U	0.161	0.161		0.278	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Bismuth-212	0.330	U	0.585	0.586		1.02	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Bismuth-214	0.364		0.108	0.115		0.0946	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Cesium-137	-0.0210	U	0.0613	0.0614		0.106	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Cobalt-60	0.0256	U	0.0510	0.0511		0.0608	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Europium-152	0.0547	U	0.0591	0.0594		0.184	pCi/g	08/24/21 16:40	09/17/21 13:13	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-046-081721

Lab Sample ID: 160-43113-3

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0764	U	0.125	0.125		0.129	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Europium-155	-0.0763	U	0.126	0.127		0.340	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Lead-212	0.428		0.0821	0.0985		0.0800	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Lead-214	0.299		0.0863	0.0915		0.0780	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Potassium-40	1.57		0.632	0.651		0.701	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Radium-226	0.364		0.108	0.115	0.200	0.0946	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Sodium-22	-0.0160	U	0.0428	0.0428		0.0783	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Thorium-232	0.428		0.156	0.162		0.234	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Zinc-65	-0.0162	U	0.0427	0.0427		0.217	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/24/21 16:40	09/17/21 13:13	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	13.0		1.24	1.81	5.00	1.36	pCi/g	09/08/21 16:09	09/17/21 08:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	105		40 - 110					09/08/21 16:09	09/17/21 08:37	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.92	U	1.76	1.77	5.00	3.19	pCi/g	08/29/21 20:28	09/16/21 08:17	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	59.3		30 - 110					08/29/21 20:28	09/16/21 08:17	1

Client Sample ID: FSS-046-081721

Lab Sample ID: 160-43113-3

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 96.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.86		0.23	0.014	mg/Kg	☼	09/08/21 14:58	09/09/21 19:29	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	7.0	J	18	5.8	ug/Kg	☼	09/10/21 17:45	09/10/21 20:38	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-047-081721

Lab Sample ID: 160-43113-4

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.161	U	0.186	0.187	3.00	0.314	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.3		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	92.3		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0711	U	0.210	0.211	1.00	0.389	pCi/g	09/03/21 13:48	09/08/21 11:28	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0111	U	0.0291	0.0291	1.00	0.0854	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.00222	U	0.0189	0.0189	1.00	0.0549	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	83.8		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00595	U	0.00824	0.00826	1.00	0.0666	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Uranium-238	0.277		0.105	0.107	1.00	0.0783	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	72.3		30 - 110					08/29/21 20:35	09/08/21 14:01	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.180	U	0.562	0.562	5.00	0.960	pCi/g	09/17/21 06:21	09/18/21 02:13	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.333		0.155	0.158		0.243	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Americium-241	-0.00436	U	0.160	0.160		0.279	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Bismuth-212	0.0261	U	0.570	0.570		1.06	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Bismuth-214	0.408		0.123	0.130		0.118	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Cesium-137	0.190		0.0745	0.0770		0.0652	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Cobalt-60	0.0328	U	0.0243	0.0245		0.0345	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Europium-152	0.0324	U	0.110	0.110		0.190	pCi/g	08/24/21 16:40	09/16/21 11:00	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-047-081721

Lab Sample ID: 160-43113-4

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0346	U	0.0787	0.0788		0.135	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Europium-155	0.0434	U	0.135	0.135		0.330	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Lead-212	0.407		0.0852	0.0996		0.0910	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Lead-214	0.382		0.107	0.114		0.0989	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Potassium-40	3.37		0.863	0.927		0.727	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Radium-226	0.408		0.123	0.130	0.200	0.118	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Sodium-22	0.0362		0.0251	0.0253		0.0334	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Thorium-232	0.333		0.155	0.158		0.243	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Zinc-65	-0.00449	U	0.140	0.140		0.261	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
<i>TI-208</i>	<i>0.234</i>		<i>0.0633</i>	<i>0.0676</i>		<i>0.0485</i>	<i>pCi/g</i>	<i>08/24/21 16:40</i>	<i>09/16/21 11:00</i>	<i>1</i>

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.540	U	0.858	0.860	5.00	1.48	pCi/g	09/08/21 16:09	09/17/21 09:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	<i>101</i>		<i>40 - 110</i>					<i>09/08/21 16:09</i>	<i>09/17/21 09:43</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-1.59	U	1.35	1.35	5.00	2.51	pCi/g	08/29/21 20:28	09/16/21 09:24	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	<i>83.8</i>		<i>30 - 110</i>					<i>08/29/21 20:28</i>	<i>09/16/21 09:24</i>	<i>1</i>

Client Sample ID: FSS-047-081721

Lab Sample ID: 160-43113-4

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 95.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	7.6		0.29	0.018	mg/Kg	☼	09/08/21 14:58	09/09/21 19:33	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	85		18	5.9	ug/Kg	☼	09/10/21 17:45	09/10/21 20:40	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-048-081721

Lab Sample ID: 160-43113-5

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.159	U	0.203	0.204	3.00	0.345	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	75.9		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	87.5		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0175	U	0.222	0.222	1.00	0.409	pCi/g	09/03/21 13:48	09/08/21 11:51	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0119	U	0.0287	0.0287	1.00	0.0979	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.0209	U	0.0336	0.0337	1.00	0.0578	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.2		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0447		0.0506	0.0507	1.00	0.0447	pCi/g	08/29/21 20:35	09/09/21 12:17	1
Uranium-238	0.191		0.0937	0.0950	1.00	0.0359	pCi/g	08/29/21 20:35	09/09/21 12:17	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	58.0		30 - 110					08/29/21 20:35	09/09/21 12:17	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0735	U	0.442	0.442	5.00	0.750	pCi/g	09/17/21 06:21	09/18/21 02:47	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.336		0.0945	0.100		0.117	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Americium-241	0.0470	U	0.108	0.108		0.184	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Bismuth-212	0.0288	U	0.434	0.434		0.802	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Bismuth-214	0.162		0.0682	0.0701		0.0805	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Cesium-137	0.0256	U	0.0445	0.0445		0.0766	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Cobalt-60	-0.0186	U	0.0563	0.0564		0.0643	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Europium-152	0.0188	U	0.0488	0.0488		0.126	pCi/g	08/24/21 16:40	09/16/21 11:30	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-048-081721

Lab Sample ID: 160-43113-5

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0538	U	0.0863	0.0865		0.0774	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Europium-155	0.0206	U	0.0702	0.0702		0.426	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Lead-212	0.254		0.0640	0.0717		0.0792	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Lead-214	0.208		0.0891	0.0916		0.129	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Potassium-40	2.64		0.665	0.716		0.567	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Radium-226	0.162		0.0682	0.0701	0.200	0.0805	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Sodium-22	0.0270		0.0187	0.0189		0.0249	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Thorium-232	0.336		0.0945	0.100		0.117	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Zinc-65	-0.0176	U	0.103	0.103		0.186	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
TI-208	0.103		0.0327	0.0344		0.0278	pCi/g	08/24/21 16:40	09/16/21 11:30	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.890	U	0.953	0.958	5.00	1.63	pCi/g	09/08/21 16:09	09/17/21 10:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	92.0		40 - 110					09/08/21 16:09	09/17/21 10:49	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.788	U	1.81	1.81	5.00	3.30	pCi/g	08/29/21 20:28	09/16/21 10:30	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.2		30 - 110					08/29/21 20:28	09/16/21 10:30	1

Client Sample ID: FSS-048-081721

Lab Sample ID: 160-43113-5

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 97.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.0		0.21	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 19:36	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	39		18	5.8	ug/Kg	☼	09/10/21 17:45	09/10/21 20:43	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-049-081721

Lab Sample ID: 160-43113-6

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0702	U	0.232	0.232	3.00	0.410	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.9		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	79.6		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.143	U	0.213	0.213	1.00	0.411	pCi/g	09/03/21 13:48	09/08/21 12:14	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00446	U	0.00618	0.00619	1.00	0.0499	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.0156	U	0.0251	0.0252	1.00	0.0432	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	80.1		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00271	U	0.00531	0.00532	1.00	0.0525	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Uranium-238	0.215		0.0874	0.0892	1.00	0.0619	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	76.7		30 - 110					08/29/21 20:35	09/08/21 14:01	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.680	U	0.585	0.589	5.00	1.05	pCi/g	09/17/21 06:21	09/18/21 03:20	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.436		0.125	0.132		0.0683	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Americium-241	0.0250	U	0.101	0.102		0.135	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Bismuth-212	0.167	U	0.404	0.404		0.719	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Bismuth-214	0.381		0.0890	0.0970		0.0763	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Cesium-137	0.0266	U	0.0497	0.0498		0.0858	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Cobalt-60	0.00121	U	0.0400	0.0400		0.0501	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Europium-152	0.0609	U	0.162	0.162		0.134	pCi/g	08/24/21 16:40	09/16/21 12:06	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-049-081721

Lab Sample ID: 160-43113-6

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0491	U	0.0788	0.0790		0.0833	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Europium-155	0.0244	U	0.0886	0.0886		0.359	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Lead-212	0.388		0.0707	0.0861		0.0709	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Lead-214	0.410		0.0917	0.101		0.0775	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Potassium-40	2.05		0.616	0.649		0.589	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Radium-226	0.381		0.0890	0.0970	0.200	0.0763	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Sodium-22	-0.00351	U	0.0407	0.0407		0.0769	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Thorium-232	0.436		0.125	0.132		0.0683	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Zinc-65	0.000	U	0.0173	0.0173		0.189	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			0.0423	0.0461		0.0289	pCi/g	08/24/21 16:40	09/16/21 12:06	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.337	U	0.900	0.901	5.00	1.58	pCi/g	09/08/21 16:09	09/17/21 11:55	1
Carrier	%Yield	Qualifier	Limits							
Ni	104		40 - 110							
								Prepared	Analyzed	Dil Fac
								09/08/21 16:09	09/17/21 11:55	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-2.09	U	1.27	1.28	5.00	2.36	pCi/g	08/29/21 20:28	09/16/21 11:36	1
Tracer	%Yield	Qualifier	Limits							
Pu-242 (T)	80.1		30 - 110							
								Prepared	Analyzed	Dil Fac
								08/29/21 20:28	09/16/21 11:36	1

Client Sample ID: FSS-049-081721

Lab Sample ID: 160-43113-6

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 94.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.3		0.24	0.014	mg/Kg	☼	09/08/21 14:58	09/09/21 19:40	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	12	J	19	6.3	ug/Kg	☼	09/10/21 17:45	09/10/21 20:46	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-050-081721

Lab Sample ID: 160-43113-7

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.179	U	0.180	0.181	3.00	0.363	pCi/g	09/04/21 14:31	09/20/21 14:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	76.1		40 - 110					09/04/21 14:31	09/20/21 14:50	1
Y Carrier	83.4		40 - 110					09/04/21 14:31	09/20/21 14:50	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0318	U	0.218	0.218	1.00	0.385	pCi/g	09/03/21 13:48	09/08/21 12:36	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00563	U	0.00780	0.00781	1.00	0.0631	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.000	U	0.0247	0.0247	1.00	0.0753	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	68.0		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0360		0.0408	0.0409	1.00	0.0360	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Uranium-238	0.0867		0.0604	0.0609	1.00	0.0643	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	72.3		30 - 110					08/29/21 20:35	09/08/21 14:01	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.369	U	0.562	0.563	5.00	0.960	pCi/g	09/16/21 08:54	09/17/21 22:41	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.223		0.0694	0.0729		0.107	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Americium-241	0.0357	U	0.0788	0.0789		0.136	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Bismuth-212	0.211	U	0.345	0.346		0.598	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Bismuth-214	0.0372	U	0.0660	0.0661		0.156	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Cesium-137	0.0138	U	0.0276	0.0276		0.0486	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Cobalt-60	0.00426	U	0.0357	0.0357		0.0441	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Europium-152	0.0920	U	0.146	0.147		0.246	pCi/g	08/24/21 16:40	09/16/21 12:07	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-050-081721

Lab Sample ID: 160-43113-7

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0340	U	0.0639	0.0640		0.0753	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Europium-155	0.0198	U	0.0732	0.0732		0.296	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Lead-212	0.277		0.0587	0.0684		0.0651	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Lead-214	0.179		0.0572	0.0601		0.120	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Potassium-40	2.35		0.756	0.792		0.608	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Radium-226	0.0372	U	0.0660	0.0661	0.200	0.156	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Sodium-22	-0.00412	U	0.0483	0.0483		0.0568	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Thorium-232	0.223		0.0694	0.0729		0.107	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Zinc-65	0.0369	U	0.0736	0.0737		0.129	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/24/21 16:40	09/16/21 12:07	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.824	U	0.851	0.855	5.00	1.44	pCi/g	09/08/21 16:09	09/17/21 13:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	103		40 - 110					09/08/21 16:09	09/17/21 13:01	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.88	U	1.67	1.67	5.00	3.11	pCi/g	08/29/21 20:28	09/16/21 12:42	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	68.0		30 - 110					08/29/21 20:28	09/16/21 12:42	1

Client Sample ID: FSS-050-081721

Lab Sample ID: 160-43113-7

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 96.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.68		0.24	0.015	mg/Kg	☼	09/08/21 14:58	09/09/21 19:43	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	20	6.4	ug/Kg	☼	09/10/21 17:45	09/10/21 20:48	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-051-081721

Lab Sample ID: 160-43113-8

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0756	U	0.186	0.187	3.00	0.328	pCi/g	09/04/21 14:31	09/20/21 14:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.8		40 - 110					09/04/21 14:31	09/20/21 14:50	1
Y Carrier	90.5		40 - 110					09/04/21 14:31	09/20/21 14:50	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0804	U	0.235	0.235	1.00	0.415	pCi/g	09/03/21 13:48	09/08/21 12:59	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00306	U	0.0275	0.0275	1.00	0.0870	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.000	U	0.00600	0.00600	1.00	0.0367	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	59.7		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00652	U	0.00904	0.00905	1.00	0.0730	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Uranium-238	0.0784		0.0584	0.0588	1.00	0.0586	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.4		30 - 110					08/29/21 20:35	09/08/21 14:01	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.259	U	0.784	0.785	5.00	1.37	pCi/g	09/16/21 08:54	09/17/21 23:03	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.140	U	0.219	0.219		0.307	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Americium-241	-0.0723	U	0.193	0.193		0.330	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Bismuth-212	1.04		0.418	0.431		0.321	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Bismuth-214	0.274		0.110	0.113		0.110	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Cesium-137	0.0267	U	0.0502	0.0503		0.0876	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Cobalt-60	-0.00223	U	0.00994	0.00994		0.0935	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Europium-152	0.109	U	0.0854	0.0861		0.164	pCi/g	08/24/21 16:40	09/16/21 11:33	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-051-081721

Lab Sample ID: 160-43113-8

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0128	U	0.0165	0.0166		0.138	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Europium-155	-0.00510	U	0.236	0.236		0.411	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Lead-212	0.0188	U	0.0933	0.0934		0.163	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Lead-214	0.267		0.0845	0.0887		0.0996	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Potassium-40	2.29		0.792	0.824		0.810	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Radium-226	0.274		0.110	0.113	0.200	0.110	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Sodium-22	-0.0302	U	0.0609	0.0610		0.108	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Thorium-232	0.140	U	0.219	0.219		0.307	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Zinc-65	-0.00500	U	0.0932	0.0932		0.137	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
TI-208	0.127		0.0667	0.0680		0.0605	pCi/g	08/24/21 16:40	09/16/21 11:33	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	-0.340	U	0.817	0.818	5.00	1.48	pCi/g	09/08/21 16:09	09/17/21 14:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	98.3		40 - 110					09/08/21 16:09	09/17/21 14:08	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-1.87	U	2.08	2.09	5.00	3.92	pCi/g	08/29/21 20:28	09/16/21 13:48	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	59.7		30 - 110					08/29/21 20:28	09/16/21 13:48	1

Client Sample ID: FSS-051-081721

Lab Sample ID: 160-43113-8

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 97.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.58		0.21	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 19:47	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/10/21 17:45	09/10/21 20:56	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-052-081721

Lab Sample ID: 160-43113-9

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0992	U	0.203	0.203	3.00	0.354	pCi/g	09/04/21 14:31	09/20/21 14:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	75.3		40 - 110					09/04/21 14:31	09/20/21 14:50	1
Y Carrier	85.6		40 - 110					09/04/21 14:31	09/20/21 14:50	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.147	U	0.246	0.246	1.00	0.423	pCi/g	09/03/21 13:48	09/08/21 13:21	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00211	U	0.00414	0.00414	1.00	0.0409	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.000	U	0.00414	0.00414	1.00	0.0254	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	83.4		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0216	U	0.0299	0.0300	1.00	0.0324	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.433		0.120	0.125	1.00	0.0260	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	80.4		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.128	U	0.759	0.759	5.00	1.34	pCi/g	09/16/21 08:54	09/17/21 23:26	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.655		0.170	0.182		0.0847	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Americium-241	-0.0628	U	0.154	0.154		0.263	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Bismuth-212	0.326	U	0.609	0.609		1.06	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Bismuth-214	0.335		0.106	0.111		0.0955	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Cesium-137	-0.000269	U	0.0610	0.0610		0.106	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Cobalt-60	0.0289	U	0.0510	0.0511		0.0601	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Europium-152	0.0418	U	0.0910	0.0911		0.170	pCi/g	08/24/21 16:40	09/16/21 12:13	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-052-081721

Lab Sample ID: 160-43113-9

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0264	U	0.0471	0.0471		0.125	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Europium-155	-0.0572	U	0.137	0.137		0.328	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Lead-212	0.535		0.0894	0.112		0.0820	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Lead-214	0.252		0.0776	0.0817		0.0664	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Potassium-40	2.23		0.711	0.746		0.693	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Radium-226	0.335		0.106	0.111	0.200	0.0955	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Sodium-22	-0.0187	U	0.0580	0.0580		0.105	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Thorium-232	0.655		0.170	0.182		0.0847	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Zinc-65	-0.00428	U	0.0473	0.0473		0.212	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
TI-208	0.138		0.0427	0.0449		0.0348	pCi/g	08/24/21 16:40	09/16/21 12:13	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.321	U	0.846	0.846	5.00	1.51	pCi/g	09/08/21 16:09	09/17/21 15:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	105		40 - 110					09/08/21 16:09	09/17/21 15:14	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.616	U	1.17	1.17	5.00	2.11	pCi/g	08/31/21 14:29	09/15/21 19:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	83.4		30 - 110					08/31/21 14:29	09/15/21 19:32	1

Client Sample ID: FSS-052-081721

Lab Sample ID: 160-43113-9

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 91.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.86		0.28	0.017	mg/Kg	☼	09/08/21 14:58	09/09/21 19:57	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	21	6.8	ug/Kg	☼	09/10/21 17:45	09/10/21 20:58	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-053-081721

Lab Sample ID: 160-43113-10

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.116	U	0.218	0.218	3.00	0.378	pCi/g	09/04/21 14:31	09/20/21 14:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.5		40 - 110					09/04/21 14:31	09/20/21 14:51	1
Y Carrier	89.7		40 - 110					09/04/21 14:31	09/20/21 14:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.00906	U	0.216	0.216	1.00	0.387	pCi/g	09/03/21 13:48	09/08/21 13:44	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.176	U	0.0464	0.0486	1.00	0.188	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.263	U	0.0546	0.0588	1.00	0.221	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.9		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0186	U	0.0299	0.0299	1.00	0.0513	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.187		0.0782	0.0797	1.00	0.0255	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	87.0		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.455	U	0.724	0.725	5.00	1.24	pCi/g	09/16/21 08:54	09/17/21 23:49	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.353		0.139	0.143		0.184	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Americium-241	0.0518	U	0.124	0.124		0.212	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Bismuth-212	-0.393	U	0.839	0.840		1.46	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Bismuth-214	0.268		0.105	0.108		0.0989	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Cesium-137	-0.0198	U	0.0449	0.0449		0.113	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Cobalt-60	-0.00869	U	0.102	0.102		0.0793	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Europium-152	0.00954	U	0.0196	0.0196		0.151	pCi/g	08/24/21 16:40	09/16/21 11:42	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-053-081721

Lab Sample ID: 160-43113-10

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0133	U	0.115	0.115		0.0929	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Europium-155	-0.0760	U	0.230	0.230		0.370	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Lead-212	0.315		0.0702	0.0772		0.0703	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Lead-214	0.262		0.0784	0.0826		0.104	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Potassium-40	7.60		1.35	1.54		0.628	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Radium-226	0.268		0.105	0.108	0.200	0.0989	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Sodium-22	-0.0112	U	0.0380	0.0380		0.0734	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Thorium-232	0.353		0.139	0.143		0.184	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Zinc-65	-0.0384	U	0.161	0.161		0.290	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			0.0422	0.0444		0.0248	pCi/g	08/24/21 16:40	09/16/21 11:42	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.705	U	0.900	0.902	5.00	1.53	pCi/g	09/08/21 16:09	09/17/21 16:20	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	107		40 - 110					09/08/21 16:09	09/17/21 16:20	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	0.553	U	1.47	1.47	5.00	2.55	pCi/g	08/31/21 14:29	09/15/21 20:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.9		30 - 110					08/31/21 14:29	09/15/21 20:38	1

Client Sample ID: FSS-053-081721

Lab Sample ID: 160-43113-10

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 98.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.96		0.29	0.018	mg/Kg	☼	09/08/21 14:58	09/09/21 20:01	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.7	ug/Kg	☼	09/10/21 17:45	09/10/21 21:01	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-054-081721

Lab Sample ID: 160-43113-11

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.127	U	0.222	0.222	3.00	0.384	pCi/g	09/04/21 14:31	09/20/21 14:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	75.2		40 - 110					09/04/21 14:31	09/20/21 14:51	1
Y Carrier	90.1		40 - 110					09/04/21 14:31	09/20/21 14:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.161	U	0.253	0.253	1.00	0.435	pCi/g	09/03/21 13:48	09/08/21 14:07	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00419	U	0.00580	0.00581	1.00	0.0469	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00419	U	0.00581	0.00582	1.00	0.0469	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	81.1		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00622	U	0.00862	0.00864	1.00	0.0697	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.190		0.0853	0.0867	1.00	0.0299	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.2		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.454	U	0.706	0.708	5.00	1.21	pCi/g	09/16/21 08:54	09/18/21 00:11	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.367		0.164	0.168		0.149	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Americium-241	-0.0414	U	0.0885	0.0886		0.230	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Bismuth-212	0.293	U	0.509	0.510		0.880	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Bismuth-214	0.367		0.0986	0.105		0.0978	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Cesium-137	0.0161	U	0.0398	0.0398		0.0704	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Cobalt-60	-0.00246	U	0.0407	0.0407		0.0508	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Europium-152	0.0260	U	0.0421	0.0422		0.152	pCi/g	08/24/21 16:40	09/16/21 13:10	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-054-081721

Lab Sample ID: 160-43113-11

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0441	U	0.0743	0.0745		0.0996	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Europium-155	-0.0697	U	0.131	0.131		0.393	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Lead-212	0.313		0.0659	0.0769		0.0706	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Lead-214	0.414		0.0827	0.0928		0.0998	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Potassium-40	4.94		0.894	1.02		0.597	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Radium-226	0.367		0.0986	0.105	0.200	0.0978	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Sodium-22	-0.0142	U	0.0430	0.0430		0.0780	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Thorium-232	0.367		0.164	0.168		0.149	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Zinc-65	-0.0834	U	0.155	0.155		0.266	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			(1.96σ+/-)	(1.96σ+/-)						
	0.106		0.0412	0.0426		0.0417	pCi/g	08/24/21 16:40	09/16/21 13:10	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	1.16	U	0.875	0.883	5.00	1.45	pCi/g	09/08/21 16:09	09/17/21 17:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	102		40 - 110					09/08/21 16:09	09/17/21 17:26	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-0.367	U	1.23	1.23	5.00	2.23	pCi/g	08/31/21 14:29	09/15/21 21:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	81.1		30 - 110					08/31/21 14:29	09/15/21 21:44	1

Client Sample ID: FSS-054-081721

Lab Sample ID: 160-43113-11

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 90.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.9		0.22	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 20:18	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	17	U	22	7.0	ug/Kg	☼	09/10/21 17:45	09/10/21 21:13	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-055-081721

Lab Sample ID: 160-43113-12

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.565	U	0.369	0.371	3.00	0.579	pCi/g	09/04/21 14:31	09/20/21 14:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	40.5		40 - 110					09/04/21 14:31	09/20/21 14:51	1
Y Carrier	90.1		40 - 110					09/04/21 14:31	09/20/21 14:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.178	U	0.242	0.243	1.00	0.412	pCi/g	09/03/21 13:48	09/08/21 14:29	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.000	U	0.00454	0.00454	1.00	0.0278	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.000	U	0.00455	0.00455	1.00	0.0278	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	72.3		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0232	U	0.0322	0.0323	1.00	0.0348	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.219		0.0897	0.0915	1.00	0.0522	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	85.5		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.0322	U	0.688	0.688	5.00	1.23	pCi/g	09/16/21 08:54	09/18/21 00:34	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.386		0.148	0.153		0.109	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Americium-241	-0.0534	U	0.141	0.142		0.243	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Bismuth-212	-0.0392	U	0.587	0.587		1.10	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Bismuth-214	0.289		0.0947	0.0990		0.0816	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Cesium-137	-0.0509	U	0.0475	0.0478		0.151	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Cobalt-60	-0.00895	U	0.0598	0.0598		0.0817	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Europium-152	0.105	U	0.137	0.137		0.115	pCi/g	08/24/21 16:40	09/17/21 13:14	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-055-081721

Lab Sample ID: 160-43113-12

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.00644	U	0.0434	0.0434		0.0887	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Europium-155	0.0422	U	0.0860	0.0862		0.223	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Lead-212	0.250		0.0677	0.0724		0.0769	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Lead-214	0.166		0.0789	0.0806		0.0903	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Potassium-40	3.86		0.996	1.07		0.648	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Radium-226	0.289		0.0947	0.0990	0.200	0.0816	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Sodium-22	0.000	U	0.0160	0.0160		0.0757	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Thorium-232	0.386		0.148	0.153		0.109	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Zinc-65	0.000	U	0.0281	0.0281		0.286	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			(1.96σ+/-)	(1.96σ+/-)						
	0.109		0.0473	0.0485		0.0404	pCi/g	08/24/21 16:40	09/17/21 13:14	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.434	U	0.837	0.838	5.00	1.44	pCi/g	09/08/21 16:09	09/17/21 18:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	106		40 - 110					09/08/21 16:09	09/17/21 18:32	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-0.650	U	1.34	1.34	5.00	2.41	pCi/g	08/31/21 14:29	09/15/21 22:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	72.3		30 - 110					08/31/21 14:29	09/15/21 22:50	1

Client Sample ID: FSS-055-081721

Lab Sample ID: 160-43113-12

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 97.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.0		0.22	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 20:36	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.1	ug/Kg	☼	09/10/21 17:45	09/10/21 21:26	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-056-081721

Lab Sample ID: 160-43113-13

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0382	U	0.166	0.166	3.00	0.299	pCi/g	09/04/21 14:31	09/20/21 14:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.6		40 - 110					09/04/21 14:31	09/20/21 14:51	1
Y Carrier	89.0		40 - 110					09/04/21 14:31	09/20/21 14:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0393	U	0.232	0.232	1.00	0.413	pCi/g	09/03/21 13:48	09/08/21 14:52	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00275	U	0.00540	0.00540	1.00	0.0533	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.000	U	0.00540	0.00540	1.00	0.0331	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	61.8		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00329	U	0.00645	0.00646	1.00	0.0637	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.290		0.110	0.112	1.00	0.0591	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	72.3		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.622	U	0.790	0.792	5.00	1.35	pCi/g	09/16/21 08:54	09/18/21 00:56	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.320		0.135	0.139		0.117	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Americium-241	0.0438	U	0.0925	0.0926		0.122	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Bismuth-212	0.160	U	0.419	0.419		0.746	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Bismuth-214	0.259		0.0876	0.0915		0.0879	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Cesium-137	0.128		0.0342	0.0366		0.0175	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Cobalt-60	-0.00581	U	0.0392	0.0392		0.0481	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Europium-152	0.0445	U	0.147	0.147		0.255	pCi/g	08/24/21 16:40	09/16/21 13:55	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-056-081721

Lab Sample ID: 160-43113-13

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0138	U	0.0536	0.0536		0.0819	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Europium-155	-0.0722	U	0.174	0.174		0.393	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Lead-212	0.344		0.0603	0.0744		0.0486	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Lead-214	0.259		0.0778	0.0821		0.0744	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Potassium-40	4.08		0.797	0.896		0.565	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Radium-226	0.259		0.0876	0.0915	0.200	0.0879	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Sodium-22	0.00785	U	0.0382	0.0382		0.0465	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Thorium-232	0.320		0.135	0.139		0.117	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Zinc-65	0.000	U	0.0166	0.0166		0.141	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	0.120		0.0406	0.0423		0.0385	pCi/g	08/24/21 16:40	09/16/21 13:55	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.15	U	0.881	0.888	5.00	1.47	pCi/g	09/08/21 16:09	09/17/21 19:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	99.5		40 - 110					09/08/21 16:09	09/17/21 19:38	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	0.285	U	1.62	1.62	5.00	2.81	pCi/g	08/31/21 14:29	09/15/21 23:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	61.8		30 - 110					08/31/21 14:29	09/15/21 23:56	1

Client Sample ID: FSS-056-081721

Lab Sample ID: 160-43113-13

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 93.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	4.9		0.25	0.015	mg/Kg	☼	09/08/21 14:58	09/09/21 20:46	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	58		21	6.8	ug/Kg	☼	09/10/21 17:45	09/10/21 21:34	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-256-081721

Lab Sample ID: 160-43113-14

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.189	U	0.206	0.206	3.00	0.345	pCi/g	09/04/21 14:31	09/20/21 14:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	85.6		40 - 110					09/04/21 14:31	09/20/21 14:51	1
Y Carrier	89.7		40 - 110					09/04/21 14:31	09/20/21 14:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.170	U	0.250	0.250	1.00	0.424	pCi/g	09/03/21 13:48	09/08/21 15:15	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00272	U	0.0233	0.0233	1.00	0.0673	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.0272	U	0.0378	0.0378	1.00	0.0610	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	62.4		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0251	U	0.0404	0.0405	1.00	0.0695	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-238	0.199		0.0962	0.0976	1.00	0.0712	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	63.8		30 - 110					08/31/21 14:27	09/10/21 13:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.541	U	0.539	0.542	5.00	0.957	pCi/g	09/17/21 06:21	09/18/21 03:54	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.195	U	0.0971	0.0990		0.237	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Americium-241	0.0483	U	0.103	0.103		0.176	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Bismuth-212	0.211	U	0.436	0.436		0.765	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Bismuth-214	0.274		0.0847	0.0892		0.0854	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Cesium-137	0.102		0.0309	0.0326		0.0179	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Cobalt-60	-0.0119	U	0.0567	0.0567		0.0657	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Europium-152	0.0360	U	0.0572	0.0574		0.137	pCi/g	08/24/21 16:40	09/16/21 14:06	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-256-081721

Lab Sample ID: 160-43113-14

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0407	U	0.0517	0.0519		0.0955	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Europium-155	-0.0782	U	0.232	0.232		0.395	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Lead-212	0.336		0.0635	0.0765		0.0611	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Lead-214	0.267		0.0675	0.0728		0.0866	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Potassium-40	4.07		0.750	0.854		0.265	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Radium-226	0.274		0.0847	0.0892	0.200	0.0854	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Sodium-22	-0.0345	U	0.0448	0.0449		0.0756	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Thorium-232	0.195	U	0.0971	0.0990		0.237	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Zinc-65	0.00306	U	0.0986	0.0986		0.182	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>Tl-208</i>	<i>0.141</i>		<i>0.0444</i>	<i>0.0466</i>		<i>0.0312</i>	<i>pCi/g</i>	<i>08/24/21 16:40</i>	<i>09/16/21 14:06</i>	<i>1</i>

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.328	U	0.893	0.894	5.00	1.57	pCi/g	09/08/21 16:09	09/17/21 21:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	<i>105</i>		<i>40 - 110</i>					<i>09/08/21 16:09</i>	<i>09/17/21 21:51</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	1.82	U	1.68	1.68	5.00	2.81	pCi/g	08/31/21 14:29	09/16/21 01:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	<i>62.4</i>		<i>30 - 110</i>					<i>08/31/21 14:29</i>	<i>09/16/21 01:03</i>	<i>1</i>

Client Sample ID: FSS-256-081721

Lab Sample ID: 160-43113-14

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 91.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.1		0.22	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 20:50	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	54		19	6.3	ug/Kg	☼	09/10/21 17:45	09/10/21 21:36	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-057-081721

Lab Sample ID: 160-43113-15

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.360		0.214	0.216	3.00	0.333	pCi/g	09/04/21 14:31	09/20/21 14:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.8		40 - 110					09/04/21 14:31	09/20/21 14:53	1
Y Carrier	90.1		40 - 110					09/04/21 14:31	09/20/21 14:53	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0449	U	0.226	0.226	1.00	0.398	pCi/g	09/03/21 13:48	09/08/21 15:37	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00778	U	0.0209	0.0210	1.00	0.0502	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.00778	U	0.0210	0.0210	1.00	0.0502	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.1		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0549		0.0538	0.0540	1.00	0.0412	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Uranium-238	0.176		0.0896	0.0908	1.00	0.0735	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	64.0		30 - 110					08/31/21 14:27	09/10/21 13:43	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.680	U	0.571	0.575	5.00	1.03	pCi/g	09/17/21 06:21	09/18/21 04:27	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.355		0.145	0.149		0.114	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Americium-241	0.0598	U	0.143	0.143		0.245	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Bismuth-212	0.0489	U	0.658	0.658		1.23	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Bismuth-214	0.295		0.107	0.111		0.108	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Cesium-137	0.256		0.0770	0.0812		0.0858	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Cobalt-60	-0.0488	U	0.0339	0.0342		0.113	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Europium-152	0.0898	U	0.186	0.187		0.162	pCi/g	08/24/21 16:40	09/16/21 14:56	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-057-081721

Lab Sample ID: 160-43113-15

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0291	U	0.0649	0.0649		0.112	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Europium-155	0.0301	U	0.0847	0.0847		0.297	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Lead-212	0.325		0.0739	0.0810		0.0743	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Lead-214	0.383		0.0872	0.0951		0.151	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Potassium-40	3.32		0.950	1.01		0.674	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Radium-226	0.295		0.107	0.111	0.200	0.108	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Sodium-22	0.0120	U	0.0407	0.0407		0.0787	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Thorium-232	0.355		0.145	0.149		0.114	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Zinc-65	0.000	U	0.0292	0.0292		0.284	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/24/21 16:40	09/16/21 14:56	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.863	U	0.880	0.884	5.00	1.48	pCi/g	09/08/21 16:09	09/17/21 22:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	96.5		40 - 110					09/08/21 16:09	09/17/21 22:57	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.79	U	1.67	1.67	5.00	2.81	pCi/g	08/31/21 14:29	09/16/21 02:09	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.1		30 - 110					08/31/21 14:29	09/16/21 02:09	1

Client Sample ID: FSS-057-081721

Lab Sample ID: 160-43113-15

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 94.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.1		0.29	0.018	mg/Kg	☼	09/08/21 14:58	09/09/21 20:53	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	34		19	6.0	ug/Kg	☼	09/10/21 17:45	09/10/21 21:39	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-257-081721

Lab Sample ID: 160-43113-16

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.100	U	0.198	0.198	3.00	0.343	pCi/g	09/04/21 14:31	09/20/21 14:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.0		40 - 110					09/04/21 14:31	09/20/21 14:53	1
Y Carrier	91.2		40 - 110					09/04/21 14:31	09/20/21 14:53	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0564	U	0.219	0.220	1.00	0.383	pCi/g	09/03/21 13:48	09/08/21 16:00	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0217	U	0.0383	0.0384	1.00	0.0724	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00271	U	0.00532	0.00532	1.00	0.0525	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	62.0		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00694	U	0.00962	0.00964	1.00	0.0778	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Uranium-238	0.239		0.103	0.105	1.00	0.0624	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	58.9		30 - 110					08/31/21 14:27	09/10/21 13:43	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.118	U	0.531	0.532	5.00	0.907	pCi/g	09/17/21 06:21	09/18/21 05:01	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.128	U	0.167	0.168		0.270	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Americium-241	-0.0587	U	0.0173	0.0183		0.213	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Bismuth-212	-0.0154	U	0.540	0.540		0.988	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Bismuth-214	0.0191	U	0.0913	0.0913		0.213	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Cesium-137	0.156		0.0446	0.0473		0.0302	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Cobalt-60	0.00125	U	0.0412	0.0412		0.0517	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Europium-152	0.0589	U	0.105	0.105		0.125	pCi/g	08/24/21 16:40	09/16/21 14:52	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-257-081721

Lab Sample ID: 160-43113-16

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0215	U	0.0359	0.0360		0.0747	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Europium-155	0.0473	U	0.116	0.116		0.323	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Lead-212	0.321		0.0697	0.0807		0.0791	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Lead-214	0.294		0.0716	0.0776		0.0630	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Potassium-40	3.62		0.789	0.868		0.607	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Radium-226	0.0191	U	0.0913	0.0913	0.200	0.213	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Sodium-22	0.00482	U	0.0252	0.0252		0.0499	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Thorium-232	0.128	U	0.167	0.168		0.270	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Zinc-65	0.000	U	0.0178	0.0178		0.204	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/24/21 16:40	09/16/21 14:52	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.611	U	0.853	0.855	5.00	1.44	pCi/g	09/08/21 16:09	09/18/21 00:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	95.1		40 - 110					09/08/21 16:09	09/18/21 00:03	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.000	U	1.56	1.56	5.00	2.74	pCi/g	08/31/21 14:29	09/15/21 14:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	62.0		30 - 110					08/31/21 14:29	09/15/21 14:00	1

Client Sample ID: FSS-257-081721

Lab Sample ID: 160-43113-16

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 95.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7		0.25	0.015	mg/Kg	☼	09/08/21 14:58	09/09/21 20:57	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	25		18	6.0	ug/Kg	☼	09/10/21 17:45	09/10/21 21:41	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-058-081721

Lab Sample ID: 160-43113-17

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.206	U	0.198	0.198	3.00	0.327	pCi/g	09/04/21 14:31	09/20/21 14:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.8		40 - 110					09/04/21 14:31	09/20/21 14:53	1
Y Carrier	84.5		40 - 110					09/04/21 14:31	09/20/21 14:53	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.124	U	0.234	0.234	1.00	0.401	pCi/g	09/03/21 13:48	09/08/21 16:23	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00615	U	0.00852	0.00854	1.00	0.0689	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00308	U	0.0277	0.0277	1.00	0.0876	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	51.0		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00350	U	0.00687	0.00688	1.00	0.0678	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Uranium-238	0.259		0.109	0.111	1.00	0.0751	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	55.0		30 - 110					08/31/21 14:27	09/10/21 13:43	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.446	U	0.535	0.537	5.00	0.945	pCi/g	09/17/21 06:21	09/18/21 05:35	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.127		0.0642	0.0654		0.0663	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Americium-241	-0.0227	U	0.114	0.114		0.198	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Bismuth-212	0.232	U	0.359	0.360		0.619	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Bismuth-214	0.197		0.0784	0.0809		0.0858	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Cesium-137	0.117		0.0443	0.0459		0.0381	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Cobalt-60	0.0117	U	0.0405	0.0405		0.0486	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Europium-152	0.0127	U	0.0182	0.0182		0.129	pCi/g	08/24/21 16:40	09/16/21 14:53	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-058-081721

Lab Sample ID: 160-43113-17

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.103		0.0429	0.0442		0.0932	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Europium-155	0.00632	U	0.0162	0.0162		0.378	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Lead-212	0.418		0.0948	0.109		0.129	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Lead-214	0.249		0.0673	0.0719		0.123	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Potassium-40	2.06		0.671	0.702		0.501	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Radium-226	0.197		0.0784	0.0809	0.200	0.0858	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Sodium-22	0.00453	U	0.0237	0.0237		0.0469	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Thorium-232	0.127		0.0642	0.0654		0.0663	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Zinc-65	0.0000000 0576	U	0.0946	0.0946		0.175	pCi/g	08/24/21 16:40	09/16/21 14:53	1

Other Detected Radionuclides	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.145		0.0444	0.0468		0.0307	pCi/g	08/24/21 16:40	09/16/21 14:53	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.740	U	0.802	0.806	5.00	1.35	pCi/g	09/08/21 16:09	09/18/21 01:09	1
Carrier Ni	%Yield 104	Qualifier	Limits 40 - 110					Prepared 09/08/21 16:09	Analyzed 09/18/21 01:09	Dil Fac 1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.30	U	1.94	1.94	5.00	3.30	pCi/g	08/31/21 14:29	09/16/21 04:21	1
Tracer Pu-242 (T)	%Yield 51.0	Qualifier	Limits 30 - 110					Prepared 08/31/21 14:29	Analyzed 09/16/21 04:21	Dil Fac 1

Client Sample ID: FSS-058-081721

Lab Sample ID: 160-43113-17

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 96.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.4		0.24	0.015	mg/Kg	☼	09/08/21 14:58	09/09/21 21:00	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	6.0	J	18	5.9	ug/Kg	☼	09/10/21 17:45	09/10/21 21:44	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-258-081721

Lab Sample ID: 160-43113-18

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.555		0.245	0.249	3.00	0.361	pCi/g	09/04/21 14:31	09/20/21 14:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.7		40 - 110					09/04/21 14:31	09/20/21 14:53	1
Y Carrier	84.5		40 - 110					09/04/21 14:31	09/20/21 14:53	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.186	U	0.259	0.259	1.00	0.434	pCi/g	09/03/21 13:48	09/08/21 16:45	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0180	U	0.0507	0.0507	1.00	0.106	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.0391	U	0.0483	0.0484	1.00	0.0745	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	55.8		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0323	U	0.0448	0.0448	1.00	0.0724	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-238	0.0466	U	0.0513	0.0514	1.00	0.0778	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.1		30 - 110					08/31/21 14:27	09/10/21 13:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.170	U	0.383	0.383	5.00	0.629	pCi/g	09/17/21 06:21	09/18/21 06:08	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.533		0.112	0.124		0.0903	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Americium-241	0.0606	U	0.150	0.150		0.257	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Bismuth-212	-0.0464	U	0.851	0.851		1.53	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Bismuth-214	0.354		0.105	0.111		0.0954	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Cesium-137	0.232		0.0619	0.0663		0.0404	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Cobalt-60	-0.0270	U	0.0727	0.0728		0.0853	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Europium-152	0.0167	U	0.0220	0.0221		0.207	pCi/g	08/24/21 16:40	09/16/21 14:54	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-258-081721

Lab Sample ID: 160-43113-18

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	-0.0293	U	0.0752	0.0752		0.130	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Europium-155	-0.0963	U	0.129	0.129		0.469	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Lead-212	0.394		0.0790	0.0935		0.0728	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Lead-214	0.344		0.0943	0.101		0.0708	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Potassium-40	2.71		0.798	0.843		0.739	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Radium-226	0.354		0.105	0.111	0.200	0.0954	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Sodium-22	0.000	U	0.00901	0.00901		0.0339	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Thorium-232	0.533		0.112	0.124		0.0903	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Zinc-65	0.0446	U	0.104	0.104		0.185	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	0.169		0.0574	0.0600		0.0545	pCi/g	08/24/21 16:40	09/16/21 14:54	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.290	U	0.866	0.867	5.00	1.50	pCi/g	09/08/21 16:09	09/18/21 02:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	103		40 - 110					09/08/21 16:09	09/18/21 02:16	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	1.79	U	1.91	1.91	5.00	3.21	pCi/g	08/31/21 14:29	09/16/21 05:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	55.8		30 - 110					08/31/21 14:29	09/16/21 05:28	1

Client Sample ID: FSS-258-081721

Lab Sample ID: 160-43113-18

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 81.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.6		0.27	0.016	mg/Kg	☼	09/08/21 14:58	09/09/21 21:04	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	17	U	22	7.1	ug/Kg	☼	09/10/21 17:45	09/10/21 21:46	1

Laboratory Report

Eurofins TestAmerica, St. Louis
13715 Rider Trail North
Earth City, MO 63045
United States
Attention: Ivan H Vania
Telephone: 314-298-8566

Report Date 09/21/2021
Sample Receipt Date 08/23/2021
RJ Lee Group Job No. AOH1063198-0
Authorization/P.O. No.
Client Job No./Name 160-43113-1

Analysis: Asbestos in Bulk Samples by Point Count

Method: NYELAP Method 198.1

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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546258.HPL	FSS-044-081721 (160-43113-1)	Yes	1	ND		100.00	CA, AM, F, OP, MI, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546259.HPL	FSS-045-081721 (160-43113-2)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP 198.1.						
Weight Loss:		0.0%						
10546260.HPL	FSS-046-081721 (160-43113-3)	Yes	1	ND		100.00	Q, CA, F, M, OP	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43113-1

RJ Lee Group Job No: AOH1063198-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546261.HPL	FSS-047-081721 (160-43113-4)	Yes	1	ND		100.00	Q, CA, F, OP, OR	EAF-09/16/2021
Description:		Beige Sediment 400 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546262.HPL	FSS-048-081721 (160-43113-5)	Yes	1	ND		100.00	Q, CA, AM, F, OP, OR	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP 198.1.						
Weight Loss:		0.0%						
10546263.HPL	FSS-049-081721 (160-43113-6)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP 198.1.						
Weight Loss:		0.0%						
10546264.HPL	FSS-050-081721 (160-43113-7)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546265.HPL	FSS-051-081721 (160-43113-8)	Yes	1	ND		100.00	Q, CA, F, AM, OP, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43113-1

RJ Lee Group Job No: AOH1063198-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546266.HPL	FSS-052-081721 (160-43113-9)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546267.HPL	FSS-053-081721 (160-43113-10)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss:		0.0%						
10546268.HPL	FSS-054-081721 (160-43113-11)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546269.HPL	FSS-055-081721 (160-43113-12)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss:		0.0%						

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Client Job No./Name: 160-43113-1

RJ Lee Group Job No: AOH1063198-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546270.HPL	FSS-056-081721 (160-43113-13)	Yes	1	ND		100.00	Q, CA, CL, AM, OR, OP, MI, M	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							
10546271.HPL	FSS-256-081721 (160-43113-14)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							
10546272.HPL	FSS-057-081721 (160-43113-15)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							
10546273.HPL	FSS-257-081721 (160-43113-16)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OR, OP, MI, M	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							

Client Job No./Name: 160-43113-1

RJ Lee Group Job No: AOH1063198-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546274.HPL	FSS-058-081721 (160-43113-17)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M, OR	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							
10546275.HPL	FSS-258-081721 (160-43113-18)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OR, OP, MI, M	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							

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Client Job No./Name: 160-43113-1

RJ Lee Group Job No: AOH1063198-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
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Authorized Signature: _____

Alexandra Cheek, Microscopist

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ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- AM = Amphibole
- B = Binder
- CA = Carbonates
- CL = Clay
- F = Feldspar
- G = Gypsum
- HY = Hydromagnesite
- M = Miscellaneous
- MI = Mica
- OP = Opaque
- OR = Organic
- P = Perlite
- Q = Quartz
- T = Tar
- V = Vermiculite

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

FPM Remediations, Inc.
Data Verification and Usability Report
BNL Decommissioning
Contract No. W912DW-19-D-1025

FPM Project No. 1085-20-01-01:a

TestAmerica Jobs # 160-43079-1, 160-43084-1, 160-43113-1, 160-43124-1, 160-43154-1 and -2, 160-43157-1, 160-43195-1 and -2, 160-43220-1, 160-43229-1, 160-43230-1, 160-43306-1, 160-43375-1

RJ Lee Group Jobs #AOH1063230-0, AOH1063128-0, AOH1063198-0, AOH1063223-0, AOH1063241-0, AOH-1063242-0, AOH-1063266-0, AOH1063281-0, AOH1063332-0, AOH1063479-0

Laboratory:	Test America Laboratories, Inc. (Metals) RJ Lee Group (Asbestos only)
Sample Matrix:	Soil
Number of Samples:	185
Analytical Protocol:	DOD Quality Systems Manual (QSM) Version 5.3, as per project-specific UFP QAPP
Data Reviewer:	Connie van Hoesel
Sample Date:	August 11-13, 17-20, 24-26, 28, and September 2, 2021

LIST OF DATA VERIFICATION SAMPLES

This verification report pertains to the following environmental samples and corresponding QC samples:

DELIVERABLES

The data deliverable report was per requirements of the DOD QSM, Version 5.3, as specified in the project-specific QAPP (FPM, 2019). The report consisted of the following major sections: lab attachment letter, case narrative, chain-of-custody, lab qualifier definitions, analytical results (sheet 2) based on analytical batch, calibration summaries, method blank summaries, laboratory control sample summaries, matrix spike/matrix spike duplicate summaries, holding time forms, performance checks, surrogate and internal standard recoveries, as applicable.

ANALYTICAL METHODS

The analytical test methods and QA/QC requirements used for the sample analyses were per methods as specified in the DOD QSM, Version 5.3, with project-specific modifications as listed in the project-specific QAPP. The analytical methods employed included metals by Method 6020B, mercury by Method 7471B, and asbestos by Method NYELAP Method 198.1.

**TABLE 1
SUMMARY OF SAMPLE ANALYSES
BNL DECOMMISSIONING**

Sample ID ⁽¹⁾	Sample Date	Sample Matrix/ Sample Type	Lab ID	Metals (lead only)	Mercury	Asbestos	Data Usable ⁽²⁾
FSS-001-081121	8/11/21	S/N	160-43079-1 10546418.HPL	X	X	X	Yes
FSS-002-081121	8/11/21	S/N	160-43079-2 10546419.HPL	X	X	X	Yes
FSS-003-081121	8/11/21	S/N	160-43079-3 10546420.HPL	X	X	X	Yes
FSS-004-081121	8/11/21	S/N	160-43079-4 10546421.HPL	X	X	X	Yes
FSS-005-081121	8/11/21	S/N	160-43079-5 10546422.HPL	X	X	X	Yes
FSS-006-081121	8/11/21	S/N	160-43079-6 10546423.HPL	X	X	X	Yes
FSS-007-081121	8/11/21	S/N	160-43079-7 10546424.HPL	X	X	X	Yes
FSS-008-081121	8/11/21	S/N	160-43079-8 10546425.HPL	X	X	X	Yes
FSS-009-081121	8/11/21	S/N	160-43079-9 10546426.HPL	X	X	X	Yes
FSS-010-081121	8/11/21	S/N	160-43079-10 10546427.HPL	X	X	X	Yes
FSS-011-081121	8/11/21	S/N	160-43079-11 10546428.HPL	X	X	X	Yes
FSS-012-081121	8/11/21	S/N	160-43079-12 10546429.HPL	X	X	X	Yes
FSS-013-081221	8/12/21	S/N	160-43079-13 10546430.HPL	X	X	X	Yes
FSS-014-081221	8/12/21	S/N	160-43079-14 10546431.HPL	X	X	X	Yes
FSS-015-081221	8/12/21	S/N	160-43079-15 10546432.HPL	X	X	X	Yes
FSS-016-081221	8/12/21	S/N	160-43079-16 10546433.HPL	X	X	X	Yes
FSS-017-081221	8/12/21	S/N	160-43084-1 10545957.HPL	X	X	X	Yes
FSS-018-081221	8/12/21	S/N	160-43084-2 10545958.HPL	X	X	X	Yes
FSS-019-081221	8/12/21	S/N	160-43084-3 10545959.HPL	X	X	X	Yes
FSS-020-081221	8/12/21	S/N	160-43084-4 10545960.HPL	X	X	X	Yes
FSS-021-081221	8/12/21	S/N	160-43084-5 10545961.HPL	X	X	X	Yes
FSS-022-081221	8/12/21	S/N	160-43084-6 10545962.HPL	X	X	X	Yes
FSS-023-081221	8/12/21	S/N	160-43084-7 10545963.HPL	X	X	X	Yes

Sample ID ⁽¹⁾	Sample Date	Sample Matrix/ Sample Type	Lab ID	Metals (lead only)	Mercury	Asbestos	Data Usable ⁽²⁾
FSS-024-081221	8/12/21	S/N	160-43084-8 10545964.HPL	X	X	X	Yes
FSS-025-081221	8/12/21	S/N	160-43084-9 10545965.HPL	X	X	X	Yes
FSS-026-081221	8/12/21	S/N	160-43084-10 10545966.HPL	X	X	X	Yes
FSS-027-081221	8/12/21	S/N	160-43084-11 10545967.HPL	X	X	X	Yes
FSS-028-081221	8/12/21	S/N	160-43084-12 10545968.HPL	X	X	X	Yes
FSS-029-081321	8/13/21	S/N	160-43084-13 10545969.HPL	X	X	X	Yes
FSS-030-081321	8/13/21	S/N	160-43084-14 10545970.HPL	X	X	X	Yes
FSS-031-081321	8/13/21	S/N	160-43084-15 10545971.HPL	X	X	X	Yes
FSS-032-081321	8/13/21	S/N	160-43084-16 10545972.HPL	X	X	X	Yes
FSS-033-081321	8/13/21	S/N	160-43084-17 10545973.HPL	X	X	X	Yes
FSS-034-081321	8/13/21	S/N	160-43084-18 10545974.HPL	X	X	X	Yes
FSS-035-081321	8/13/21	S/N	160-43084-19 10545975.HPL	X	X	X	Yes
FSS-036-081321	8/13/21	S/N	160-43084-20 10545976.HPL	X	X	X	Yes
FSS-037-081321	8/13/21	S/N	160-43084-21 10545977.HPL	X	X	X	Yes
FSS-038-081321	8/13/21	S/N	160-43084-22 10545978.HPL	X	X	X	Yes
FSS-039-081321	8/13/21	S/N	160-43084-23 10545979.HPL	X	X	X	Yes
FSS-040-081321	8/13/21	S/N	160-43084-24 10545980.HPL	X	X	X	Yes
FSS-041-081321	8/13/21	S/N	160-43084-25 10545981.HPL	X	X	X	Yes
FSS-042-081321	8/13/21	S/N	160-43084-26 10545982.HPL	X	X	X	Yes
FSS-043-081321	8/13/21	S/N	160-43084-27 10545983.HPL	X	X	X	Yes
FSS-044-081721	8/17/21	S/N	160-43113-1 10546258.HPL	X	X	X	Yes
FSS-045-081721	8/17/21	S/N	160-43113-2 10546259.HPL	X	X	X	Yes
FSS-046-081721	8/17/21	S/N	160-43113-3 10546260.HPL	X	X	X	Yes
FSS-047-081721	8/17/21	S/N	160-43113-4 10546261.HPL	X	X	X	Yes
FSS-048-081721	8/17/21	S/N	160-43113-5 10546262.HPL	X	X	X	Yes

Sample ID ⁽¹⁾	Sample Date	Sample Matrix/ Sample Type	Lab ID	Metals (lead only)	Mercury	Asbestos	Data Usable ⁽²⁾
FSS-049-081721	8/17/21	S/N	160-43113-6 10546263.HPL	X	X	X	Yes
FSS-050-081721	8/17/21	S/N	160-43113-7 10546264.HPL	X	X	X	Yes
FSS-051-081721	8/17/21	S/N	160-43113-8 10546265.HPL	X	X	X	Yes
FSS-052-081721	8/17/21	S/N	160-43113-9 10546266.HPL	X	X	X	Yes
FSS-053-081721	8/17/21	S/N	160-43113-10 10546267.HPL	X	X	X	Yes
FSS-054-081721	8/17/21	S/N	160-43113-11 10546268.HPL	X	X	X	Yes
FSS-055-081721	8/17/21	S/N	160-43113-12 10546269.HPL	X	X	X	Yes
FSS-056-081721	8/17/21	S/N	160-43113-13 10546270.HPL	X	X	X	Yes
FSS-256-081721	8/17/21	S/N	160-43113-14 10546271.HPL	X	X	X	Yes
FSS-057-081721	8/17/21	S/N	160-43113-15 10546272.HPL	X	X	X	Yes
FSS-257-081721	8/17/21	S/N	160-43113-16 10546273.HPL	X	X	X	Yes
FSS-058-081721	8/17/21	S/N	160-43113-17 10546274.HPL	X	X	X	Yes
FSS-258-081721	8/17/21	S/N	160-43113-18 10546275.HPL	X	X	X	Yes
FSS-059-081821	8/18/21	S/N	160-43124-1 10546365.HPL	X	X	X	Yes
FSS-259-081821	8/18/21	S/N	160-43124-2 10546366.HPL	X	X	X	Yes
FSS-060-081821	8/18/21	S/N	160-43124-3 10546367.HPL	X	X	X	Yes
FSS-260-081821	8/18/21	S/N	160-43124-4 10546368.HPL	X	X	X	Yes
FSS-061-081821	8/18/21	S/N	160-43124-5 10546369.HPL	X	X	X	Yes
FSS-261-081821	8/18/21	S/N	160-43124-6 10546370.HPL	X	X	X	Yes
FSS-062-081821	8/18/21	S/N	160-43124-7 10546371.HPL	X	X	X	Yes
FSS-063-081821	8/18/21	S/N	160-43124-8 10546372.HPL	X	X	X	Yes
FSS-064-081821	8/18/21	S/N	160-43124-9 10546373.HPL	X	X	X	Yes
HFBR-021- 061821	8/18/21	S/N	160-43124-10	X	X		Yes
FSS-065-081821	8/18/21	S/N	160-43124-11 10546374.HPL	X	X	X	Yes
FSS-066-081821	8/18/21	S/N	160-43124-12 10546375.HPL	X	X	X	Yes

Sample ID ⁽¹⁾	Sample Date	Sample Matrix/ Sample Type	Lab ID	Metals (lead only)	Mercury	Asbestos	Data Usable ⁽²⁾
FSS-181-081821	8/18/21	S/N	160-43124-13 10546376.HPL	X	X	X	Yes
FSS-067-081821	8/18/21	S/N	160-43124-14 10546377.HPL	X	X	X	Yes
FSS-068-081821	8/18/21	S/N	160-43124-15 10546378.HPL	X	X	X	Yes
FSS-069-081821	8/18/21	S/N	160-43124-16 10546379.HPL	X	X	X	Yes
FSS-070-081821	8/18/21	S/N	160-43124-17 10546380.HPL	X	X	X	Yes
FSS-071-081821	8/18/21	S/N	160-43124-18 10546381.HPL	X	X	X	Yes
FSS-072-081821	8/18/21	S/N	160-43124-19 10546382.HPL	X	X	X	Yes
FSS-073-081821	8/18/21	S/N	160-43124-20 10546383.HPL	X	X	X	Yes
FSS-074-081821	8/18/21	S/N	160-43124-21 10546384.HPL	X	X	X	Yes
FSS-075-081821	8/18/21	S/N	160-43124-22 10546385.HPL	X	X	X	Yes
FSS-076-081821	8/18/21	S/N	160-43124-23 10546386.HPL	X	X	X	Yes
FSS-077-081821	8/18/21	S/N	160-43124-24 10546387.HPL	X	X	X	Yes
FSS-078-081821	8/18/21	S/N	160-43124-25 10546388.HPL	X	X	X	Yes
FSS-079-081821	8/18/21	S/N	160-43124-26 10546389.HPL	X	X	X	Yes
FSS-279-081821	8/18/21	S/N	160-43124-27 10546390.HPL	X	X	X	Yes
FSS-080-081821	8/18/21	S/N	160-43124-28 10546391.HPL	X	X	X	Yes
FSS-280-081821	8/18/21	S/N	160-43124-29 10546392.HPL	X	X	X	Yes
FSS-081-081821	8/18/21	S/N	160-43124-30 10546393.HPL	X	X	X	Yes
FSS-281-081821	8/18/21	S/N	160-43124-31 10546394.HPL	X	X	X	Yes
FSS-082-081921	8/19/21	S/N	160-43154-1 10546504.HPL	X	X	X	Yes
FSS-083-081921	8/19/21	S/N	160-43154-2 10546505.HPL	X	X	X	Yes
FSS-084-081921	8/19/21	S/N	160-43154-3 10546506.HPL	X	X	X	Yes
FSS-088-081921	8/19/21	S/N	160-43154-4 10546507.HPL	X	X	X	Yes
FSS-089-081921	8/19/21	S/N	160-43154-5 10546508.HPL	X	X	X	Yes
FSS-090-081921	8/19/21	S/N	160-43154-6 1054509.HPL	X	X	X	Yes

Sample ID ⁽¹⁾	Sample Date	Sample Matrix/ Sample Type	Lab ID	Metals (lead only)	Mercury	Asbestos	Data Usable ⁽²⁾
FSS-085-081921	8/19/21	S/N	160-43154-7 10546510.HPL	X	X	X	Yes
FSS-086-081921	8/19/21	S/N	160-43154-8 10546511.HPL	X	X	X	Yes
FSS-087-081921	8/19/21	S/N	160-43154-9 10546512.HPL	X	X	X	Yes
FSS-091-081921	8/19/21	S/N	160-43154-10 10546513.HPL	X	X	X	Yes
FSS-092-081921	8/19/21	S/N	160-43154-11 10546514.HPL	X	X	X	Yes
FSS-093-081921	8/19/21	S/N	160-43154-12 10546515.HPL	X	X	X	Yes
FSS-094-081921	8/19/21	S/N	160-43157-1 10546660.HPL	X	X	X	Yes
FSS-095-081921	8/19/21	S/N	160-43157-2 10546661.HPL	X	X	X	Yes
FSS-096-081921	8/19/21	S/N	160-43157-3 10546662.HPL	X	X	X	Yes
FSS-097-081921	8/19/21	S/N	160-43157-4 10546663.HPL	X	X	X	Yes
FSS-297-081921	8/19/21	S/N	160-43157-5 10546664.HPL	X	X	X	Yes
FSS-098-082021	8/20/21	S/N	160-43157-6 10546665.HPL	X	X	X	Yes
FSS-298-082021	8/20/21	S/N	160-43157-7 10546666.HPL	X	X	X	Yes
FSS-099-082021	8/20/21	S/N	160-43157-8 10546667.HPL	X	X	X	Yes
FSS-299-082021	8/20/21	S/N	160-43157-9 10546668.HPL	X	X	X	Yes
FSS-100-082021	8/20/21	S/N	160-43157-10 10546669.HPL	X	X	X	Yes
FSS-101-082021	8/20/21	S/N	160-43157-11 10546670.HPL	X	X	X	Yes
FSS-102-082021	8/20/21	S/N	160-43157-12 10546671.HPL	X	X	X	Yes
FSS-103-082021	8/20/21	S/N	160-43157-13 10546526.HPL	X	X	X	Yes
FSS-104-082021	8/20/21	S/N	160-43157-14 10546527.HPL	X	X	X	Yes
FSS-105-082021	8/20/21	S/N	160-43157-15 10546528.HPL	X	X	X	Yes
FSS-106-082021	8/20/21	S/N	160-43157-16 10546529.HPL	X	X	X	Yes
FSS-107-082021	8/20/21	S/N	160-43157-17 10546530.HPL	X	X	X	Yes
FSS-108-082021	8/20/21	S/N	160-43157-18 10546531.HPL	X	X	X	Yes
FSS-109-082021	8/20/21	S/N	160-43157-19 10546532.HPL	X	X	X	Yes

Sample ID ⁽¹⁾	Sample Date	Sample Matrix/ Sample Type	Lab ID	Metals (lead only)	Mercury	Asbestos	Data Usable ⁽²⁾
FSS-110-082021	8/20/21	S/N	160-43157-20 10546533.HPL	X	X	X	Yes
FSS-111-082021	8/20/21	S/N	160-43157-21 10546534.HPL	X	X	X	Yes
FSS-112-082021	8/20/21	S/N	160-43157-22 10546535.HPL	X	X	X	Yes
FSS-113-082021	8/20/21	S/N	160-43157-23 10546536.HPL	X	X	X	Yes
FSS-114-082021	8/20/21	S/N	160-43157-24 10546537.HPL	X	X	X	Yes
FSS-115-082421	8/24/21	S/N	160-43195-1 10546739.HPL	X	X	X	Yes
FSS-116-082421	8/24/21	S/N	160-43195-2 10546740.HPL	X	X	X	Yes
FSS-117-082421	8/24/21	S/N	160-43195-3 10546741.HPL	X	X	X	Yes
FSS-118-082421	8/24/21	S/N	160-43195-4 10546742.HPL	X	X	X	Yes
FSS-119-082421	8/24/21	S/N	160-43195-5 10546743.HPL	X	X	X	Yes
FSS-120-082421	8/24/21	S/N	160-43195-6 10546744.HPL	X	X	X	Yes
FSS-121-082421	8/24/21	S/N	160-43195-7 10546745.HPL	X	X	X	Yes
FSS-122-082421	8/24/21	S/N	160-43195-8 10546746.HPL	X	X	X	Yes
FSS-123-082421	8/24/21	S/N	160-43195-9 10546747.HPL	X	X	X	Yes
FSS-124-082421	8/24/21	S/N	160-43195-10 10546748.HPL	X	X	X	Yes
FSS-125-082421	8/24/21	S/N	160-43195-11 10546749.HPL	X	X	X	Yes
FSS-126-082421	8/24/21	S/N	160-43195-12 10546750.HPL	X	X	X	Yes
FSS-127-082421	8/24/21	S/N	160-43195-13 10546751.HPL	X	X	X	Yes
FSS-128-082421	8/24/21	S/N	160-43195-14 10546752.HPL	X	X	X	Yes
FSS-129-082421	8/24/21	S/N	160-43195-15 10546753.HPL	X	X	X	Yes
FSS-130-082421	8/24/21	S/N	160-43195-16 10546754.HPL	X	X	X	Yes
FSS-131-082421	8/24/21	S/N	160-43195-17 10546755.HPL	X	X	X	Yes
FSS-132-082421	8/24/21	S/N	160-43195-18 10546756.HPL	X	X	X	Yes
FSS-133-082421	8/24/21	S/N	160-43195-22 10546760.HPL	X	X	X	Yes
FSS-134-082421	8/24/21	S/N	160-43195-23 10546761.HPL	X	X	X	Yes

Sample ID ⁽¹⁾	Sample Date	Sample Matrix/ Sample Type	Lab ID	Metals (lead only)	Mercury	Asbestos	Data Usable ⁽²⁾
FSS-135-082421	8/24/21	S/N	160-43195-24 10546762.HPL	X	X	X	Yes
FSS-136-082421	8/24/21	S/N	160-43195-19 10546757.HPL	X	X	X	Yes
FSS-137-082421	8/24/21	S/N	160-43195-20 10546758.HPL	X	X	X	Yes
FSS-138-082421	8/24/21	S/N	160-43195-21 10546759.HPL	X	X	X	Yes
FSS-139-082421	8/24/21	S/N	160-43195-25 10546763.HPL	X	X	X	Yes
FSS-140-082421	8/24/21	S/N	160-43195-26 10546764.HPL	X	X	X	Yes
FSS-141-082421	8/24/21	S/N	160-43195-27 10546765.HPL	X	X	X	Yes
FSS-339-082421	8/24/21	S/N	160-43195-28 10546766.HPL	X	X	X	Yes
FSS-340-082421	8/24/21	S/N	160-43195-29 10546767.HPL	X	X	X	Yes
FSS-341-082421	8/24/21	S/N	160-43195-30 10546768.HPL	X	X	X	Yes
FSS-142-082421	8/24/21	S/N	160-43195-31 10546769.HPL	X	X	X	Yes
FSS-143-082421	8/24/21	S/N	160-43195-32 10546770.HPL	X	X	X	Yes
FSS-144-082421	8/24/21	S/N	160-43195-33 10546771.HPL	X	X	X	Yes
FSS-136-082521	8/25/21	S/N	160-43220-1 10546795.HPL	X	X	X	Yes
FSS-137-082521	8/25/21	S/N	160-43220-2 10546796.HPL	X	X	X	Yes
FSS-138-082521	8/25/21	S/N	160-43220-3 10546797.HPL	X	X	X	Yes
FSS-145-082521	8/25/21	S/N	160-43220-4 10546798.HPL	X	X	X	Yes
FSS-146-082521	8/25/21	S/N	160-43220-5 10546799.HPL	X	X	X	Yes
FSS-147-082521	8/25/21	S/N	160-43220-6 10546800.HPL	X	X	X	Yes
FSS-148-082521	8/25/21	S/N	160-43220-7 10546801.HPL	X	X	X	Yes
FSS-348-082521	8/25/21	S/N	160-43220-8 10546802.HPL	X	X	X	Yes
FSS-149-082521	8/25/21	S/N	160-43220-9 10546803.HPL	X	X	X	Yes
FSS-349-082521	8/25/21	S/N	160-43220-10 10546804.HPL	X	X	X	Yes
FSS-150-082521	8/25/21	S/N	160-43220-11 10546805.HPL	X	X	X	Yes
FSS-350-082521	8/25/21	S/N	160-43220-12 10546806.HPL	X	X	X	Yes

Sample ID ⁽¹⁾	Sample Date	Sample Matrix/ Sample Type	Lab ID	Metals (lead only)	Mercury	Asbestos	Data Usable ⁽²⁾
FSS-151-082521	8/25/21	S/N	160-43220-13 10546807.HPL	X	X	X	Yes
FSS-152-082521	8/25/21	S/N	160-43220-14 10546808.HPL	X	X	X	Yes
FSS-088-082521	8/25/21	S/N	160-43220-15 10546809.HPL	X	X	X	Yes
FSS-089-082521	8/25/21	S/N	160-43220-16 10546810.HPL	X	X	X	Yes
FSS-090-082521	8/25/21	S/N	160-43220-17 10546811.HPL	X	X	X	Yes
Rinsate-082621	8/26/21	WQ	160-43229-1	X	X		Yes
FSS-153-082621	8/26/21	S/N	160-43230-1 10546986.HPL	X	X	X	Yes
FSS-154-082621	8/26/21	S/N	160-43230-2 10546987.HPL	X	X	X	Yes
FSS-155-082621	8/26/21	S/N	160-43230-3 10546988.HPL	X	X	X	Yes
FSS-156-082621	8/26/21	S/N	160-43230-4 10546989.HPL	X	X	X	Yes
FSS-157-082621	8/26/21	S/N	160-43230-5 10546990.HPL	X	X	X	Yes
FSS-158-082621	8/26/21	S/N	160-43230-6 10546991.HPL	X	X	X	Yes
FSS-159-082621	8/26/21	S/N	160-43230-7 10546992.HPL	X	X	X	Yes
FSS-160-082621	8/26/21	S/N	160-43230-8 10546993.HPL	X	X	X	Yes
FSS-161-082621	8/26/21	S/N	160-43230-9 10546994.HPL	X	X	X	Yes
FSS-162-082621	8/26/21	S/N	160-43230-10 10546995.HPL	X	X	X	Yes
FSS-163-082621	8/26/21	S/N	160-43230-11 10546996.HPL	X	X	X	Yes
FSS-164-082621	8/26/21	S/N	160-43230-12 10546997.HPL	X	X	X	Yes
FSS-165-082621	8/26/21	S/N	160-43230-13 10546998.HPL	X	X	X	Yes
FSS-166-082621	8/26/21	S/N	160-43230-14 10546999.HPL	X	X	X	Yes
FSS-167-082621	8/26/21	S/N	160-43230-15 10547000.HPL	X	X	X	Yes
FSS-168-082621	8/26/21	S/N	160-43230-16 10547001.HPL	X	X	X	Yes
FSS-169-082621	8/26/21	S/N	160-43230-17 10547002.HPL	X	X	X	Yes
FSS-170-082621	8/26/21	S/N	160-43230-18 10547003.HPL	X	X	X	Yes
FSS-171-082621	8/28/21	S/N	160-43306-1 10547936.HPL	X	X	X	Yes
FSS-172-082621	8/28/21	S/N	160-43306-2 10547937.HPL	X	X	X	Yes

Sample ID ⁽¹⁾	Sample Date	Sample Matrix/ Sample Type	Lab ID	Metals (lead only)	Mercury	Asbestos	Data Usable ⁽²⁾
FSS-173-082621	8/28/21	S/N	160-43306-3 10547938.HPL	X	X	X	Yes
FSS-174-082621	8/28/21	S/N	160-43306-4 10547939.HPL	X	X	X	Yes
FSS-175-082621	8/28/21	S/N	160-43306-5 10547940.HPL	X	X	X	Yes
FSS-176-082621	8/28/21	S/N	160-43306-6 10547941.HPL	X	X	X	Yes
FSS-177-082621	8/28/21	S/N	160-43306-7 10547942.HPL	X	X	X	Yes
FSS-178-082621	8/28/21	S/N	160-43306-8 10547943.HPL	X	X	X	Yes
FSS-179-082621	8/28/21	S/N	160-43306-9 10547944.HPL	X	X	X	Yes
FSS-180-082621	8/28/21	S/N	160-43306-10 10547945.HPL	X	X	X	Yes
Rinsate-082821	8/28/21	WQ	160-43375-1	X	X		Yes
Rinsate-090221	9/2/21	WQ	160-43375-2	X	X		Yes

WG = groundwater, WQ=water quality, TB=trip blank, AB=ambient blank, MS/MSD=matrix spike/matrix spike duplicate, N=normal, FD=field duplicate.

⁽¹⁾ "Sample ID" as shown on COC.

⁽²⁾ "Yes"- Sample analysis considered valid and usable.

VERIFICATION GUIDANCE

The analytical work was performed by Test America Laboratories, Inc. and RJ Lee Group (subcontracted for asbestos only) in accordance with the QC requirements of the respective analytical methods and of the QAPP. The data usability analysis was based on the reviewer's professional judgment and on an assessment of the criteria as listed in the QAPP.

QA/QC CRITERIA

The following QA/QC criteria were reviewed for the metals analyses, as applicable:

- LODs and LOQs
- Holding times
- GC/MS tune performance
- Initial and Continuing calibration summaries
- Method blanks
- ICP interference check sample analysis
- Field duplicate results
- Matrix spike/matrix spike duplicate (MS/MSD) analysis
- Laboratory control samples (LCS)
- ICP serial dilution analysis
- Results reported between LOD and LOQ (J-flag)
- Sample storage and preservation
- Data system printouts
- Qualitative and quantitative compound identification
- Chain-of-custody (COC)
- Case narrative and deliverables compliance

According to the laboratory, the following criteria were reviewed as a part of the laboratory's NVLAP, NYELAP, and AIHA accreditations for asbestos identification methods:

- Microscope Alignment
- Refractive Index Liquid Calibration
- Blank Analysis
- Reference Sample Analysis
- Replicate Analysis

As part of this review, the sample receipt and the point counting results were reviewed.

The items listed above were in compliance with DOD QSM, Version 5.3 and project-specific QAPP criteria and protocols with exceptions discussed in the text below. The data have been verified according to the procedures outlined above and qualified accordingly.

GENERAL NOTES:

BLANKS

Whenever blanks, including method, ambient, equipment, and trip, contained low levels of contaminants (between the DL and LOQ), the laboratory qualified the subject results with a “J” flag. Since no qualification of associated field samples are required for blank concentrations less than half the LOQ, no further action was taken in such instances.

SAMPLE LABELING/CHAIN-OF-CUSTODY

No errors in the chain-of-custody were noted. There were no discrepancies noted between the sample labels and the chain-of-custody, or the cooler contents and the chain-of-custody.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

For metals, the laboratory performed MS/MSD analysis for an internal quality control sample. These were not requested by FPM and were performed for batch control; no action was taken for the MS/MSD criterion for these samples.

METALS

- Field duplicate samples, which are collected at the same location and at the same time using identical collection, handling, and analytical procedures, are used to assess precision of the sample collection process. The QAPP requires qualification of data for field duplicates criterion if the duplicate samples contain detected compounds with concentrations above 5x the LOQ and the relative percent differences (RPDs) between the duplicate sample results exceed RPD control limits (50% for soil samples). If either the parent or the duplicate sample is less than 5x the LOQ, then the difference between the parent and duplicate sample must be less than 2x the LOQ. “J” flags for detects and “UJ” flags for non-detects are required per the QAPP for any exceedances.

The following table summarizes the RPDs/total differences of field duplicate sample sets field duplicate sample sets FSS-056-081721/FSS-256-081721, FSS-057-081721/FSS-257-081721, FSS-058-081721/FSS-258-081721, FSS-059-081821/FSS-259-081821, FSS-060-081821/FSS-260-081821, FSS-061-081821/FSS-261-081821, FSS-079-081821/FSS-279-081821, FSS-080-081821/FSS-280-081821, FSS-081-081821/FSS-281-081821, FSS-097-081921/FSS-297-081921, FSS-098-082021/FSS-298-082021, FSS-099-082021/FSS-299-082021, FSS-139-082421/FSS-339-082421, FSS-140-082421/FSS-340-082421, FSS-141-082421/FSS-341-082421, FSS-148-081821/FSS-348-081821, FSS-149-081821/FSS-349-081821, and FSS-150-081821/FSS-350-081821:

Normal sample ID	Field duplicate sample ID	Analyte	Normal Result (mg/kg [Pb] or µg/kg [Hg])	Field Dup Result (mg/kg [Pb] or µg/kg [Hg])	LOQ	RPD or ±difference	Flag Applied	Rationale
FSS-056-081721	FSS-256-081721	Lead	4.9	5.1	0.25, 0.22	4.0	None	RPD < 50%
FSS-056-081721	FSS-256-081721	Mercury	58	54	21, 19	4	None	Difference < 2x LOQ
FSS-057-081721	FSS-257-081721	Lead	3.1	2.7	0.29, 0.25	14	None	RPD < 50%
FSS-057-081721	FSS-257-081721	Mercury	34	25	19, 18	9	None	Difference < 2x LOQ
FSS-058-081721	FSS-258-081721	Lead	1.4	1.6	0.24, 0.27	13	None	RPD < 50%
FSS-058-081721	FSS-258-081721	Mercury	6.0 J	17 U	18, 22	11	None	Difference < 2x LOQ
FSS-059-081821	FSS-259-081821	Lead	1.7	1.8	0.30, 0.28	5.7	None	RPD < 50%
FSS-060-081821	FSS-260-081221	Lead	0.98	1.4	0.28, 0.29	0.42	None	Difference < 2x LOQ
FSS-061-081821	FSS-261-081221	Lead	1.6	1.4	0.28	13	None	RPD < 50%
FSS-079-081821	FSS-279-081821	Lead	24	25	0.27, 0.28	4.1	None	RPD < 50%
FSS-079-081821	FSS-279-081821	Mercury	10 J	9.8 J	19	0.2	None	Difference < 2x LOQ
FSS-080-081821	FSS-280-081821	Lead	17	18	0.30	5.7	None	RPD < 50%

Normal sample ID	Field duplicate sample ID	Analyte	Normal Result (mg/kg [Pb] or µg/kg [Hg])	Field Dup Result (mg/kg [Pb] or µg/kg [Hg])	LOQ	RPD or ±difference	Flag Applied	Rationale
FSS-081-081821	FSS-281-081821	Lead	3.6	5.8	0.29	47	None	RPD < 50%
FSS-097-081921	FSS-297-081921	Lead	28	51 J	0.29, 0.24	58	J	RPD > 50%
FSS-097-081921	FSS-297-081921	Mercury	21	32	19	10	None	Difference < 2x LOQ
FSS-098-082021	FSS-298-082021	Lead	44	23	0.28	63	J	RPD > 50%
FSS-098-082021	FSS-298-082021	Mercury	82	14 J	22, 19	68	J	Difference > 2x LOQ
FSS-099-082021	FSS-299-082021	Lead	38	46	0.26, 0.28	19	None	RPD < 50%
FSS-099-082021	FSS-299-082021	Mercury	91	50	23, 24	41	None	Difference < 2x LOQ
FSS-139-082421	FSS-339-082421	Lead	6.9	7.5	0.22, 0.24	8.3	None	RPD < 50%
FSS-139-082421	FSS-339-082421	Mercury	15 J	15 J	19	0	None	Difference < 2x LOQ
FSS-140-082421	FSS-340-082421	Lead	6.5	6.5	0.28	0	None	RPD < 50%
FSS-140-082421	FSS-340-082421	Mercury	16 U	12 J	20, 21	4	None	Difference < 2x LOQ
FSS-141-082421	FSS-341-082421	Lead	5.8	5.9	0.27, 0.26	1.7	None	RPD < 50%
FSS-141-082421	FSS-341-082421	Mercury	16 U	7.0 J	20, 19	9	None	Difference < 2x LOQ
FSS-148-082521	FSS-348-082521	Lead	9.2	6.9	0.27	29	None	RPD < 50%
FSS-148-082521	FSS-348-082521	Mercury	68	47	18	21	None	Difference < 2x LOQ
FSS-149-082521	FSS-349-082521	Lead	5.5	6.6	0.25, 0.31	18	None	RPD < 50%
FSS-149-082521	FSS-349-082521	Mercury	33	31	18, 19	2	None	Difference < 2x LOQ
FSS-150-082521	FSS-350-082521	Lead	6.5	5.8	0.29	11	None	RPD < 50%
FSS-150-082521	FSS-350-082521	Mercury	86	42	20	44	J	Difference > 2x LOQ

Corrective Action: The RPD or total difference was within control limits for field duplicate sample sets FSS-056-081721/FSS-256-081721, FSS-057-081721/FSS-257-081721, FSS-058-081721/FSS-258-081721, FSS-059-081821/FSS-259-081821, FSS-060-081821/FSS-260-081821, FSS-061-081821/FSS-261-081821, FSS-079-081821/FSS-279-081821, FSS-080-081821/FSS-280-081821, FSS-081-081821/FSS-281-081821, FSS-148-081821/FSS-348-081821, FSS-149-081821/FSS-349-081821, FSS-139-082421/FSS-339-082421, FSS-140-082421/FSS-340-082421, and FSS-141-082421/FSS-341-082421; no “J” flags were deemed required. For field duplicate sample set FSS-150-081821/FSS-350-081821, mercury results exceeded the total difference limit of 2x the LOQ. “J” qualifiers were applied to the sample set only.

- The following blank sample analyses indicated blank contaminants present at concentrations equal to or greater than the DL but less than the LOQ. The Blank ID, detected contaminant, and concentration are listed.

Blank ID	Analyte	Concentration (mg/kg)	LOQ (mg/kg)	Samples Affected
Method blank 280-548182/1-A	Total Lead	0.0584 J	0.40	None; blank concentration < ½ LOQ and associated field sample concentrations > 5x blank concentration
Method blank 280-549137/1-A	Total Lead	0.0560 J	0.30	None; blank concentration < ½ LOQ and associated field sample concentrations > 5x blank concentration
Method blank 280-553378/1-A	Total Lead	0.0409 J	0.30	None; blank concentration < ½ LOQ and associated field sample concentrations > 5x blank concentration

The purpose of laboratory, equipment or trip blank analysis is to determine the existence and magnitude of contamination resulting from lab or field activities. If contamination is found in blanks the associated sample results for these analytes may be considered suspect. As per the UFP QAPP, based on the blank contaminants present above half the RL, results for the specific analytes in the associated environmental samples are qualified with a “U” flag, for only those sample results that are less than five times (5x) the blank concentration.

Corrective Action: No “U” flags were applied since the associated field sample results were more than 5x the blank concentration.

- The following table summarizes QC exceedances of the matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and/or RPDs for parent samples FSS-001-081121, FSS-087-081921, FSS-085-081921, and FSS-138-082421. The spike analytes, MS recoveries, MSD recoveries, spike recovery QC limits, and RPDs and their QC limit between the MS and MSD are listed.

MS/MSD Results Job Number/ Spike Analytes	MS %Rec	MSD %Rec	QC Limits (%) (DOD QSM Limits)	RPD (limit 20)	Flag Applied	Rationale
Parent sample FSS-001-081121						
Lead	68	147	84-118	38	J	%Rec and RPD outside control limits
Parent sample FSS-087-081921						
Lead	55	101	84-118	47	J	%Rec and RPD outside control limits
Parent sample FSS-085-081921						
Mercury	23	18	80-124	5	J	%Rec outside control limits
Parent sample FSS-138-082421						
Lead	97	94	84-118	25	J	RPD outside control limits
Parent sample FSS-297-081921						
Lead	137	111	84-118	4	J	%Rec outside control limits

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices. Generally, these data alone cannot be used to evaluate the precision and accuracy of individual samples. A matrix spike and matrix spike duplicate analysis is an aliquot of sample spiked with known concentrations of all the analytes in the method. Using professional judgment, exceedances of either percent recovery (%Rec) control limits of spike concentrations or relative percent difference (RPD) control limits between the MS and MSD results may require flagging (“J”) for the specific analyte in the parent sample, and the results considered estimated. Due to the varied nature of environmental samples, such as locations, depths, physical characteristics (dissolved and suspended solids, turbidity, pH, organic content, etc.), it is difficult to assign one matrix spike sample analysis as truly representative of an entire site matrix. Therefore, using professional judgment it is deemed inappropriate to qualify more than the actual parent sample due to an MS/MSD exceedance. This approach is in accordance with the EPA National Functional guidelines, which states that the MS/MSD results are not used alone to qualify the entire data package, however, can be used in conjunction with other QC criteria to determine the need for some qualification of the data. Using professional judgment, no corrective action and/or flagging is deemed required for minimal exceedances (i.e., within 1% of the %Rec control limits).

Corrective Action: In the parent samples listed above, “J” qualifiers were assigned to indicate the results be considered estimated since a matrix effect is indicated.

ASBESTOS

- There were no quality control exceedances associated with the asbestos analyses.

DATA USABILITY RESULTS

For each analysis performed, the following data parameters were assessed:

- laboratory analytical precision,
- accuracy,
- representativeness,
- completeness, and
- comparability (PARCC).

Data qualifier results from this review are summarized in Table 2.

METALS

Based on the evaluation of all information in the analytical data groups, the results for metals are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable.

ASBESTOS

Based on the evaluation of all information in the analytical data groups, the results for asbestos are usable with the data qualifiers as noted. Using the verification approach as presented above, the results for all above samples are 100% usable.

**TABLE 2
SUMMARY OF QUALIFIED DATA
BNL DECOMMISSIONING**

Sample ID	Lab Sample ID	Analyte	Lab Flag	Validation Flag	Reason
FSS-001-081121	160-43079-1	Lead	J1	J	Matrix effect indicated; %Rec and RPD outside control limits
FSS-087-081121	160-43154-9	Lead	J1	J	Matrix effect indicated; %Rec and RPD outside control limits
FSS-297-081921	160-43157-5	Lead	J1	J	Matrix effect indicated; %Rec outside control limits
FSS-138-082421	160-43195-21	Lead	J1	J	Matrix effect indicated; RPD outside control limits
FSS-097-081921, FSS-297-081921	160-43157-4, -5	Lead	None	J	Field duplicate criterion exceedance
FSS-098-082021, FSS-298-082021	160-43157-6, -7	Lead	None	J	Field duplicate criterion exceedance
FSS-085-081121	160-43154-7	Mercury	J	J	Matrix effect indicated; %Rec outside control limits
FSS-098-082021, FSS-298-082021	160-43157-6, -7	Mercury	None	J	Field duplicate criterion exceedance
FSS-150-082521, FSS-350-082521	160-43220-11, -12	Mercury	None	J	Field duplicate criterion exceedance

*Data Usability Qualifier based on project QAPP data validation and data usability considerations.

DATA USABILITY SUMMARY

All data in Jobs # 160-43079-1, 160-43084-1, 160-43113-1, 160-43124-1 and -2, 160-43154-1 and -2, 160-43157-1, 160-43195-1 and -2, 160-43220-1, 160-43229-1, 160-43230-1, 160-43306-1, and 160-43375-1 are valid and usable with qualifications as noted in the data review.

Signed: Concordia van Hoesel Date: 10/19/2021

ATTACHMENTS

- Chain of Custody
- Laboratory's Case Narrative
- Qualified final data verification results on annotated Lab Sheet 2s

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43079-1	FSS-001-081121	Solid	08/11/21 09:00	08/13/21 08:45
160-43079-2	FSS-002-081121	Solid	08/11/21 09:00	08/13/21 08:45
160-43079-3	FSS-003-081121	Solid	08/11/21 09:00	08/13/21 08:45
160-43079-4	FSS-004-081121	Solid	08/11/21 09:00	08/13/21 08:45
160-43079-5	FSS-005-081121	Solid	08/11/21 11:00	08/13/21 08:45
160-43079-6	FSS-006-081121	Solid	08/11/21 11:00	08/13/21 08:45
160-43079-7	FSS-007-081121	Solid	08/11/21 11:00	08/13/21 08:45
160-43079-8	FSS-008-081121	Solid	08/11/21 11:00	08/13/21 08:45
160-43079-9	FSS-009-081121	Solid	08/11/21 13:30	08/13/21 08:45
160-43079-10	FSS-010-081121	Solid	08/11/21 13:30	08/13/21 08:45
160-43079-11	FSS-011-081121	Solid	08/11/21 13:30	08/13/21 08:45
160-43079-12	FSS-012-081121	Solid	08/11/21 13:30	08/13/21 08:45
160-43079-13	FSS-013-081221	Solid	08/12/21 08:00	08/13/21 08:45
160-43079-14	FSS-014-081221	Solid	08/12/21 08:00	08/13/21 08:45
160-43079-15	FSS-015-081221	Solid	08/12/21 08:00	08/13/21 08:45
160-43079-16	FSS-016-081221	Solid	08/12/21 08:00	08/13/21 08:45

Regulatory Program: DW NPDES RCRA Other:

Client Contact FPM Address 181 Kenwood Avenue Oneida, NY 13421 (315) 336-7721 ext. 218 Phone Fax (315) 336-7722 FAX Project Name: BNL 705 Stack Demo Site: BNL P O # 1085-20-01-01		Project Manager: Dan Ours Email: d.ours@tpr-remediations.com Tel/Fax: (315) 336-7721 ext. 218 Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below: 30 Days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: Doug Beard Date: 08-12-21 Carrier: Fed Ex Lab Contact: Ivan Vania		COC No.: 1 of 2 COCs TALS Project #: B. Gaudette Sampler: B. Gaudette For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:																									
Sample Identification FSS-001-081121 FSS-002-081121 FSS-003-081121 FSS-004-081121 FSS-005-081121 FSS-006-081121 FSS-007-081121 FSS-008-081121 FSS-009-081121 FSS-010-081121 FSS-011-081121 FSS-012-081121		Sample Date 11-Aug 11-Aug 11-Aug 11-Aug 11-Aug 11-Aug 11-Aug 11-Aug 11-Aug 11-Aug 11-Aug		Sample Time 9:00 9:00 9:00 9:00 11:00 11:00 11:00 11:00 13:30 13:30 13:30 13:30		Sample Type (C-Comp, G-Grab) C C C C C C C C C C C		Matrix S S S S S S S S S S S		# of Cont. 3 3 3 3 3 3 3 3 3 3 3		Filtered Sample (Y/N) N N N N N N N N N N N		Perform MS/MSD (Y/N) N N N N N N N N N N N		Gamma Spec: Ra-226+detects N N N N N N N N N N N		Strontium-90 (GFPC) N N N N N N N N N N N		Asbestos - EPA600 R-93 N N N N N N N N N N N		Lead (ICP/MS) - 6020B N N N N N N N N N N N		Mercury - EPA 7470A N N N N N N N N N N N		Ni-63 N N N N N N N N N N N		Tritium N N N N N N N N N N N		C-14 N N N N N N N N N N N	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Possible Hazard Identification:												Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)																			
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.												Return to Client <input type="checkbox"/> Disposal by Lab <input checked="" type="checkbox"/> Archive for _____ Months																			
Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-212, Pb-212, and K-40												Received by: <i>MICHA KENNEDY</i> Company: <i>ETA STL</i> Date: <i>13 2021</i>																			
Custody Seal No.: Relinquished by: Douglas Beard Relinquished by: FED EX Relinquished by:												Received in Laboratory by: Date/Time: 8-12-21/17:00 Date/Time: Date/Time:																			
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Relinquished by:												Cooler Temp. (°C): Obs'd: Received by: Fed Ex Company: Therm ID No.: Date/Time:																			

Chain of Custody Record



TestAmerica Laboratories, Inc. db/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Client Contact		Project Manager: Dan Ours	
Email: d.ours@fpm-remediations.com		Site Contact: Doug Beard	
Address 181 Kenwood Avenue		Date: 08-12-21	
Oneida, NY 13421		Carrier: Fed Ex	
Phone (315) 336-7721 ext. 218		TALS Project #:	
FAX (315) 336-7722		Sampler: B. Gaudette	
Project Name: BNL 705 Stack Demo		For Lab Use Only:	
Site: BNL		Walk-in Client:	
P O # 1085-20-01-01		Lab Sampling:	

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Analytical Parameters										Sample Specific Notes	
						Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Gamma Spec: Ra-226+detects	Strontium-90 (GFP)	Asbestos - EPA600 R-93	Lead (ICP/MS) - 6020B	Mercury - EPA 7470A	Ni-63	Tritium	C-14		
FSS-013-081221	12-Aug	8:00	C	S	4	N	N	1	1	1	1	1	1	1	1	1	Asphalt D SU-7D
FSS-014-081221	12-Aug	8:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	Ground surface below Asphalt D 0-6"
FSS-015-081221	12-Aug	8:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	Ground surface below Asphalt D 6" -12"
FSS-016-081221	12-Aug	8:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	Ground surface below Asphalt D 18" -24"

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Polson B Unknown

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40

Return to Client Disposal by Lab Archive for _____ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Cooler Temp. (°C):	Obs'd:	Therm ID No.:
Received by: Fed Ex	Company:	Date/Time:
Received by: <i>Melina Kervinings</i>	Company: <i>ETA</i>	Date/Time: <i>AUG 13 2021 08:45</i>
Received in Laboratory by:	Company:	Date/Time:

Custody Seal No.:
Relinquished by: Douglas Beard
Relinquished by:
Relinquished by:

Chain of Custody Record



Client Information (Sub Contract Lab)		Lab PM: Vania, Ivan H	Carrier Tracking No(s): COC No: 160-217526-1
Client Contact: Shipping/Receiving		E-Mail: Ivan.Vania@Eurofins.com	State of Origin: New York
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York	
Address: 4955 Yarrow Street.		Job #: 160-43079-1	
City: Arvada		Preservation Codes:	
State, Zip: CO, 80002		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - Nitric Acid F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Phone: 303-736-0100(Tel) 303-431-7171(Fax)		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Email:			
Project #: BNL Decommissioning Project			
Site: SSOW#			
Due Date Requested: 9/12/2021		Analysis Requested	
TAT Requested (days):			
PO #:			
WO #:			
Sample Date		Field Filtered Sample (Yes or No)	
Sample Time		Perform MS/MSD (Yes or No)	
Sample Identification - Client ID (Lab ID)		Moisture	
		7471B_DDS57471B_Prep Mercury	
		Total Number of Containers	
		Special Instructions/Note:	
FSS-001-081121 (160-43079-1)	8/11/21 09:00 Eastern	X	X
FSS-002-081121 (160-43079-2)	8/11/21 09:00 Eastern	X	X
FSS-003-081121 (160-43079-3)	8/11/21 09:00 Eastern	X	X
FSS-004-081121 (160-43079-4)	8/11/21 09:00 Eastern	X	X
FSS-005-081121 (160-43079-5)	8/11/21 11:00 Eastern	X	X
FSS-006-081121 (160-43079-6)	8/11/21 11:00 Eastern	X	X
FSS-007-081121 (160-43079-7)	8/11/21 11:00 Eastern	X	X
FSS-008-081121 (160-43079-8)	8/11/21 11:00 Eastern	X	X
FSS-009-081121 (160-43079-9)	8/11/21 13:30 Eastern	X	X

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/mainx being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
Unconfirmed
Deliverable Requested: I, II, III, IV, Other (specify) _____ Primary Deliverable Rank: 2
Special Instructions/QC Requirements: _____

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return To Client Disposal By Lab Archive For _____ Months

Empty Kit Relinquished by: _____ Date: _____ Time: _____ Method of Shipment: _____

Relinquished by: *MICHAEL KENIGHING* Date/Time: 8/13/2021 17:00 Company: STASR Company: STASR
Relinquished by: _____ Date/Time: _____ Company: _____
Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: *NA* Custody Seal No.: *NA*
Cooler Temperature(s) °C and Other Remarks: *39.10°C F706*

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Lab PM: Vania, Ivan H		Carrier Tracking No(s): COC No: 160-217526-2	
Client Contact: Shipping/Receiving		Phone: E-Mail: Ivan.Vania@Eurofinset.com		State of Origin: New York	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Page: Page 2 of 2	
Address: 4955 Yarrow Street, Arvada		Due Date Requested: 9/12/2021		Job #: 160-43079-1	
City: Arvada		TAT Requested (days):		Preservation Codes:	
State, Zip: CO, 80002		PO #:		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Phone: 303-736-0100(Tel) 303-431-7171(Fax)		WG #:		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecylhydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Email:		Project #:		Special Instructions/Note:	
Project Name: BNL Decommissioning Project		16009147			
Site:		SSOW#:		Total Number of Containers	
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time	
FSS-010-081121 (160-43079-10)		8/11/21		13:30 Eastern	
FSS-011-081121 (160-43079-11)		8/11/21		13:30 Eastern	
FSS-012-081121 (160-43079-12)		8/11/21		13:30 Eastern	
FSS-013-081121 (160-43079-13)		8/12/21		08:00 Eastern	
FSS-014-081121 (160-43079-14)		8/12/21		08:00 Eastern	
FSS-015-081121 (160-43079-15)		8/12/21		08:00 Eastern	
FSS-016-081121 (160-43079-16)		8/12/21		08:00 Eastern	
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.					
Possible Hazard Identification					
Unconfirmed					
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Empty Kit Relinquished by:		Date/Time:		Method of Shipment:	
Relinquished by: <i>Michael Koninkings</i>		8/13/2021 17:00		Date/Time: 8/12/21 0940	
Relinquished by:		Date/Time:		Date/Time:	
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	

Eurofins TestAmerica, St. Louis

13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8566 Fax: 314-298-8757

Chain of Custody Record



Environment Testing America

A0410632300

Client Information (Sub Contract Lab)			Sampler:		Lab PM: Vania, Ivan H		Carrier Tracking No(s):		COC No: 160-218033.1				
Client Contact: Shipping/Receiving			Phone:		E-Mail: Ivan.Vania@Eurofinset.com		State of Origin: New York		Page: Page 1 of 2				
Company: RJ Lee Group, Inc			Address: 350 Hochberg Rd, City: Monroeville State, Zip: PA, 15146 Phone: Email:		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Job #: 160-43079-1		Preservation Codes:				
Project Name: BNL Decommissioning Project Site:			Project #: 16009147 SSOW#:		Analysis Requested						A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify) Other:		
Sample Identification - Client ID (Lab ID)			Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT= tissue, A=As)	Field Filtered Sample (Yes or No)	Perform M/MSD (Yes or No)	SUB (Asbestos/ Asbestos)	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03)	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03)	Total Number of containers	Special Instructions/Note:
FSS-001-081121 (160-43079-1)			8/11/21	09:00 Eastern		Solid			X			1	
FSS-002-081121 (160-43079-2)			8/11/21	09:00 Eastern		Solid				X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-003-081121 (160-43079-3)			8/11/21	09:00 Eastern		Solid				X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-004-081121 (160-43079-4)			8/11/21	09:00 Eastern		Solid				X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-005-081121 (160-43079-5)			8/11/21	11:00 Eastern		Solid			X			1	
FSS-006-081121 (160-43079-6)			8/11/21	11:00 Eastern		Solid			X			1	
FSS-007-081121 (160-43079-7)			8/11/21	11:00 Eastern		Solid				X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-008-081121 (160-43079-8)			8/11/21	11:00 Eastern		Solid				X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-009-081121 (160-43079-9)			8/11/21	13:30 Eastern		Solid			X			1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification			Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		
Unconfirmed			<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2	Special Instructions/QC Requirements:		

Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:	
<i>Michael Karimking</i>		8/13/2021		17:00		ETA ST	
Relinquished by:		Date/Time:		Company:		Received by:	
						<i>Indira Mangru</i>	
Relinquished by:		Date/Time:		Company:		Received by:	
						<i>18242021 2:51 AM</i>	
Relinquished by:		Date/Time:		Company:		Received by:	

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
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Page 8562 of 8565

Eurofins TestAmerica, St. Louis

13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8566 Fax: 314-298-8757

Chain of Custody Record

eurofins Environment Testing America

A0410632300

Client Information (Sub Contract Lab)		Sampler Vania, Ivan H	Lab PM: Vania, Ivan H	Carrier Tracking No(s)	COC No: 160-218033.2						
Client Contact: Shipping/Receiving		Phone:	E-Mail: Ivan.Vania@Eurofinset.com	State of Origin: New York	Page: Page 2 of 2						
Company: RJ Lee Group, Inc			Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Job #: 160-43079-1						
Address: 350 Hochberg Rd.		Due Date Requested: 9/13/2021	Analysis Requested A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify) Other:								
City: Monroeville		TAT Requested (days):									
State, Zip: PA, 15146		PO #:									
Phone:		WO #:									
Email:											
Project Name: BNL Decommissioning Project		Project #: 16009147									
Site:		SSOW#									
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=organic, BT=Trace, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Asbestos) / Asbestos	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03) / Asbestos - PLM-EPA600-R-93/LAP-080.03	Total Number of containers	Special Instructions/Note:
FSS-010-081121 (160-43079-10)		8/11/21	13:30 Eastern	Solid		X				1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-011-081121 (160-43079-11)		8/11/21	13:30 Eastern	Solid				X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-012-081121 (160-43079-12)		8/11/21	13:30 Eastern	Solid				X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-013-081221 (160-43079-13)		8/12/21	08:00 Eastern	Solid			X			1	
FSS-014-081221 (160-43079-14)		8/12/21	08:00 Eastern	Solid				X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-015-081221 (160-43079-15)		8/12/21	08:00 Eastern	Solid				X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-016-081221 (160-43079-16)		8/12/21	08:00 Eastern	Solid				X		1	Asbestos - PLM-EPA600-R-93/LAP-080.03
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.											
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
Unconfirmed						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Deliverable Requested: I, II, III, IV, Other (specify)			Primary Deliverable Rank: 2			Special Instructions/QC Requirements:					
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:					
Relinquished by: <i>Micha Konings</i>		Date/Time: <i>8/13/2021 17:00</i>		Company: <i>ETA SH</i>		Received by: <i>Linda Naugus</i>		Date/Time: <i>08242021 2:51pm</i>		Company: <i>RJ Lee Group</i>	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:				Cooler Temperature(s) °C and Other Remarks:					

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43079-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/13/2021 8:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 1.5° C, 23.4° C, 23.6° C and 24.7° C.

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis.

METALS (ICP/MS)

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081221 (160-43079-13), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15) and FSS-016-081221 (160-43079-16) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 09/07/2021 and analyzed on 09/08/2021.

Analytical Batch 280-549084:

Lead was detected in method blank MB 280-548182/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Lead failed the recovery criteria low for the MS/MSD of sample FSS-001-081121MS/MSD (160-43079-1). Lead exceeded the RPD limit.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081121 (160-43079-13), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B_DoD5. The samples were prepared and analyzed on 09/01/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081121 (160-43079-13), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 08/25/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 08/16/2021, prepared on 08/27/2021 and analyzed on 09/07/2021.

Samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9) and FSS-013-081121 (160-43079-13) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were prepared on 08/27/2021 and analyzed on 09/07/2021.

Preparation Batch 160-524352:

The bracketing daily background, analyzed the day after the sample was analyzed, was outside the upper QC acceptance limit indicating a potential high bias. The sample analysis on that detector had activity below the MDC indicating no adverse effect from the potential bias. In addition, the daily check and background analyzed on the day of sample analysis passed as did the bracketing daily check: FSS-010-081121 (160-43079-10).

The sample duplicate (DUP) precision (RER/DER) was outside control limits. Sample non-homogeneity and a matrix effect was observed and noted during preparation. In addition, the original sample and sample duplicate both had activity below the RL: (160-43079-A-2-F DU).

The following samples could not be thoroughly homogenized before sub-sampling was performed due to sample matrix: FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081121 (160-43079-13), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15), FSS-016-081121 (160-43079-16), and (160-43079-A-2-A DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081121 (160-43079-13), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 08/27/2021 and analyzed on 09/01/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 08/19/2021, prepared on 08/29/2021 and analyzed on 09/09/2021.

Samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9) and FSS-013-081121 (160-43079-13) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with DOE A01R_Pu. The samples were prepared on 08/31/2021 and analyzed on 09/10/2021.

Preparation Batch 160-524624:

Detectors 131-142 were calibrated in August; therefore, the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-002-081121 (160-43079-2), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15), FSS-016-081121 (160-43079-16), (LCS 160-524624/2-A), (MB 160-524624/1-A), and (160-43079-A-2-H DU).

Detectors 131-146 were calibrated in August therefore the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-013-081121 (160-43079-13).

The samples exhibited a negative result greater in magnitude than the 3 sigma TPU. This occurrence was evaluated and determined to be random in nature. Sporadic occurrences such as this are statistically expected: FSS-003-081121 (160-43079-3) and FSS-004-081121 (160-43079-4).

The sample was counted on detector AV126 which failed the pulser resolution check the day after (closing bracket) the sample count. However, the sample tracer resolution was well within QC limits the day of the count. The laboratory does not believe this excursion adversely affects the data: FSS-004-081121 (160-43079-4).

Preparation Batch 160-524992:

The sample results were based on as received weight. The samples were not dried and ground due to the nature of the sample matrices: FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9), and FSS-013-081121 (160-43079-13).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081121 (160-43079-14), FSS-015-081121 (160-43079-15) and FSS-016-081121 (160-43079-16) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/19/2021, prepared on 08/29/2021 and analyzed on 09/08/2021 and 09/09/2021.

Samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9) and FSS-013-081121 (160-43079-13) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE A01R_U. The samples were prepared on 08/31/2021 and analyzed on 09/10/2021.

Preparation Batch 160-524626:

The sample was counted on detector AV199 which failed the pulser energy check the day after (closing bracket) the sample count. However, the sample tracer energy centroid was well within QC limits the day of the count. The laboratory does not believe this excursion adversely affects the data: FSS-007-081121 (160-43079-7).

The sample was counted on detector AV75 which failed the pulser efficiency check (low) the day after (closing bracket) the sample count. The sample pulser efficiency the day of the count as well as the tracer recovery was within QC limits the day of the count. While the lower efficiency may lead to a higher MDC, it would not affect the sample activity result (the efficiency effectively "cancels out" due to the tracer). Further, the MDC achieved is below the client requested limit. The laboratory does not believe this excursion adversely affects the data: FSS-014-081121 (160-43079-14).

Preparation Batch 160-524999:

The sample results were based on as received weight. The samples were not dried and ground due to the nature of the sample matrices: FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9), and FSS-013-081121 (160-43079-13).

Detectors 95, 96, 97, and 161 were calibrated in August therefore the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: (160-43124-D-6-K).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081221 (160-43079-13), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15) and FSS-016-081221 (160-43079-16) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 09/09/2021 and analyzed on 09/10/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15) and FSS-016-081221 (160-43079-16) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/16/2021, prepared on 08/18/2021 and analyzed on 09/11/2021 and 09/13/2021.

Samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9) and FSS-013-081221 (160-43079-13) were analyzed for Radium 226 (21 day ingrowth) in accordance with DOE GA-01-R. The samples were prepared on 08/20/2021 and analyzed on 09/11/2021.

Preparation Batch 160-523357:

The replicate precision for Pb-212 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (160-43079-A-13-B DU).

For samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9), FSS-013-081221 (160-43079-13), (LCS 160-523357/2-A), (MB 160-523357/1-A), and (160-43079-A-13-B DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

Preparation Batch 160-523157:

The method blank z-score for Eu-152 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (MB 160-523157/1-A).

The method blank z-score for Eu-154 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (MB 160-523357/1-A).

For samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15), FSS-016-081221 (160-43079-16), (LCS 160-523157/2-A), (MB 160-523157/1-A), and (160-43079-A-16-C DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from Reported to Analyte

Inferred	Reported
From	to
Nuclide	Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15) and FSS-016-081221 (160-43079-16) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 08/16/2021, prepared on 08/26/2021 and analyzed on 09/18/2021 and 09/19/2021.

Samples FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9) and FSS-013-081221 (160-43079-13) were analyzed for Nickel 59/63 in accordance with LSC-Nickel. The samples were prepared on 08/26/2021 and analyzed on 09/18/2021.

Preparation Batch 160-524237:

The carrier recovery for the sample failed below the lower QC limit at 35% (40%), indicating a potential high bias for analysis results. However, the sample final result was below the MDC and reporting limit (RL): FSS-005-081121 (160-43079-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-001-081121 (160-43079-1), FSS-002-081121 (160-43079-2), FSS-003-081121 (160-43079-3), FSS-004-081121 (160-43079-4), FSS-005-081121 (160-43079-5), FSS-006-081121 (160-43079-6), FSS-007-081121 (160-43079-7), FSS-008-081121 (160-43079-8), FSS-009-081121 (160-43079-9), FSS-010-081121 (160-43079-10), FSS-011-081121 (160-43079-11), FSS-012-081121 (160-43079-12), FSS-013-081221 (160-43079-13), FSS-014-081221 (160-43079-14), FSS-015-081221 (160-43079-15) and FSS-016-081221 (160-43079-16) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared on 08/29/2021 and 08/31/2021 and analyzed on 09/15/2021 and 09/16/2021.

Preparation Batch 160-525000:

The sample results were based on as received weight. The samples were not dried and ground due to the nature of the sample matrices: FSS-001-081121 (160-43079-1), FSS-005-081121 (160-43079-5), FSS-009-081121 (160-43079-9), and FSS-013-081221 (160-43079-13).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-001-081121

Lab Sample ID: 160-43079-1

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0667	U	0.158	0.158	3.00	0.278	pCi/g	08/27/21 13:56	09/07/21 16:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.4		40 - 110					08/27/21 13:56	09/07/21 16:54	1
Y Carrier	95.3		40 - 110					08/27/21 13:56	09/07/21 16:54	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.127	U	0.237	0.237	1.00	0.413	pCi/g	08/27/21 08:28	09/01/21 09:35	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0125	U	0.0208	0.0208	1.00	0.0734	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.00417	U	0.0252	0.0252	1.00	0.0626	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	88.5		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-234	0.127		0.0714	0.0722	1.00	0.0807	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-235	-0.0127	U	0.0111	0.0112	1.00	0.0723	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.104		0.0578	0.0584	1.00	0.0395	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	77.0		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.467	U	0.835	0.836	5.00	1.42	pCi/g	09/09/21 09:41	09/10/21 16:34	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.110	U	0.292	0.293		0.370	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Americium-241	0.0720	U	0.127	0.127		0.216	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Bismuth-212	-0.752	U	1.01	1.01		1.71	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Bismuth-214	0.0698	U	0.246	0.246		0.416	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Cesium-137	-0.00571	U	0.0747	0.0747		0.135	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Cobalt-60	0.00362	U	0.00227	0.00230		0.117	pCi/g	08/20/21 09:48	09/11/21 07:41	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-001-081121

Date Collected: 08/11/21 09:00

Date Received: 08/13/21 08:45

Lab Sample ID: 160-43079-1

Matrix: Solid

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-152	0.164		0.0656	0.0677		0.145	pCi/g	08/20/21 09:48	09/11/21 07:41	
Europium-154	0.0469	U	0.0980	0.0981		0.0982	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Europium-155	0.0990	U	0.348	0.348		0.592	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Lead-212	0.282		0.106	0.111		0.105	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Lead-214	0.0232	U	0.0572	0.0573		0.364	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Potassium-40	3.71		1.47	1.51		1.33	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Radium-226	0.0698	U	0.246	0.246	1.00	0.416	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Radium-228	0.110	U	0.292	0.293		0.370	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Sodium-22	0.00974	U	0.0434	0.0434		0.0844	pCi/g	08/20/21 09:48	09/11/21 07:41	1
Zinc-65	-0.158	U	0.132	0.133		0.438	pCi/g	08/20/21 09:48	09/11/21 07:41	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.563	U	0.885	0.887	5.00	1.51	pCi/g	08/26/21 10:56	09/18/21 08:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	87.1		40 - 110					08/26/21 10:56	09/18/21 08:25	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-0.284	U	1.11	1.11	5.00	2.01	pCi/g	08/31/21 14:29	09/15/21 15:07	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	88.5		30 - 110					08/31/21 14:29	09/15/21 15:07	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			08/19/21 16:11	1

Client Sample ID: FSS-001-081121

Date Collected: 08/11/21 09:00

Date Received: 08/13/21 08:45

Lab Sample ID: 160-43079-1

Matrix: Solid

Percent Solids: 97.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	14	J J	0.39	0.018	mg/Kg	*	09/07/21 07:45	09/08/21 03:47	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	20	6.4	ug/Kg	*	09/01/21 15:10	09/01/21 17:27	1

WA
9/27/2021

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-002-081121

Lab Sample ID: 160-43079-2

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.117	U	0.165	0.165	3.00	0.282	pCi/g	08/27/21 13:56	09/07/21 16:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.5		40 - 110					08/27/21 13:56	09/07/21 16:55	1
Y Carrier	94.2		40 - 110					08/27/21 13:56	09/07/21 16:55	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.193	U	0.241	0.242	1.00	0.407	pCi/g	08/27/21 08:28	09/01/21 09:57	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00720	U	0.00998	0.00999	1.00	0.0806	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	0.00721	U	0.0300	0.0300	1.00	0.0807	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	48.9		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00468	U	0.00917	0.00917	1.00	0.0905	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Uranium-238	0.113		0.0900	0.0905	1.00	0.113	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	48.6		30 - 110					08/29/21 20:35	09/08/21 13:49	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.491	U	0.860	0.861	5.00	1.47	pCi/g	09/09/21 09:41	09/10/21 16:57	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.285		0.137	0.140		0.250	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Americium-241	0.0589	U	0.147	0.147		0.253	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Bismuth-212	0.351	U	0.605	0.606		1.05	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Bismuth-214	0.336		0.0953	0.101		0.0807	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Cesium-137	-0.0163	U	0.0550	0.0550		0.118	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Cobalt-60	0.0337	U	0.0250	0.0252		0.0355	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Europium-152	0.0466	U	0.0698	0.0700		0.157	pCi/g	08/18/21 14:03	09/11/21 18:21	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-002-081121

Lab Sample ID: 160-43079-2

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0117	U	0.0749	0.0749		0.131	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Europium-155	-0.0939	U	0.220	0.220		0.459	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Lead-212	0.272		0.0794	0.0866		0.0999	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Lead-214	0.364		0.109	0.115		0.107	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Potassium-40	4.30		1.05	1.14		0.890	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Radium-226	0.336		0.0953	0.101	1.00	0.0807	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Sodium-22	0.0217	U	0.0357	0.0358		0.0627	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Thorium-232	0.285		0.137	0.140		0.250	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Zinc-65	-0.0173	U	0.116	0.116		0.234	pCi/g	08/18/21 14:03	09/11/21 18:21	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.404	U	0.868	0.869	5.00	1.49	pCi/g	08/26/21 10:56	09/18/21 09:31	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	88.8		40 - 110					08/26/21 10:56	09/18/21 09:31	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.80	U	2.21	2.21	5.00	3.96	pCi/g	08/29/21 20:28	09/15/21 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	48.9		30 - 110					08/29/21 20:28	09/15/21 15:44	1

Client Sample ID: FSS-002-081121

Lab Sample ID: 160-43079-2

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 91.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.9		0.39	0.018	mg/Kg	☼	09/07/21 07:45	09/08/21 04:04	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.6	ug/Kg	☼	09/01/21 15:10	09/01/21 17:40	1

Client Sample ID: FSS-003-081121

Lab Sample ID: 160-43079-3

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.166	U	0.172	0.172	3.00	0.340	pCi/g	08/27/21 13:56	09/07/21 17:20	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-003-081121

Lab Sample ID: 160-43079-3

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	84.3		40 - 110	08/27/21 13:56	09/07/21 17:20	1
Y Carrier	94.6		40 - 110	08/27/21 13:56	09/07/21 17:20	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0115	U	0.229	0.229	1.00	0.422	pCi/g	08/27/21 08:28	09/01/21 10:20	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0278	U	0.0173	0.0174	1.00	0.0982	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	-0.00557	U	0.0256	0.0256	1.00	0.0836	pCi/g	08/29/21 18:19	09/09/21 13:00	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	69.8		30 - 110	08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0205	U	0.0390	0.0391	1.00	0.0765	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Uranium-238	0.255		0.106	0.108	1.00	0.0678	pCi/g	08/29/21 20:35	09/08/21 13:49	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	60.5		30 - 110	08/29/21 20:35	09/08/21 13:49	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.289	U	0.856	0.856	5.00	1.56	pCi/g	09/09/21 09:41	09/10/21 17:42	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.132	U	0.152	0.152		0.224	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Americium-241	0.0511	U	0.113	0.113		0.193	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Bismuth-212	0.452	U	0.799	0.800		1.37	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Bismuth-214	0.359		0.102	0.108		0.0916	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Cesium-137	-0.0190	U	0.0564	0.0564		0.0989	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Cobalt-60	-0.0297	U	0.0734	0.0735		0.0815	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Europium-152	0.0499	U	0.114	0.114		0.140	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Europium-154	0.0455	U	0.0706	0.0708		0.0978	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Europium-155	-0.00779	U	0.132	0.132		0.364	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Lead-212	0.0396	U	0.0941	0.0942		0.161	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Lead-214	0.358		0.0891	0.0963		0.0989	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Potassium-40	4.42		0.856	0.964		0.603	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Radium-226	0.359		0.102	0.108	1.00	0.0916	pCi/g	08/18/21 14:03	09/11/21 18:21	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-003-081121

Lab Sample ID: 160-43079-3

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Sodium-22	0.00838	U	0.0260	0.0260		0.0495	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Thorium-232	0.132	U	0.152	0.152		0.224	pCi/g	08/18/21 14:03	09/11/21 18:21	1
Zinc-65	0.000	U	0.0177	0.0177		0.185	pCi/g	08/18/21 14:03	09/11/21 18:21	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.321	U	0.824	0.825	5.00	1.47	pCi/g	08/26/21 10:56	09/18/21 10:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	85.4		40 - 110					08/26/21 10:56	09/18/21 10:38	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-2.09	U	1.48	1.49	5.00	2.73	pCi/g	08/29/21 20:28	09/15/21 17:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	69.8		30 - 110					08/29/21 20:28	09/15/21 17:56	1

Client Sample ID: FSS-003-081121

Lab Sample ID: 160-43079-3

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 86.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.6		0.41	0.019	mg/Kg	☼	09/07/21 07:45	09/08/21 04:15	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	18	U	23	7.4	ug/Kg	☼	09/01/21 15:10	09/01/21 17:42	1

Client Sample ID: FSS-004-081121

Lab Sample ID: 160-43079-4

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0553	U	0.177	0.177	3.00	0.314	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.0		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	93.1		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-004-081121

Lab Sample ID: 160-43079-4

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.222	U	0.244	0.245	1.00	0.407	pCi/g	08/27/21 08:28	09/01/21 10:43	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0530	U	0.0227	0.0231	1.00	0.115	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	-0.0228	U	0.0149	0.0150	1.00	0.0861	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.7		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00282	U	0.00552	0.00553	1.00	0.0546	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Uranium-238	0.165		0.0776	0.0788	1.00	0.0559	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.1		30 - 110					08/29/21 20:35	09/08/21 13:49	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.296	U	0.906	0.907	5.00	1.58	pCi/g	09/09/21 09:41	09/10/21 18:27	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.540		0.156	0.165		0.0865	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Americium-241	0.0632	U	0.157	0.158		0.270	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Bismuth-212	0.333	U	0.703	0.704		1.22	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Bismuth-214	0.382		0.108	0.115		0.100	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Cesium-137	0.0214	U	0.0442	0.0442		0.0775	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Cobalt-60	0.00544	U	0.0255	0.0255		0.0614	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-152	0.0784	U	0.190	0.190		0.186	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-154	0.0263	U	0.0677	0.0677		0.117	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-155	0.00198	U	0.00374	0.00375		0.372	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Lead-212	0.306		0.104	0.111		0.116	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Lead-214	0.232		0.117	0.119		0.177	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Potassium-40	3.51		0.864	0.933		0.708	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Radium-226	0.382		0.108	0.115	1.00	0.100	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Sodium-22	0.0103	U	0.0420	0.0420		0.0790	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Thorium-232	0.540		0.156	0.165		0.0865	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Zinc-65	-0.000370	U	0.121	0.121		0.225	pCi/g	08/18/21 14:03	09/11/21 18:57	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-004-081121

Lab Sample ID: 160-43079-4

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.00647	U	0.873	0.873	5.00	1.53	pCi/g	08/26/21 10:56	09/18/21 11:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	85.0		40 - 110					08/26/21 10:56	09/18/21 11:44	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-2.37	U	1.30	1.32	5.00	2.49	pCi/g	08/29/21 20:28	09/15/21 19:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.7		30 - 110					08/29/21 20:28	09/15/21 19:02	1

Client Sample ID: FSS-004-081121

Lab Sample ID: 160-43079-4

Date Collected: 08/11/21 09:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 93.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.3		0.31	0.014	mg/Kg	☼	09/07/21 07:45	09/08/21 04:18	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	20	6.4	ug/Kg	☼	09/01/21 15:10	09/01/21 17:50	1

Client Sample ID: FSS-005-081121

Lab Sample ID: 160-43079-5

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0981	U	0.185	0.185	3.00	0.321	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	89.7		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	94.2		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0802	U	0.234	0.235	1.00	0.418	pCi/g	08/27/21 08:28	09/01/21 11:05	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-005-081121

Lab Sample ID: 160-43079-5

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	0.00406	U	0.0245	0.0245	1.00	0.0609	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.00609	U	0.0164	0.0164	1.00	0.0393	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-234	0.135		0.0738	0.0746	1.00	0.0698	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-235	-0.00289	U	0.00567	0.00568	1.00	0.0560	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.225		0.0913	0.0932	1.00	0.0574	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	71.2		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.986	U	0.935	0.941	5.00	1.53	pCi/g	09/09/21 09:41	09/10/21 18:50	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.192		0.140	0.142		0.185	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Americium-241	0.0676	U	0.169	0.169		0.290	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Bismuth-212	-0.582	U	0.960	0.962		1.65	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Bismuth-214	0.287		0.116	0.120		0.114	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Cesium-137	-0.0204	U	0.0626	0.0627		0.138	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Cobalt-60	-0.0507	U	0.106	0.106		0.120	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Europium-152	0.112	U	0.0810	0.0818		0.331	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Europium-154	0.0867	U	0.122	0.122		0.112	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Europium-155	0.0663	U	0.102	0.103		0.230	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Lead-212	0.217		0.0768	0.0816		0.0982	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Lead-214	0.279		0.0886	0.0931		0.104	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Potassium-40	3.89		1.02	1.09		0.875	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Radium-226	0.287		0.116	0.120	1.00	0.114	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Radium-228	0.192		0.140	0.142		0.185	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Sodium-22	-0.00182	U	0.0354	0.0354		0.0734	pCi/g	08/20/21 09:48	09/11/21 07:40	1
Zinc-65	0.137	U	0.104	0.105		0.153	pCi/g	08/20/21 09:48	09/11/21 07:40	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	-1.44	U	1.90	1.90	5.00	3.41	pCi/g	08/26/21 10:56	09/18/21 12:50	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-005-081121

Lab Sample ID: 160-43079-5

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	35.1	Q	40 - 110	08/26/21 10:56	09/18/21 12:50	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.469	U	1.01	1.01	5.00	1.75	pCi/g	08/31/21 14:29	09/15/21 16:13	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110	08/31/21 14:29	09/15/21 16:13	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			08/19/21 16:11	1

Client Sample ID: FSS-005-081121

Lab Sample ID: 160-43079-5

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 98.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.6		0.40	0.018	mg/Kg	☼	09/07/21 07:45	09/08/21 04:22	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.7	ug/Kg	☼	09/01/21 15:10	09/01/21 17:52	1

Client Sample ID: FSS-006-081121

Lab Sample ID: 160-43079-6

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.139	U	0.237	0.237	1.00	0.411	pCi/g	08/27/21 08:28	09/01/21 11:28	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00471	U	0.0285	0.0285	1.00	0.0708	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	-0.00236	U	0.00462	0.00463	1.00	0.0457	pCi/g	08/29/21 18:19	09/09/21 13:00	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.9		30 - 110	08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0191	U	0.0389	0.0389	1.00	0.0775	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Uranium-238	0.155		0.0776	0.0787	1.00	0.0744	pCi/g	08/29/21 20:35	09/08/21 13:49	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-006-081121

Lab Sample ID: 160-43079-6

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	78.4		30 - 110	08/29/21 20:35	09/08/21 13:49	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.44	U	1.20	1.21	5.00	2.21	pCi/g	08/29/21 20:28	09/15/21 20:08	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.9		30 - 110	08/29/21 20:28	09/15/21 20:08	1

Client Sample ID: FSS-006-081121

Lab Sample ID: 160-43079-6

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 95.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.2		0.34	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 04:25	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/01/21 15:10	09/01/21 17:55	1

Client Sample ID: FSS-007-081121

Lab Sample ID: 160-43079-7

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0998	U	0.193	0.193	3.00	0.335	pCi/g	08/27/21 13:56	09/07/21 17:21	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	83.2		40 - 110	08/27/21 13:56	09/07/21 17:21	1
Y Carrier	96.1		40 - 110	08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0976	U	0.240	0.240	1.00	0.426	pCi/g	08/27/21 08:28	09/01/21 11:50	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00292	U	0.0262	0.0262	1.00	0.0831	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.00292	U	0.0250	0.0250	1.00	0.0724	pCi/g	08/29/21 18:19	09/09/21 13:00	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	63.3		30 - 110	08/29/21 18:19	09/09/21 13:00	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-007-081121

Lab Sample ID: 160-43079-7

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-235	0.00289	U	0.0354	0.0354	1.00	0.0910	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Uranium-238	0.165		0.0799	0.0810	1.00	0.0660	pCi/g	08/29/21 20:35	09/08/21 13:49	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.1		30 - 110					08/29/21 20:35	09/08/21 13:49	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.635	U	0.826	0.829	5.00	1.39	pCi/g	09/09/21 09:41	09/10/21 19:12	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.384		0.120	0.126		0.0725	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Americium-241	-0.0402	U	0.0751	0.0752		0.169	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Bismuth-212	0.000	U	0.404	0.404		1.17	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Bismuth-214	0.311		0.100	0.105		0.102	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Cesium-137	0.0179	U	0.0346	0.0346		0.0607	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Cobalt-60	0.0338	U	0.0177	0.0180		0.0709	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-152	0.102	U	0.212	0.212		0.318	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-154	0.0362	U	0.0360	0.0362		0.119	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Europium-155	0.0649	U	0.223	0.223		0.381	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Lead-212	0.342		0.0707	0.0829		0.0765	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Lead-214	0.341		0.0793	0.0865		0.0771	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Potassium-40	5.24		0.942	1.08		0.625	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Radium-226	0.311		0.100	0.105	1.00	0.102	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Sodium-22	-0.0335	U	0.0478	0.0479		0.0816	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Thorium-232	0.384		0.120	0.126		0.0725	pCi/g	08/18/21 14:03	09/11/21 18:57	1
Zinc-65	0.0547	U	0.117	0.117		0.205	pCi/g	08/18/21 14:03	09/11/21 18:57	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.150	U	0.862	0.862	5.00	1.49	pCi/g	08/26/21 10:56	09/18/21 13:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	86.1		40 - 110					08/26/21 10:56	09/18/21 13:56	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-2.69	U	1.72	1.74	5.00	3.23	pCi/g	08/29/21 20:28	09/15/21 21:15	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-007-081121

Lab Sample ID: 160-43079-7

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	63.3		30 - 110	08/29/21 20:28	09/15/21 21:15	1

Client Sample ID: FSS-007-081121

Lab Sample ID: 160-43079-7

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 90.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.9		0.32	0.014	mg/Kg	☼	09/07/21 07:45	09/08/21 04:29	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	17	U	21	6.9	ug/Kg	☼	09/01/21 15:10	09/01/21 17:57	1

Client Sample ID: FSS-008-081121

Lab Sample ID: 160-43079-8

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0228	U	0.205	0.205	3.00	0.376	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.4		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	94.2		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0474	U	0.220	0.220	1.00	0.418	pCi/g	08/27/21 08:28	09/01/21 12:13	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00309	U	0.00607	0.00607	1.00	0.0599	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	-0.00310	U	0.00607	0.00608	1.00	0.0600	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	54.7		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00673	U	0.00932	0.00934	1.00	0.0753	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.248		0.101	0.103	1.00	0.0324	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	70.4		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-008-081121

Lab Sample ID: 160-43079-8

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.245	U	0.823	0.823	5.00	1.42	pCi/g	09/09/21 09:41	09/10/21 19:35	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.305		0.101	0.105		0.0642	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Americium-241	-0.0549	U	0.124	0.124		0.211	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Bismuth-212	-0.0234	U	0.511	0.511		0.931	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Bismuth-214	0.238		0.0785	0.0821		0.0815	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Cesium-137	-0.0176	U	0.0508	0.0508		0.0890	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Cobalt-60	-0.0148	U	0.0545	0.0545		0.0627	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Europium-152	0.0687	U	0.110	0.110		0.306	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Europium-154	0.0292	U	0.0587	0.0588		0.0892	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Europium-155	-0.0315	U	0.202	0.202		0.347	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Lead-212	0.358		0.0646	0.0790		0.0630	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Lead-214	0.284		0.0963	0.101		0.0928	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Potassium-40	4.98		0.811	0.953		0.253	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Radium-226	0.238		0.0785	0.0821	1.00	0.0815	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Sodium-22	0.00548	U	0.0318	0.0318		0.0605	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Thorium-232	0.305		0.101	0.105		0.0642	pCi/g	08/18/21 14:03	09/11/21 18:58	1
Zinc-65	0.000	U	0.0324	0.0324		0.218	pCi/g	08/18/21 14:03	09/11/21 18:58	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.110	U	0.876	0.876	5.00	1.53	pCi/g	08/26/21 10:56	09/18/21 16:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	84.9		40 - 110					08/26/21 10:56	09/18/21 16:08	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.34	U	1.99	1.99	5.00	3.56	pCi/g	08/29/21 20:28	09/15/21 22:21	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	54.7		30 - 110					08/29/21 20:28	09/15/21 22:21	1

Client Sample ID: FSS-008-081121

Lab Sample ID: 160-43079-8

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 95.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.9		0.36	0.016	mg/Kg	☼	09/07/21 07:45	09/08/21 04:32	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-008-081121

Lab Sample ID: 160-43079-8

Date Collected: 08/11/21 11:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 95.3

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.4	ug/Kg	☼	09/01/21 15:10	09/01/21 18:00	1

Client Sample ID: FSS-009-081121

Lab Sample ID: 160-43079-9

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.174	U	0.214	0.215	3.00	0.362	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	72.3		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	94.2		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0938	U	0.231	0.232	1.00	0.409	pCi/g	08/27/21 08:28	09/01/21 12:36	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00195	U	0.0176	0.0176	1.00	0.0556	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00587	U	0.00664	0.00666	1.00	0.0484	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.1		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-234	0.148		0.0688	0.0698	1.00	0.0569	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-235	0.0165	U	0.0266	0.0266	1.00	0.0457	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.0530		0.0426	0.0429	1.00	0.0506	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	87.2		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.187	U	0.740	0.740	5.00	1.28	pCi/g	09/09/21 09:41	09/10/21 19:58	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-009-081121

Lab Sample ID: 160-43079-9

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.332		0.152	0.155		0.193	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Americium-241	0.0489	U	0.104	0.104		0.137	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Bismuth-212	-0.527	U	0.800	0.802		1.36	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Bismuth-214	0.373		0.112	0.118		0.107	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Cesium-137	0.00344	U	0.0602	0.0602		0.0751	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Cobalt-60	0.000	U	0.00850	0.00850		0.0319	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Europium-152	0.159		0.0971	0.0984		0.115	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Europium-154	0.0197	U	0.0286	0.0287		0.110	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Europium-155	0.0715	U	0.254	0.254		0.434	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Lead-212	0.265		0.0658	0.0739		0.0719	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Lead-214	0.414		0.0876	0.0973		0.0849	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Potassium-40	3.62		0.998	1.06		0.887	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Radium-226	0.373		0.112	0.118	1.00	0.107	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Radium-228	0.332		0.152	0.155		0.193	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Sodium-22	0.0335		0.0232	0.0234		0.0308	pCi/g	08/20/21 09:48	09/11/21 07:03	1
Zinc-65	0.00506	U	0.116	0.116		0.214	pCi/g	08/20/21 09:48	09/11/21 07:03	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.0723	U	0.903	0.903	5.00	1.58	pCi/g	08/26/21 10:56	09/18/21 17:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	79.9		40 - 110					08/26/21 10:56	09/18/21 17:15	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.0957	U	1.11	1.11	5.00	1.96	pCi/g	08/31/21 14:29	09/15/21 17:19	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.1		30 - 110					08/31/21 14:29	09/15/21 17:19	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			08/19/21 16:11	1

Client Sample ID: FSS-009-081121

Lab Sample ID: 160-43079-9

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 98.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7		0.38	0.017	mg/Kg	☼	09/07/21 07:45	09/08/21 04:36	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-009-081121

Lab Sample ID: 160-43079-9

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 98.6

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/01/21 15:10	09/01/21 18:02	1

Client Sample ID: FSS-010-081121

Lab Sample ID: 160-43079-10

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0605	U	0.191	0.191	3.00	0.338	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.9		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	95.0		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.146	U	0.241	0.242	1.00	0.419	pCi/g	08/27/21 08:28	09/01/21 12:58	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00238	U	0.00466	0.00466	1.00	0.0460	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	0.000	U	0.00466	0.00466	1.00	0.0285	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.8		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0236	U	0.0327	0.0328	1.00	0.0354	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.421		0.125	0.129	1.00	0.0530	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	83.4		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0944	U	0.852	0.852	5.00	1.51	pCi/g	09/09/21 09:41	09/10/21 20:20	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-010-081121

Lab Sample ID: 160-43079-10

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.886		0.175	0.196		0.158	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Americium-241	0.0770	U	0.202	0.202		0.346	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Bismuth-212	0.461	U	0.851	0.852		1.47	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Bismuth-214	0.581		0.145	0.157		0.117	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Cesium-137	0.000928	U	0.0576	0.0576		0.107	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Cobalt-60	0.0123	U	0.0394	0.0395		0.0737	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Europium-152	0.231		0.115	0.118		0.178	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Europium-154	0.0479	U	0.0600	0.0602		0.164	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Europium-155	0.0919	U	0.269	0.269		0.460	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Lead-212	0.738		0.132	0.162		0.153	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Lead-214	0.749		0.152	0.170		0.133	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Potassium-40	5.26		1.14	1.25		0.849	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Radium-226	0.581		0.145	0.157	1.00	0.117	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Sodium-22	0.000	U	0.0104	0.0104		0.0390	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Thorium-232	0.886		0.175	0.196		0.158	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Zinc-65	-0.00525	U	0.138	0.138		0.328	pCi/g	08/18/21 14:03	09/11/21 19:42	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.163	U	0.960	0.960	5.00	1.67	pCi/g	08/26/21 10:56	09/18/21 18:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	84.9		40 - 110					08/26/21 10:56	09/18/21 18:21	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.184	U	1.81	1.81	5.00	3.24	pCi/g	08/29/21 20:28	09/15/21 23:27	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.8		30 - 110					08/29/21 20:28	09/15/21 23:27	1

Client Sample ID: FSS-010-081121

Lab Sample ID: 160-43079-10

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 94.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.2		0.36	0.017	mg/Kg	☼	09/07/21 07:45	09/08/21 04:39	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	6.7	J	18	6.0	ug/Kg	☼	09/01/21 15:10	09/01/21 18:05	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-011-081121

Lab Sample ID: 160-43079-11

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.218	U	0.197	0.198	3.00	0.324	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.7		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	92.3		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0852	U	0.218	0.218	1.00	0.422	pCi/g	08/27/21 08:28	09/01/21 13:21	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00729	U	0.00825	0.00828	1.00	0.0602	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00487	U	0.00675	0.00676	1.00	0.0545	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	71.2		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.000	U	0.00583	0.00583	1.00	0.0357	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.327		0.111	0.114	1.00	0.0590	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	65.7		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.279	U	0.917	0.918	5.00	1.58	pCi/g	09/09/21 09:41	09/10/21 20:43	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.43		0.207	0.252		0.110	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Americium-241	-0.0939	U	0.0722	0.0728		0.244	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Bismuth-212	0.391	U	0.793	0.794		1.37	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Bismuth-214	0.843		0.141	0.165		0.104	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Cesium-137	-0.0134	U	0.0794	0.0794		0.139	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Cobalt-60	0.0277	U	0.0458	0.0459		0.0736	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Europium-152	0.137	U	0.271	0.271		0.423	pCi/g	08/18/21 14:03	09/11/21 19:42	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-011-081121

Lab Sample ID: 160-43079-11

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0751	U	0.121	0.121		0.131	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Europium-155	-0.000927	U	0.0851	0.0851		0.597	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Lead-212	1.30		0.126	0.207		0.0970	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Lead-214	0.836		0.120	0.147		0.126	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Potassium-40	4.56		0.905	1.01		0.649	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Radium-226	0.843		0.141	0.165	1.00	0.104	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Sodium-22	-0.0386	U	0.0514	0.0515		0.0869	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Thorium-232	1.43		0.207	0.252		0.110	pCi/g	08/18/21 14:03	09/11/21 19:42	1
Zinc-65	0.000	U	0.0329	0.0329		0.256	pCi/g	08/18/21 14:03	09/11/21 19:42	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.0332	U	0.853	0.853	5.00	1.49	pCi/g	08/26/21 10:56	09/18/21 19:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	86.1		40 - 110					08/26/21 10:56	09/18/21 19:27	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.86	U	1.61	1.62	5.00	3.06	pCi/g	08/29/21 20:28	09/16/21 00:33	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	71.2		30 - 110					08/29/21 20:28	09/16/21 00:33	1

Client Sample ID: FSS-011-081121

Lab Sample ID: 160-43079-11

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 93.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.6		0.33	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 04:43	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.1	ug/Kg	☼	09/01/21 15:10	09/01/21 18:07	1

Client Sample ID: FSS-012-081121

Lab Sample ID: 160-43079-12

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0588	U	0.186	0.186	3.00	0.330	pCi/g	08/27/21 13:56	09/07/21 17:21	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-012-081121

Lab Sample ID: 160-43079-12

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	79.5		40 - 110	08/27/21 13:56	09/07/21 17:21	1
Y Carrier	93.5		40 - 110	08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0376	U	0.228	0.228	1.00	0.415	pCi/g	08/27/21 08:28	09/01/21 13:43	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00699	U	0.0188	0.0188	1.00	0.0451	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00233	U	0.00457	0.00458	1.00	0.0452	pCi/g	08/29/21 18:19	09/09/21 21:38	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	73.8		30 - 110	08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0418	U	0.0475	0.0476	1.00	0.0668	pCi/g	08/29/21 20:35	09/08/21 14:04	1
Uranium-238	0.684		0.159	0.169	1.00	0.0536	pCi/g	08/29/21 20:35	09/08/21 14:04	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	71.5		30 - 110	08/29/21 20:35	09/08/21 14:04	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.405	U	0.855	0.856	5.00	1.47	pCi/g	09/09/21 09:41	09/10/21 21:05	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.14		0.168	0.203		0.259	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Americium-241	-0.0891	U	0.185	0.185		0.314	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Bismuth-212	1.26		0.601	0.615		0.569	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Bismuth-214	0.744		0.130	0.150		0.0902	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Cesium-137	0.0315	U	0.0648	0.0649		0.112	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Cobalt-60	-0.000303	U	0.000472	0.000473		0.0787	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Europium-152	0.0604	U	0.107	0.107		0.164	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Europium-154	0.0153	U	0.0263	0.0264		0.123	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Europium-155	0.000	U	0.111	0.111		0.536	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Lead-212	1.09		0.109	0.176		0.0863	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Lead-214	0.673		0.0989	0.120		0.100	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Potassium-40	6.05		0.918	1.10		0.267	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Radium-226	0.744		0.130	0.150	1.00	0.0902	pCi/g	08/18/21 14:03	09/11/21 19:41	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-012-081121

Lab Sample ID: 160-43079-12

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Sodium-22	-0.0116	U	0.0480	0.0481		0.0874	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Thorium-232	1.14		0.168	0.203		0.259	pCi/g	08/18/21 14:03	09/11/21 19:41	1
Zinc-65	0.000	U	0.0296	0.0296		0.267	pCi/g	08/18/21 14:03	09/11/21 19:41	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.0926	U	1.08	1.08	5.00	1.90	pCi/g	08/26/21 10:56	09/18/21 20:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	67.8		40 - 110					08/26/21 10:56	09/18/21 20:33	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.13	U	1.50	1.50	5.00	2.71	pCi/g	08/29/21 20:28	09/16/21 01:40	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	73.8		30 - 110					08/29/21 20:28	09/16/21 01:40	1

Client Sample ID: FSS-012-081121

Lab Sample ID: 160-43079-12

Date Collected: 08/11/21 13:30

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 93.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	4.3		0.33	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 04:53	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/01/21 15:10	09/01/21 18:10	1

Client Sample ID: FSS-013-081221

Lab Sample ID: 160-43079-13

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0888	U	0.204	0.204	3.00	0.357	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	74.7		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	93.8		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-013-081221

Lab Sample ID: 160-43079-13

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0547	U	0.225	0.225	1.00	0.405	pCi/g	08/27/21 08:28	09/01/21 14:06	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00219	U	0.00429	0.00430	1.00	0.0424	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00219	U	0.00430	0.00430	1.00	0.0424	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	78.0		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-234	0.597		0.146	0.154	1.00	0.0518	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-235	0.0576		0.0505	0.0507	1.00	0.0345	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.573		0.143	0.150	1.00	0.0277	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	71.9		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.392	U	0.854	0.855	5.00	1.46	pCi/g	09/09/21 09:41	09/10/21 21:28	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.138	U	0.120	0.120		0.142	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Americium-241	-0.0499	U	0.125	0.125		0.215	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Bismuth-212	-0.482	U	0.784	0.786		1.34	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Bismuth-214	0.355		0.0968	0.103		0.0905	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Cesium-137	0.150		0.0448	0.0473		0.0304	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Cobalt-60	0.00377	U	0.0105	0.0105		0.0777	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Europium-152	0.00949	U	0.0265	0.0266		0.144	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Europium-154	0.0664	U	0.0465	0.0470		0.0994	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Europium-155	-0.000494	U	0.00122	0.00122		0.357	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Lead-212	0.144		0.0444	0.0480		0.0439	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Lead-214	0.372		0.0832	0.0914		0.113	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Potassium-40	5.02		0.907	1.04		0.314	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Radium-226	0.355		0.0968	0.103	1.00	0.0905	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Radium-228	0.138	U	0.120	0.120		0.142	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Sodium-22	0.00543	U	0.0284	0.0284		0.0562	pCi/g	08/20/21 09:48	09/11/21 07:05	1
Zinc-65	-0.109	U	0.165	0.165		0.280	pCi/g	08/20/21 09:48	09/11/21 07:05	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-013-081221

Lab Sample ID: 160-43079-13

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.404	U	0.786	0.787	5.00	1.35	pCi/g	08/26/21 10:56	09/18/21 21:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	92.6		40 - 110					08/26/21 10:56	09/18/21 21:40	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.167	U	1.32	1.32	5.00	2.37	pCi/g	08/31/21 14:29	09/15/21 18:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	78.0		30 - 110					08/31/21 14:29	09/15/21 18:25	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			08/19/21 16:11	1

Client Sample ID: FSS-013-081221

Lab Sample ID: 160-43079-13

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 98.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.4		0.41	0.018	mg/Kg	☼	09/07/21 07:45	09/08/21 04:57	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	10	J	19	6.0	ug/Kg	☼	09/01/21 15:10	09/01/21 18:13	1

Client Sample ID: FSS-014-081221

Lab Sample ID: 160-43079-14

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.138	U	0.205	0.206	3.00	0.352	pCi/g	08/27/21 13:56	09/07/21 17:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.0		40 - 110					08/27/21 13:56	09/07/21 17:21	1
Y Carrier	93.1		40 - 110					08/27/21 13:56	09/07/21 17:21	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.211	U	0.246	0.246	1.00	0.414	pCi/g	08/27/21 08:28	09/01/21 14:29	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-014-081221

Lab Sample ID: 160-43079-14

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	-0.00946	U	0.00927	0.00930	1.00	0.0632	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00237	U	0.00464	0.00464	1.00	0.0458	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	75.4		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-235	-0.00281	U	0.00551	0.00552	1.00	0.0545	pCi/g	08/29/21 20:35	09/08/21 14:04	1
Uranium-238	0.142		0.0736	0.0745	1.00	0.0642	pCi/g	08/29/21 20:35	09/08/21 14:04	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Uranium-232</i>	90.9		30 - 110					08/29/21 20:35	09/08/21 14:04	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.0466	U	0.766	0.766	5.00	1.35	pCi/g	09/09/21 09:41	09/10/21 21:51	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.140	U	0.233	0.233		0.385	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Americium-241	-0.0588	U	0.180	0.180		0.308	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Bismuth-212	-0.535	U	0.839	0.840		1.43	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Bismuth-214	0.340		0.121	0.126		0.109	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Cesium-137	-0.000289	U	0.0624	0.0624		0.0470	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Cobalt-60	0.0253	U	0.0150	0.0152		0.0354	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Europium-152	0.143	U	0.195	0.196		0.318	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Europium-154	0.119		0.0624	0.0636		0.113	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Europium-155	-0.0249	U	0.167	0.167		0.418	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Lead-212	0.277		0.0870	0.0938		0.117	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Lead-214	0.334		0.0959	0.102		0.0767	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Potassium-40	3.50		0.889	0.956		0.745	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Radium-226	0.340		0.121	0.126	1.00	0.109	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Sodium-22	-0.0658	U	0.0747	0.0750		0.124	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Thorium-232	0.140	U	0.233	0.233		0.385	pCi/g	08/18/21 14:03	09/11/21 20:20	1
Zinc-65	-0.00460	U	0.121	0.121		0.252	pCi/g	08/18/21 14:03	09/11/21 20:20	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.463	U	0.865	0.867	5.00	1.49	pCi/g	08/26/21 10:56	09/18/21 22:46	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-014-081221

Lab Sample ID: 160-43079-14

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	85.9		40 - 110	08/26/21 10:56	09/18/21 22:46	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.19	U	1.48	1.49	5.00	2.67	pCi/g	08/29/21 20:28	09/16/21 02:46	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.4		30 - 110	08/29/21 20:28	09/16/21 02:46	1

Client Sample ID: FSS-014-081221

Lab Sample ID: 160-43079-14

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 95.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.6		0.35	0.016	mg/Kg	☼	09/07/21 07:45	09/08/21 05:00	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/01/21 15:10	09/01/21 18:20	1

Client Sample ID: FSS-015-081221

Lab Sample ID: 160-43079-15

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.101	U	0.175	0.175	3.00	0.303	pCi/g	08/27/21 13:56	09/07/21 17:24	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	84.0		40 - 110	08/27/21 13:56	09/07/21 17:24	1
Y Carrier	95.7		40 - 110	08/27/21 13:56	09/07/21 17:24	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0524	U	0.216	0.216	1.00	0.409	pCi/g	08/27/21 08:28	09/01/21 14:51	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00433	U	0.0180	0.0180	1.00	0.0485	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	0.00650	U	0.0258	0.0258	1.00	0.0616	pCi/g	08/29/21 18:19	09/09/21 21:38	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.2		30 - 110	08/29/21 18:19	09/09/21 21:38	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-015-081221

Lab Sample ID: 160-43079-15

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-235	-0.00257	U	0.00505	0.00505	1.00	0.0498	pCi/g	08/29/21 20:35	09/08/21 14:04	1
Uranium-238	0.147		0.0711	0.0721	1.00	0.0587	pCi/g	08/29/21 20:35	09/08/21 14:04	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	91.5		30 - 110					08/29/21 20:35	09/08/21 14:04	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.553	U	0.896	0.898	5.00	1.52	pCi/g	09/09/21 09:41	09/10/21 22:13	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.462		0.114	0.123		0.0691	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Americium-241	-0.0265	U	0.114	0.114		0.197	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Bismuth-212	0.242	U	0.400	0.401		0.692	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Bismuth-214	0.281		0.0910	0.0954		0.0909	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Cesium-137	-0.00473	U	0.0415	0.0415		0.0756	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Cobalt-60	0.0257	U	0.0190	0.0192		0.0270	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Europium-152	0.0414	U	0.0552	0.0553		0.0932	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Europium-154	0.0764	U	0.0529	0.0535		0.0795	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Europium-155	0.0424	U	0.108	0.108		0.327	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Lead-212	0.359		0.0618	0.0768		0.0460	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Lead-214	0.253		0.0690	0.0737		0.0642	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Potassium-40	3.37		0.692	0.770		0.273	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Radium-226	0.281		0.0910	0.0954	1.00	0.0909	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Sodium-22	0.000	U	0.0139	0.0139		0.0330	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Thorium-232	0.462		0.114	0.123		0.0691	pCi/g	08/18/21 14:03	09/11/21 20:23	1
Zinc-65	-0.000974	U	0.0960	0.0960		0.178	pCi/g	08/18/21 14:03	09/11/21 20:23	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	-0.0979	U	0.945	0.945	5.00	1.68	pCi/g	08/26/21 10:56	09/18/21 23:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	76.8		40 - 110					08/26/21 10:56	09/18/21 23:52	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.971	U	1.46	1.46	5.00	2.63	pCi/g	08/29/21 20:28	09/16/21 03:52	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-015-081221

Lab Sample ID: 160-43079-15

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.2		30 - 110	08/29/21 20:28	09/16/21 03:52	1

Client Sample ID: FSS-015-081221

Lab Sample ID: 160-43079-15

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 96.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.5		0.38	0.017	mg/Kg	☼	09/07/21 07:45	09/08/21 05:04	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.8	ug/Kg	☼	09/01/21 15:10	09/01/21 18:23	1

Client Sample ID: FSS-016-081221

Lab Sample ID: 160-43079-16

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0820	U	0.177	0.177	3.00	0.310	pCi/g	08/27/21 13:56	09/07/21 17:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.9		40 - 110					08/27/21 13:56	09/07/21 17:24	1
Y Carrier	93.8		40 - 110					08/27/21 13:56	09/07/21 17:24	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.204	U	0.241	0.242	1.00	0.404	pCi/g	08/27/21 08:28	09/01/21 15:14	1

Method: A-01-R - Isotopic Plutonium analysis by Alpha Spec

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00478	U	0.0303	0.0303	1.00	0.0842	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00717	U	0.00812	0.00814	1.00	0.0591	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.8		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.000	U	0.00552	0.00552	1.00	0.0338	pCi/g	08/29/21 20:35	09/09/21 12:16	1
Uranium-238	0.108		0.0613	0.0619	1.00	0.0271	pCi/g	08/29/21 20:35	09/09/21 12:16	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	70.9		30 - 110					08/29/21 20:35	09/09/21 12:16	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-016-081221

Lab Sample ID: 160-43079-16

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.587	U	0.856	0.859	5.00	1.45	pCi/g	09/09/21 09:41	09/10/21 22:36	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.425		0.124	0.132		0.126	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Americium-241	0.0260	U	0.122	0.122		0.212	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Bismuth-212	-0.0207	U	0.366	0.366		0.693	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Bismuth-214	0.245		0.0903	0.0936		0.0980	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Cesium-137	-0.0183	U	0.0591	0.0591		0.104	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Cobalt-60	0.000	U	0.0181	0.0181		0.0278	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Europium-152	-0.0522	U	0.0928	0.0930		0.158	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Europium-154	0.0507	U	0.0888	0.0890		0.101	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Europium-155	0.0257	U	0.139	0.139		0.240	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Lead-212	0.360		0.0700	0.0836		0.0722	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Lead-214	0.269		0.0729	0.0779		0.0661	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Potassium-40	4.29		0.851	0.954		0.611	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Radium-226	0.245		0.0903	0.0936	1.00	0.0980	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Sodium-22	-0.0461	U	0.0543	0.0545		0.0905	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Thorium-232	0.425		0.124	0.132		0.126	pCi/g	08/18/21 14:03	09/13/21 15:00	1
Zinc-65	-0.0171	U	0.138	0.138		0.247	pCi/g	08/18/21 14:03	09/13/21 15:00	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.0726	U	1.03	1.03	5.00	1.82	pCi/g	08/26/21 10:56	09/19/21 01:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	79.9		40 - 110					08/26/21 10:56	09/19/21 01:01	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.85	U	1.52	1.53	5.00	2.81	pCi/g	08/29/21 20:28	09/16/21 04:59	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.8		30 - 110					08/29/21 20:28	09/16/21 04:59	1

Client Sample ID: FSS-016-081221

Lab Sample ID: 160-43079-16

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 96.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.96		0.40	0.018	mg/Kg	☼	09/07/21 07:45	09/08/21 05:07	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43079-1

Client Sample ID: FSS-016-081221

Lab Sample ID: 160-43079-16

Date Collected: 08/12/21 08:00

Matrix: Solid

Date Received: 08/13/21 08:45

Percent Solids: 96.8

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.8	ug/Kg	☼	09/01/21 15:10	09/01/21 18:25	1

Laboratory Report

Eurofins TestAmerica, St. Louis
13715 Rider Trail North
Earth City, MO 63045
United States
Attention: Ivan H Vania
Telephone: 314-298-8566

Report Date 09/21/2021
Sample Receipt Date 08/25/2021
RJ Lee Group Job No. AOH1063230-0
Authorization/P.O. No.
Client Job No./Name 160-43079-1

Analysis: Asbestos in Bulk Samples by Point Count

Method: NYELAP Method 198.6 NOB
NYELAP Method 198.1

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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546418.HPL	FSS-001-081121 (160-43079-1)	Yes	1	ND		100.00	Q, AM, F, OP, MI, M	EAF-09/21/2021
Description:		Grey Residue 4 Slides Scanned. Inconclusive- No Asbestos Detected. NY ELAP Method 198.6.						
Weight Loss: 12.05%								
10546419.HPL	FSS-002-081121 (160-43079-2)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								

Client Job No./Name: 160-43079-1

RJ Lee Group Job No: AOH1063230-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546420.HPL	FSS-003-081121 (160-43079-3)	Yes	1	ND		100.00	Q, CA, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546421.HPL	FSS-004-081121 (160-43079-4)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546422.HPL	FSS-005-081121 (160-43079-5)	Yes	1	ND		100.00	Q, AM, F, OP, M	EAF-09/21/2021
Description:		Grey Residue 4 Slides Scanned. Inconclusive- No Asbestos Detected. NY ELAP Method 198.6.						
Weight Loss: 72.28%								
10546423.HPL	FSS-006-081121 (160-43079-6)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								

Client Job No./Name: 160-43079-1

RJ Lee Group Job No: AOH1063230-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546424.HPL	FSS-007-081121 (160-43079-7)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	AC-09/16/2021
Description:		Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss:		0.0%						
10546425.HPL	FSS-008-081121 (160-43079-8)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/16/2021
Description:		Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss:		0.0%						
10546426.HPL	FSS-009-081121 (160-43079-9)	Yes	1	ND		100.00	Q, AM, F, OP, M	EAF-09/21/2021
Description:		Grey Residue 4 Slides Scanned. Inclusive- No Asbestos Detected. NY ELAP Method 198.6.						
Weight Loss:		0.0%						
10546426.HPL	FSS-009-081121 (160-43079-9)	Yes	1	ND		100.00	Q, AM, F, OP, M	EAF-09/21/2021
Description:		Grey Residue 4 Slides Scanned. Inconclusive- No Asbestos Detected. NY ELAP Method 198.6.						
Weight Loss:		69.76%						

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Client Job No./Name: 160-43079-1

RJ Lee Group Job No: AOH1063230-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546427.HPL	FSS-010-081121 (160-43079-10)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/16/2021
Description:		Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546428.HPL	FSS-011-081121 (160-43079-11)	Yes	1	ND		100.00	Q, CA, CL, F, OP, M	AC-09/16/2021
Description:		Yellow Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546429.HPL	FSS-012-081121 (160-43079-12)	Yes	1	ND		100.00	Q, CL, AM, CA, F, OP, MI, M	AC-09/16/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546430.HPL	FSS-013-081121 (160-43079-13)	Yes	1	ND		100.00	Q, AM, F, OP, M,	EAF-09/21/2021
Description:		Grey Powder 4 Slides Scanned. Inconclusive- No Asbestos Detected. NY ELAP Method 198.6.						
Weight Loss: 56.19%								

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Client Job No./Name: 160-43079-1

RJ Lee Group Job No: AOH1063230-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546431.HPL	FSS-014-081121 (160-43079-14)	Yes	1	ND		100.00	Q, CL, F, OP, MI, M	AC-09/16/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546432.HPL	FSS-015-081121 (160-43079-15)	Yes	1	ND		100.00	Q, CL, AM, F, OP, MI, M	AC-09/16/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								
10546433.HPL	FSS-016-081121 (160-43079-16)	Yes	1	ND		100.00	Q, CA, CL, F, OP, M	AC-09/16/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss: 0.0%								

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Client Job No./Name: 160-43079-1

RJ Lee Group Job No: AOH1063230-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
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Authorized Signature: _____

Alexandra Cheek, Microscopist

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ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- AM = Amphibole
- B = Binder
- CA = Carbonates
- CL = Clay
- F = Feldspar
- G = Gypsum
- HY = Hydromagnesite
- M = Miscellaneous
- MI = Mica
- OP = Opaque
- OR = Organic
- P = Perlite
- Q = Quartz
- T = Tar
- V = Vermiculite

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43084-1	FSS-017-081221	Solid	08/12/21 09:00	08/14/21 09:20
160-43084-2	FSS-018-081221	Solid	08/12/21 09:00	08/14/21 09:20
160-43084-3	FSS-019-081221	Solid	08/12/21 09:00	08/14/21 09:20
160-43084-4	FSS-020-081221	Solid	08/12/21 10:00	08/14/21 09:20
160-43084-5	FSS-021-081221	Solid	08/12/21 10:00	08/14/21 09:20
160-43084-6	FSS-022-081221	Solid	08/12/21 10:00	08/14/21 09:20
160-43084-7	FSS-023-081221	Solid	08/12/21 13:30	08/14/21 09:20
160-43084-8	FSS-024-081221	Solid	08/12/21 13:30	08/14/21 09:20
160-43084-9	FSS-025-081221	Solid	08/12/21 13:30	08/14/21 09:20
160-43084-10	FSS-026-081221	Solid	08/12/21 14:30	08/14/21 09:20
160-43084-11	FSS-027-081221	Solid	08/12/21 14:30	08/14/21 09:20
160-43084-12	FSS-028-081221	Solid	08/12/21 14:30	08/14/21 09:20
160-43084-13	FSS-029-081321	Solid	08/13/21 09:00	08/14/21 09:20
160-43084-14	FSS-030-081321	Solid	08/13/21 09:00	08/14/21 09:20
160-43084-15	FSS-031-081321	Solid	08/13/21 09:00	08/14/21 09:20
160-43084-16	FSS-032-081321	Solid	08/13/21 10:30	08/14/21 09:20
160-43084-17	FSS-033-081321	Solid	08/13/21 10:30	08/14/21 09:20
160-43084-18	FSS-034-081321	Solid	08/13/21 10:30	08/14/21 09:20
160-43084-19	FSS-035-081321	Solid	08/13/21 09:30	08/14/21 09:20
160-43084-20	FSS-036-081321	Solid	08/13/21 09:30	08/14/21 09:20
160-43084-21	FSS-037-081321	Solid	08/13/21 09:30	08/14/21 09:20
160-43084-22	FSS-038-081321	Solid	08/13/21 08:30	08/14/21 09:20
160-43084-23	FSS-039-081321	Solid	08/13/21 08:30	08/14/21 09:20
160-43084-24	FSS-040-081321	Solid	08/13/21 08:30	08/14/21 09:20
160-43084-25	FSS-041-081321	Solid	08/13/21 11:30	08/14/21 09:20
160-43084-26	FSS-042-081321	Solid	08/13/21 11:30	08/14/21 09:20
160-43084-27	FSS-043-081321	Solid	08/13/21 11:30	08/14/21 09:20

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43084-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/14/2021 9:20 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 6 coolers at receipt time were 4.3° C, 11.1° C, 22.5° C, 22.9° C, 23.5° C and 23.5° C.

Receipt Exceptions

The bags for the following samples were received open and a significant amount of sample was poured into the cooler, potentially contaminating these two samples. There is sufficient sample remaining for all analyses.

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis.

METALS (ICP/MS)

Samples FSS-017-081221 (160-43084-1), FSS-018-081221 (160-43084-2), FSS-019-081221 (160-43084-3), FSS-020-081221 (160-43084-4), FSS-021-081221 (160-43084-5), FSS-022-081221 (160-43084-6), FSS-023-081221 (160-43084-7), FSS-024-081221 (160-43084-8), FSS-025-081221 (160-43084-9), FSS-026-081221 (160-43084-10), FSS-027-081221 (160-43084-11), FSS-028-081221

(160-43084-12), FSS-029-081321 (160-43084-13), FSS-030-081321 (160-43084-14), FSS-031-081321 (160-43084-15), FSS-032-081321 (160-43084-16), FSS-033-081321 (160-43084-17), FSS-034-081321 (160-43084-18), FSS-035-081321 (160-43084-19), FSS-036-081321 (160-43084-20), FSS-037-081321 (160-43084-21), FSS-038-081321 (160-43084-22), FSS-039-081321 (160-43084-23), FSS-040-081321 (160-43084-24), FSS-041-081321 (160-43084-25), FSS-042-081321 (160-43084-26) and FSS-043-081321 (160-43084-27) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 09/01/2021 and 09/07/2021 and analyzed on 09/02/2021 and 09/08/2021.

Preparation Batch 280-548182:

Lead was detected in method blank MB 280-548182/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Analytical Batch 280-549084:

Lead failed the recovery criteria low for the MS of sample 160-43079-1. Lead failed the recovery criteria high for the MSD of sample 160-43079-1. Lead exceeded the RPD limit.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-017-081221 (160-43084-1), FSS-018-081221 (160-43084-2), FSS-019-081221 (160-43084-3), FSS-020-081221 (160-43084-4), FSS-021-081221 (160-43084-5), FSS-022-081221 (160-43084-6), FSS-023-081221 (160-43084-7), FSS-024-081221 (160-43084-8), FSS-025-081221 (160-43084-9), FSS-026-081221 (160-43084-10), FSS-027-081221 (160-43084-11), FSS-028-081221 (160-43084-12), FSS-029-081321 (160-43084-13), FSS-030-081321 (160-43084-14), FSS-031-081321 (160-43084-15), FSS-032-081321 (160-43084-16), FSS-033-081321 (160-43084-17), FSS-034-081321 (160-43084-18), FSS-035-081321 (160-43084-19), FSS-036-081321 (160-43084-20), FSS-037-081321 (160-43084-21), FSS-038-081321 (160-43084-22), FSS-039-081321 (160-43084-23), FSS-040-081321 (160-43084-24), FSS-041-081321 (160-43084-25), FSS-042-081321 (160-43084-26) and FSS-043-081321 (160-43084-27) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B DoD5. The samples were prepared and analyzed on 09/03/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples FSS-017-081221 (160-43084-1), FSS-018-081221 (160-43084-2), FSS-019-081221 (160-43084-3), FSS-020-081221 (160-43084-4), FSS-021-081221 (160-43084-5), FSS-022-081221 (160-43084-6), FSS-023-081221 (160-43084-7), FSS-024-081221 (160-43084-8), FSS-025-081221 (160-43084-9), FSS-026-081221 (160-43084-10), FSS-027-081221 (160-43084-11), FSS-028-081221 (160-43084-12), FSS-029-081321 (160-43084-13), FSS-030-081321 (160-43084-14), FSS-031-081321 (160-43084-15), FSS-032-081321 (160-43084-16), FSS-033-081321 (160-43084-17), FSS-034-081321 (160-43084-18), FSS-035-081321 (160-43084-19), FSS-036-081321 (160-43084-20), FSS-037-081321 (160-43084-21), FSS-038-081321 (160-43084-22), FSS-039-081321 (160-43084-23), FSS-040-081321 (160-43084-24), FSS-041-081321 (160-43084-25), FSS-042-081321 (160-43084-26) and FSS-043-081321 (160-43084-27) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 08/25/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-017-081221 (160-43084-1), FSS-018-081221 (160-43084-2), FSS-019-081221 (160-43084-3), FSS-020-081221 (160-43084-4), FSS-021-081221 (160-43084-5), FSS-022-081221 (160-43084-6), FSS-023-081221 (160-43084-7), FSS-024-081221 (160-43084-8), FSS-025-081221 (160-43084-9), FSS-026-081221 (160-43084-10), FSS-027-081221 (160-43084-11), FSS-028-081221 (160-43084-12), FSS-029-081321 (160-43084-13), FSS-030-081321 (160-43084-14), FSS-031-081321 (160-43084-15), FSS-032-081321 (160-43084-16), FSS-033-081321 (160-43084-17), FSS-034-081321 (160-43084-18), FSS-035-081321 (160-43084-19), FSS-036-081321 (160-43084-20), FSS-037-081321 (160-43084-21), FSS-038-081321 (160-43084-22), FSS-039-081321 (160-43084-23), FSS-040-081321 (160-43084-24), FSS-041-081321 (160-43084-25), FSS-042-081321 (160-43084-26) and FSS-043-081321 (160-43084-27) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 08/17/2021, prepared on 08/27/2021 and 09/04/2021 and analyzed on 09/07/2021, 09/20/2021 and 09/25/2021.

Preparation Batch 160-524352:

The samples could not be thoroughly homogenized before sub-sampling was performed due to the sample matrices: FSS-017-081221 (160-43084-1), FSS-018-081221 (160-43084-2), FSS-019-081221 (160-43084-3), FSS-020-081221 (160-43084-4), and FSS-021-081221 (160-43084-5).

Preparation Batch 160-525601:

The samples could not be thoroughly homogenized before sub-sampling was performed due to the sample matrices. The samples had large rocks >2mm: FSS-042-081321 (160-43084-26), FSS-043-081321 (160-43084-27), and (160-43084-D-26-A DU).

Preparation Batch 160-524352:

The sample duplicate (DUP) precision (RER/DER) was outside control limits. Sample non-homogeneity and a matrix effect was observed and noted during preparation. In addition, the original sample and sample duplicate both had activity below the RL: (160-43079-A-2-F DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-017-081221 (160-43084-1), FSS-018-081221 (160-43084-2), FSS-019-081221 (160-43084-3), FSS-020-081221 (160-43084-4), FSS-021-081221 (160-43084-5), FSS-022-081221 (160-43084-6), FSS-023-081221 (160-43084-7), FSS-024-081221 (160-43084-8), FSS-025-081221 (160-43084-9), FSS-026-081221 (160-43084-10), FSS-027-081221 (160-43084-11), FSS-028-081221 (160-43084-12), FSS-029-081321 (160-43084-13), FSS-030-081321 (160-43084-14), FSS-031-081321 (160-43084-15), FSS-032-081321 (160-43084-16), FSS-033-081321 (160-43084-17), FSS-034-081321 (160-43084-18), FSS-035-081321 (160-43084-19), FSS-036-081321 (160-43084-20), FSS-037-081321 (160-43084-21), FSS-038-081321 (160-43084-22), FSS-039-081321 (160-43084-23), FSS-040-081321 (160-43084-24), FSS-041-081321 (160-43084-25), FSS-042-081321 (160-43084-26) and FSS-043-081321 (160-43084-27) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 08/31/2021 and analyzed on 09/03/2021, 09/08/2021 and 09/09/2021.

Preparation Batch 160-524989:

The method blank (MB) had Tritium activity above the MDC. The samples exhibited concentrations greater than five (5) times that observed in the blank; therefore, re-analysis was not required: FSS-032-081321 (160-43084-16), FSS-033-081321 (160-43084-17), FSS-034-081321 (160-43084-18), FSS-035-081321 (160-43084-19), FSS-036-081321 (160-43084-20), FSS-037-081321 (160-43084-21), FSS-038-081321 (160-43084-22), FSS-039-081321 (160-43084-23), FSS-040-081321 (160-43084-24), FSS-041-081321 (160-43084-25), FSS-042-081321 (160-43084-26), FSS-043-081321 (160-43084-27), (LCS 160-524989/2-A), (MB 160-524989/1-A), (160-43084-C-26-B MS), and (160-43084-C-27-B DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-017-081221 (160-43084-1), FSS-018-081221 (160-43084-2), FSS-019-081221 (160-43084-3), FSS-020-081221 (160-43084-4), FSS-021-081221 (160-43084-5), FSS-022-081221 (160-43084-6), FSS-023-081221 (160-43084-7), FSS-024-081221 (160-43084-8), FSS-025-081221 (160-43084-9), FSS-026-081221 (160-43084-10), FSS-027-081221 (160-43084-11), FSS-028-081221 (160-43084-12), FSS-029-081321 (160-43084-13), FSS-030-081321 (160-43084-14), FSS-031-081321 (160-43084-15), FSS-032-081321 (160-43084-16), FSS-033-081321 (160-43084-17), FSS-034-081321 (160-43084-18), FSS-035-081321 (160-43084-19), FSS-036-081321 (160-43084-20), FSS-037-081321 (160-43084-21), FSS-038-081321 (160-43084-22), FSS-039-081321 (160-43084-23), FSS-040-081321 (160-43084-24), FSS-041-081321 (160-43084-25), FSS-042-081321 (160-43084-26) and FSS-043-081321 (160-43084-27) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 08/17/2021, prepared on 08/21/2021 and 09/11/2021 and analyzed on 09/02/2021, 09/03/2021 and 09/20/2021.

Preparation Batch 160-523548:

Detectors AV131-AV136 and AV139-AV145 were calibrated in August; therefore the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-022-081221 (160-43084-6), FSS-023-081221 (160-43084-7), FSS-024-081221 (160-43084-8), FSS-025-081221 (160-43084-9), FSS-026-081221 (160-43084-10), FSS-027-081221 (160-43084-11), FSS-028-081221 (160-43084-12), FSS-029-081321 (160-43084-13), FSS-030-081321 (160-43084-14), FSS-031-081321 (160-43084-15), FSS-032-081321 (160-43084-16), and FSS-033-081321 (160-43084-17).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-017-081221 (160-43084-1), FSS-018-081221 (160-43084-2), FSS-019-081221 (160-43084-3), FSS-020-081221 (160-43084-4), FSS-021-081221 (160-43084-5), FSS-022-081221 (160-43084-6), FSS-023-081221 (160-43084-7), FSS-024-081221 (160-43084-8), FSS-025-081221 (160-43084-9), FSS-026-081221 (160-43084-10), FSS-027-081221 (160-43084-11), FSS-028-081221 (160-43084-12), FSS-029-081321 (160-43084-13), FSS-030-081321 (160-43084-14), FSS-031-081321 (160-43084-15), FSS-032-081321 (160-43084-16), FSS-033-081321 (160-43084-17), FSS-034-081321 (160-43084-18), FSS-035-081321 (160-43084-19), FSS-036-081321 (160-43084-20), FSS-037-081321 (160-43084-21), FSS-038-081321 (160-43084-22), FSS-039-081321 (160-43084-23), FSS-040-081321 (160-43084-24), FSS-041-081321 (160-43084-25), FSS-042-081321 (160-43084-26) and FSS-043-081321 (160-43084-27) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/17/2021, prepared on 08/21/2021 and analyzed on 09/02/2021.

Preparation Batch 160-523553:

Detectors AV83-AV97 were calibrated in August; therefore, the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-035-081321 (160-43084-19), FSS-036-081321 (160-43084-20), FSS-037-081321 (160-43084-21), FSS-038-081321 (160-43084-22), FSS-039-081321 (160-43084-23), FSS-040-081321 (160-43084-24), FSS-041-081321 (160-43084-25), FSS-042-081321 (160-43084-26), FSS-043-081321 (160-43084-27), (LCS 160-523553/2-A), (MB 160-523553/1-A), and (160-43084-D-19-G DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-017-081221 (160-43084-1), FSS-018-081221 (160-43084-2), FSS-019-081221 (160-43084-3), FSS-020-081221 (160-43084-4), FSS-021-081221 (160-43084-5), FSS-022-081221 (160-43084-6), FSS-023-081221 (160-43084-7), FSS-024-081221 (160-43084-8), FSS-025-081221 (160-43084-9), FSS-026-081221 (160-43084-10), FSS-027-081221 (160-43084-11), FSS-028-081221 (160-43084-12), FSS-029-081321 (160-43084-13), FSS-030-081321 (160-43084-14), FSS-031-081321 (160-43084-15), FSS-032-081321 (160-43084-16), FSS-033-081321 (160-43084-17), FSS-034-081321 (160-43084-18), FSS-035-081321 (160-43084-19), FSS-036-081321 (160-43084-20), FSS-037-081321 (160-43084-21), FSS-038-081321 (160-43084-22), FSS-039-081321 (160-43084-23), FSS-040-081321 (160-43084-24), FSS-041-081321 (160-43084-25), FSS-042-081321 (160-43084-26) and FSS-043-081321 (160-43084-27) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 09/10/2021 and 09/14/2021 and analyzed on 09/13/2021 and 09/17/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-017-081221 (160-43084-1), FSS-018-081221 (160-43084-2), FSS-019-081221 (160-43084-3), FSS-020-081221 (160-43084-4), FSS-021-081221 (160-43084-5), FSS-022-081221 (160-43084-6), FSS-023-081221 (160-43084-7), FSS-024-081221 (160-43084-8), FSS-025-081221 (160-43084-9), FSS-026-081221 (160-43084-10), FSS-027-081221 (160-43084-11), FSS-028-081221 (160-43084-12), FSS-029-081321 (160-43084-13), FSS-030-081321 (160-43084-14), FSS-031-081321 (160-43084-15), FSS-032-081321 (160-43084-16), FSS-033-081321 (160-43084-17), FSS-034-081321 (160-43084-18), FSS-035-081321 (160-43084-19), FSS-036-081321 (160-43084-20), FSS-037-081321 (160-43084-21), FSS-038-081321 (160-43084-22), FSS-039-081321 (160-43084-23), FSS-040-081321 (160-43084-24), FSS-041-081321 (160-43084-25), FSS-042-081321 (160-43084-26) and FSS-043-081321 (160-43084-27) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/17/2021, prepared on 08/19/2021 and analyzed on 09/11/2021 and 09/12/2021.

Preparation Batch 160-523294:

The Ra-226 MDC of 0.239 pCi/g for the method blank (MB) was above the requested limit of 0.200 pCi/g. Ra-226 activity was not observed in the MB above the MDC or RL. The MDC's for the associated samples were not less than the requested limit. The data was reported with the MDC's achieved: (MB 160-523294/1-A).

The method blank z-score for Eu-152 did not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (MB 160-523294/1-A).

The detection goal of 0.200 pCi/g was not met for Ra-226 for the samples. An elevated MDC can occur when higher background counts are applied to a peak ROI. This is due to the relatively small size of the peak or subsequent "force-fit" of the non-existent peak which resulted in higher than normal background counts due to statistical fluctuations in the Compton background. The laboratory does not believe this adversely affects the data, as the Ra-226 result is below the RL and MDC: FSS-037-081321 (160-43084-21), FSS-038-081321 (160-43084-22), FSS-040-081321 (160-43084-24), and FSS-041-081321 (160-43084-25).

For samples FSS-037-081321 (160-43084-21), FSS-038-081321 (160-43084-22), FSS-039-081321 (160-43084-23), FSS-040-081321 (160-43084-24), FSS-041-081321 (160-43084-25), FSS-042-081321 (160-43084-26), FSS-043-081321 (160-43084-27), (LCS 160-523294/2-A), (MB 160-523294/1-A), and (160-43084-D-27-D DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred	Reported
From	to
Nuclide	Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223

Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

Preparation Batch 160-523276:

The detection goal of 0.200 pCi/g was not met for Ra-226 for the method blank. An elevated MDC can occur when higher background counts are applied to a peak ROI. This is due to the relatively small size of the peak or subsequent "force-fit" of the non-existent peak which resulted in higher than normal background counts due to statistical fluctuations in the Compton background. The laboratory does not believe this adversely affects the data, as the Ra-226 result is below the RL and MDC: (MB 160-523276/1-A).

The method blank z-score for Eu-152 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (MB 160-523276/1-A).

The detection goal of 0.200 pCi/g was not met for Ra-226 for the following sample. An elevated MDC can occur when higher background counts are applied to a peak ROI. This is due to the relatively small size of the peak or subsequent "force-fit" of the non-existent peak which resulted in higher than normal background counts due to statistical fluctuations in the Compton background. The laboratory does not believe this adversely affects the data, as the Ra-226 result is below the RL and MDC.: FSS-022-081221 (160-43084-6), FSS-023-081221 (160-43084-7), FSS-024-081221 (160-43084-8), FSS-033-081321 (160-43084-17), FSS-035-081321 (160-43084-19), FSS-036-081321 (160-43084-20), and (160-43084-D-20-K DU).

For samples FSS-017-081221 (160-43084-1), FSS-018-081221 (160-43084-2), FSS-019-081221 (160-43084-3), FSS-020-081221 (160-43084-4), FSS-021-081221 (160-43084-5), FSS-022-081221 (160-43084-6), FSS-023-081221 (160-43084-7), FSS-024-081221 (160-43084-8), FSS-025-081221 (160-43084-9), FSS-026-081221 (160-43084-10), FSS-027-081221 (160-43084-11), FSS-028-081221 (160-43084-12), FSS-029-081321 (160-43084-13), FSS-030-081321 (160-43084-14), FSS-031-081321 (160-43084-15), FSS-032-081321 (160-43084-16), FSS-033-081321 (160-43084-17), FSS-034-081321 (160-43084-18), FSS-035-081321 (160-43084-19), FSS-036-081321 (160-43084-20), (LCS 160-523276/2-A), (MB 160-523276/1-A), and (160-43084-D-20-K DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-017-081221 (160-43084-1), FSS-018-081221 (160-43084-2), FSS-019-081221 (160-43084-3), FSS-020-081221 (160-43084-4), FSS-021-081221 (160-43084-5), FSS-022-081221 (160-43084-6), FSS-023-081221 (160-43084-7), FSS-024-081221 (160-43084-8), FSS-025-081221 (160-43084-9), FSS-026-081221 (160-43084-10), FSS-027-081221 (160-43084-11), FSS-028-081221 (160-43084-12), FSS-029-081321 (160-43084-13), FSS-030-081321 (160-43084-14), FSS-031-081321 (160-43084-15),

FSS-032-081321 (160-43084-16), FSS-033-081321 (160-43084-17), FSS-034-081321 (160-43084-18), FSS-035-081321 (160-43084-19), FSS-036-081321 (160-43084-20), FSS-037-081321 (160-43084-21), FSS-038-081321 (160-43084-22), FSS-039-081321 (160-43084-23), FSS-040-081321 (160-43084-24), FSS-041-081321 (160-43084-25), FSS-042-081321 (160-43084-26) and FSS-043-081321 (160-43084-27) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 08/17/2021, prepared on 08/26/2021 and 09/08/2021 and analyzed on 09/12/2021, 09/17/2021 and 09/19/2021.

Preparation Batch 160-526025:

The nickel carrier recovery at 115% was outside the upper acceptance limit of 110%. The carrier recovery was truncated to 100% to minimize any potential bias a high carrier may have on the results. Note the deliverable does not show the carrier truncation. The original value of 115% is listed, but the LIM system performed the truncation for the results calculations: (MB 160-526025/1-A).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-017-081221 (160-43084-1), FSS-018-081221 (160-43084-2), FSS-019-081221 (160-43084-3), FSS-020-081221 (160-43084-4), FSS-021-081221 (160-43084-5), FSS-022-081221 (160-43084-6), FSS-023-081221 (160-43084-7), FSS-024-081221 (160-43084-8), FSS-025-081221 (160-43084-9), FSS-026-081221 (160-43084-10), FSS-027-081221 (160-43084-11), FSS-028-081221 (160-43084-12), FSS-029-081321 (160-43084-13), FSS-030-081321 (160-43084-14), FSS-031-081321 (160-43084-15), FSS-032-081321 (160-43084-16), FSS-033-081321 (160-43084-17), FSS-034-081321 (160-43084-18), FSS-035-081321 (160-43084-19), FSS-036-081321 (160-43084-20), FSS-037-081321 (160-43084-21), FSS-038-081321 (160-43084-22), FSS-039-081321 (160-43084-23), FSS-040-081321 (160-43084-24), FSS-041-081321 (160-43084-25), FSS-042-081321 (160-43084-26) and FSS-043-081321 (160-43084-27) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared on 08/21/2021, 08/26/2021 and 09/12/2021 and analyzed on 09/09/2021, 09/10/2021, 09/11/2021 and 09/23/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Chain of Custody Record



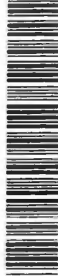
Environment Testing
TestAmerica

TestAmerica Laboratories, Inc. db/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Client Contact FPM Address: 181 Kenwood Avenue Oneida, NY 13421 (315) 336-7721 ext. 218 Phone Fax (315) 336-7722 FAX Project Name: BNL 705 Stack Demo Site: BNL P O # 1085-20-01-01		Project Manager: Dan Ours Email: d.ours@pjm-remediations.com Tel/Fax: (315) 336-7721 ext. 218 Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below 30 Days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: Doug Beard Lab Contact: Ivan Vania Date: 08-13-21 Carrier: Fed Ex COC No.: 3 of 3 COCs TALS Project #: B. Gaudette											
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Gamma Spec: Ra-226+detcts	Strontium-90 (GFPC)	Asbestos - EPA600 R-93	Lead (ICP/MS) - 6020B	Mercury - EPA 7470A	Ni-63	Tritium	C-14	Sample Specific Notes:
FSS-041-081321	13-Aug	11:30	C	S	3	N	1	1	1	1	1	1	1	1	SU 7B - SS08 0-6"
FSS-042-081321	13-Aug	11:30	C	S	3	N	1	1	1	1	1	1	1	1	SU 7B - SS08 6"-12"
FSS-043-081321	13-Aug	11:30	C	S	3	N	1	1	1	1	1	1	1	1	SU 7B - SS08 18"-24"
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Possible Hazard Identification: _____ Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.															
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-212, Pb-212, and K-40															
Return to Client <input type="checkbox"/> Disposal by Lab <input checked="" type="checkbox"/> Archive for _____ Months															
Cooler Temp. (°C): Obs'd: _____ Cor'd: _____ Received by: Fed Ex Date/Time: 8/14/21 Company: FED EX Received in Laboratory by: <i>[Signature]</i> Date/Time: 8/14/21 Company: E.T.B. S.T.C. Received in Laboratory by: _____ Date/Time: 0726 Company: _____															

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler:	Lab P/N:	Carrier Tracking No(s):	COC No:
Client Contact:		Phone:	Vania, Ivan H	State of Origin:	160-217603.1
Shipping/Receiving			E-Mail:	New York	Page:
Company:			Ivan.Vania@Eurofins.com		Page 1 of 3
TestAmerica Laboratories, Inc.			Accreditations Required (See note):	Job #:	160-43084-1
Address:		Due Date Requested:	DOD - A2LA; DoD - ANAB; NELAP - New York		
4955 Yarrow Street,		9/13/2021	Preservation Codes:		
City:		TAT Requested (days):	A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:		
State, Zip:		PO #:	M - Hexane N - None O - AsNaO2 P - Na2OAS Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)		
Phone:		WO #:			
303-736-0100(Tel) 303-431-7171(Fax)		Project #:			
Email:		SOW#:			
BNL Decommissioning Project					
Site:					

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=organic, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform M/MSD (Yes or No)	60208_DDS/30508 (MOD) (CPMS Metals Pb Only)	7471B_DDS/7471B_Prep Mercury	Moisture	Analysis Requested	Total Number of Containers	Special Instructions/Note:
FSS-017-081221 (160-43084-1)	8/12/21	09:00 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-018-081221 (160-43084-2)	8/12/21	09:00 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-019-081221 (160-43084-3)	8/12/21	09:00 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-020-081221 (160-43084-4)	8/12/21	10:00 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-021-081221 (160-43084-5)	8/12/21	10:00 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-022-081221 (160-43084-6)	8/12/21	10:00 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-023-081221 (160-43084-7)	8/12/21	13:30 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-024-081221 (160-43084-8)	8/12/21	13:30 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-025-081221 (160-43084-9)	8/12/21	13:30 Eastern	Solid	Solid	X	X	X	X	X		1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/leis/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica

Possible Hazard Identification	
Unconfirmed	
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2
Empty Kit Relinquished by:	
Relinquished by:	Date:
Relinquished by: <i>MICHA KERVINGA</i>	8/16/21 17:00
Relinquished by:	Date/Time:
Relinquished by:	Date/Time:
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: <i>3.6 JUL 2021 CFTO-0</i>	

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
<input type="checkbox"/> Return To Client	<input type="checkbox"/> Disposal By Lab
Special Instructions/QC Requirements:	
Time:	Method of Shipment:
Time:	Archive For: Months

Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler:	Lab P/N:	Carrier Tracking No(s):	COC No:																																																																																																																								
Client Contact: Shipping/Receiving		Phone:	Vania, Ivan H	State of Origin: New York	160-217603.3																																																																																																																								
Company: TestAmerica Laboratories, Inc.		E-Mail: Ivan.Vania@Eurofins.com		Page 3 of 3																																																																																																																									
Address: 4955 Yarrow Street.		Accreditations Required (See note): DoD - AZLA; DoD - ANAB; NELAP - New York		Job #: 160-43084-1																																																																																																																									
City: Arvada	State: CO, 80002	PO #:	Analysis Requested A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify) Other:																																																																																																																										
Project Name: BNL Decommissioning Project	Site:	WO #:																																																																																																																											
Project #: 16009147																																																																																																																													
SSOW#:																																																																																																																													
Due Date Requested: 9/13/2021	TAT Requested (days):																																																																																																																												
<table border="1"> <thead> <tr> <th>Sample Identification - Client ID (Lab ID)</th> <th>Sample Date</th> <th>Sample Time</th> <th>Sample Type (C=Comp, G=grab)</th> <th>Matrix (W=water, S=solid, O=wastewater, BT=Tissue, A=Air)</th> <th>Field Filtered Sample (Yes or No)</th> <th>Perform MS/MSD (Yes or No)</th> <th>6020B_DDS/3050B (MOD) IC/MS Metals Pb Only</th> <th>7471B_DDS/7471B_Prep Mercury</th> <th>Moisture</th> <th>Total Number of Containers</th> <th>Special Instructions/Note:</th> </tr> </thead> <tbody> <tr> <td>FSS-035-081221 (160-43084-19)</td> <td>8/13/21</td> <td>09:30 Eastern</td> <td>Solid</td> <td>Solid</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>FSS-036-081221 (160-43084-20)</td> <td>8/13/21</td> <td>09:30 Eastern</td> <td>Solid</td> <td>Solid</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>FSS-037-081221 (160-43084-21)</td> <td>8/13/21</td> <td>09:30 Eastern</td> <td>Solid</td> <td>Solid</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>FSS-038-081221 (160-43084-22)</td> <td>8/13/21</td> <td>08:30 Eastern</td> <td>Solid</td> <td>Solid</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>FSS-039-081221 (160-43084-23)</td> <td>8/13/21</td> <td>08:30 Eastern</td> <td>Solid</td> <td>Solid</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>FSS-040-081221 (160-43084-24)</td> <td>8/13/21</td> <td>08:30 Eastern</td> <td>Solid</td> <td>Solid</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>FSS-041-081221 (160-43084-25)</td> <td>8/13/21</td> <td>11:30 Eastern</td> <td>Solid</td> <td>Solid</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>FSS-042-081221 (160-43084-26)</td> <td>8/13/21</td> <td>11:30 Eastern</td> <td>Solid</td> <td>Solid</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> <tr> <td>FSS-043-081221 (160-43084-27)</td> <td>8/13/21</td> <td>11:30 Eastern</td> <td>Solid</td> <td>Solid</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td></td> </tr> </tbody> </table>			Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020B_DDS/3050B (MOD) IC/MS Metals Pb Only	7471B_DDS/7471B_Prep Mercury	Moisture	Total Number of Containers	Special Instructions/Note:	FSS-035-081221 (160-43084-19)	8/13/21	09:30 Eastern	Solid	Solid	X	X	X	X	X	1		FSS-036-081221 (160-43084-20)	8/13/21	09:30 Eastern	Solid	Solid	X	X	X	X	X	1		FSS-037-081221 (160-43084-21)	8/13/21	09:30 Eastern	Solid	Solid	X	X	X	X	X	1		FSS-038-081221 (160-43084-22)	8/13/21	08:30 Eastern	Solid	Solid	X	X	X	X	X	1		FSS-039-081221 (160-43084-23)	8/13/21	08:30 Eastern	Solid	Solid	X	X	X	X	X	1		FSS-040-081221 (160-43084-24)	8/13/21	08:30 Eastern	Solid	Solid	X	X	X	X	X	1		FSS-041-081221 (160-43084-25)	8/13/21	11:30 Eastern	Solid	Solid	X	X	X	X	X	1		FSS-042-081221 (160-43084-26)	8/13/21	11:30 Eastern	Solid	Solid	X	X	X	X	X	1		FSS-043-081221 (160-43084-27)	8/13/21	11:30 Eastern	Solid	Solid	X	X	X	X	X	1		Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.		
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020B_DDS/3050B (MOD) IC/MS Metals Pb Only	7471B_DDS/7471B_Prep Mercury	Moisture	Total Number of Containers	Special Instructions/Note:																																																																																																																		
FSS-035-081221 (160-43084-19)	8/13/21	09:30 Eastern	Solid	Solid	X	X	X	X	X	1																																																																																																																			
FSS-036-081221 (160-43084-20)	8/13/21	09:30 Eastern	Solid	Solid	X	X	X	X	X	1																																																																																																																			
FSS-037-081221 (160-43084-21)	8/13/21	09:30 Eastern	Solid	Solid	X	X	X	X	X	1																																																																																																																			
FSS-038-081221 (160-43084-22)	8/13/21	08:30 Eastern	Solid	Solid	X	X	X	X	X	1																																																																																																																			
FSS-039-081221 (160-43084-23)	8/13/21	08:30 Eastern	Solid	Solid	X	X	X	X	X	1																																																																																																																			
FSS-040-081221 (160-43084-24)	8/13/21	08:30 Eastern	Solid	Solid	X	X	X	X	X	1																																																																																																																			
FSS-041-081221 (160-43084-25)	8/13/21	11:30 Eastern	Solid	Solid	X	X	X	X	X	1																																																																																																																			
FSS-042-081221 (160-43084-26)	8/13/21	11:30 Eastern	Solid	Solid	X	X	X	X	X	1																																																																																																																			
FSS-043-081221 (160-43084-27)	8/13/21	11:30 Eastern	Solid	Solid	X	X	X	X	X	1																																																																																																																			
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify)			Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/QC Requirements:																																																																																																																										
Empty Kit Relinquished by:			Method of Shipment:																																																																																																																										
Relinquished by: <i>Michael Kaminings</i> Date/Time: 8/16/21 17:00 Company: ETA SN			Received by: <i>[Signature]</i> Date/Time: 8/17/2021 09:30 Company:																																																																																																																										
Relinquished by:			Received by:																																																																																																																										
Custody Seals Intact: Δ Yes Δ No			Cooler Temperature(s) °C and Other Remarks:																																																																																																																										

Eurofins TestAmerica, St. Louis

13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8566 Fax: 314-298-8757

Chain of Custody Record



A0410631280

Client Information (Sub Contract Lab)		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:
Client Contact: Shipping/Receiving		Phone:	Vania, Ivan H		160-217601.1
Company: RJ Lee Group, Inc		Address: 350 Hochberg Rd,	E-Mail: Ivan.Vania@Eurofinset.com	State of Origin: New York	Page: Page 1 of 3
Project Name: BNL Decommissioning Project		Due Date Requested: 9/14/2021	Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Job #: 160-43084-1
Site:		TAT Requested (days):	Analysis Requested		Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify)
Project #: 16009147		PO #:			
SSOW#:		WO #:	Field Filtered Sample (Yes or No)		Special Instructions/Note:
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	
Preservation Code:				Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)
FSS-017-081221 (160-43084-1)		8/12/21	09:00 Eastern		SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03)
FSS-018-081221 (160-43084-2)		8/12/21	09:00 Eastern		Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-019-081221 (160-43084-3)		8/12/21	09:00 Eastern		
FSS-020-081221 (160-43084-4)		8/12/21	10:00 Eastern		
FSS-021-081221 (160-43084-5)		8/12/21	10:00 Eastern		
FSS-022-081221 (160-43084-6)		8/12/21	10:00 Eastern		
FSS-023-081221 (160-43084-7)		8/12/21	13:30 Eastern		
FSS-024-081221 (160-43084-8)		8/12/21	13:30 Eastern		
FSS-025-081221 (160-43084-9)		8/12/21	13:30 Eastern		
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>					
Possible Hazard Identification			Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		
Unconfirmed			<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2		Special Instructions/QC Requirements:	
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:	
Relinquished by: <i>Micha Keminkinger</i>		Date/Time: <i>8/16/21 17:00</i>	Company: <i>ETA SL</i>	Received by: <i>Linda Mangus</i>	
Relinquished by:		Date/Time:	Company:	Received by:	
Relinquished by:		Date/Time:	Company:	Received by:	
Custody Seals Intact: △ Yes △ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	

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Eurofins TestAmerica, St. Louis

13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8566 Fax: 314-298-8757

Chain of Custody Record

AOH 1063128-0

Client Information (Sub Contract Lab)		Sampler:	Lab PM: Vania, Ivan H	Carrier Tracking No(s):	COC No: 160-217601.2						
Client Contact: Shipping/Receiving		Phone:	E-Mail: Ivan.Vania@Eurofinset.com	State of Origin: New York	Page: Page 2 of 3						
Company: RJ Lee Group, Inc			Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Job #: 160-43084-1						
Address: 350 Hochberg Rd,		Due Date Requested: 9/14/2021	Analysis Requested								
City: Monroeville		TAT Requested (days):									
State, Zip: PA, 15146		PO #:	Total Number of containers SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03) Asbestos - PLM-EPA600-R-93/LAP-080.03								
Phone:		WO #:									
Project Name: BNL Decommissioning Project		Project #: 16009147	Other: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)								
Site:		SSOW#:									
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/soil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)				Special Instructions/Note:
				Preservation Code:		X	X				
FSS-026-081221 (160-43084-10)		8/12/21	14:30 Eastern	Solid	Solid		X				1 Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-027-081221 (160-43084-11)		8/12/21	14:30 Eastern	Solid	Solid		X				1 Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-028-081221 (160-43084-12)		8/12/21	14:30 Eastern	Solid	Solid		X				1 Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-029-081221 (160-43084-13)		8/13/21	09:00 Eastern	Solid	Solid		X				1 Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-030-081221 (160-43084-14)		8/13/21	09:00 Eastern	Solid	Solid		X				1 Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-031-081221 (160-43084-15)		8/13/21	09:00 Eastern	Solid	Solid		X				1 Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-032-081221 (160-43084-16)		8/13/21	10:30 Eastern	Solid	Solid		X				1 Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-033-081221 (160-43084-17)		8/13/21	10:30 Eastern	Solid	Solid		X				1 Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-034-081221 (160-43084-18)		8/13/21	10:30 Eastern	Solid	Solid		X				1 Asbestos - PLM-EPA600-R-93/LAP-080.03
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.											
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
Unconfirmed						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Deliverable Requested: I, II, III, IV, Other (specify)				Primary Deliverable Rank: 2		Special Instructions/QC Requirements:					
Empty Kit Relinquished by:			Date:			Time:			Method of Shipment:		
Relinquished by: <i>Micha Keminkijer</i>			Date/Time: <i>8/16/21 17:00</i>			Company: <i>ETA SL</i>			Received by: <i>Inda Maurer</i>		
Relinquished by:			Date/Time:			Company:			Received by:		
Relinquished by:			Date/Time:			Company:			Received by:		
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:				Cooler Temperature(s) °C and Other Remarks:					

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Eurofins TestAmerica, St. Louis

13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8566 Fax: 314-298-8757

Chain of Custody Record

A0H106312P-0

Client Information (Sub Contract Lab)		Sampler: Vania, Ivan H	Lab PM: Vania, Ivan H	Carrier Tracking No(s):	COC No: 160-217601.3						
Client Contact: Shipping/Receiving		Phone:	E-Mail: Ivan.Vania@Eurofinset.com	State of Origin: New York	Page: Page 3 of 3						
Company: RJ Lee Group, Inc		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York			Job #: 160-43084-1						
Address: 350 Hochberg Rd,		Analysis Requested			Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify) Other:						
Due Date Requested: 9/14/2021						TAT Requested (days):					
City: Monroeville						PO #:					
State, Zip: PA, 15146						WO #:					
Project Name: BNL Decommissioning Project						Project #: 16009147					
Site: SSOW#:		Project #: 16009147		SSOW#:							
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Number of containers			Special Instructions/Note:
				Preservation Code:							
FSS-035-081221 (160-43084-19)		8/13/21	09:30 Eastern	Solid	Solid		X	1			Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-036-081221 (160-43084-20)		8/13/21	09:30 Eastern	Solid	Solid		X	1			Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-037-081221 (160-43084-21)		8/13/21	09:30 Eastern	Solid	Solid		X	1			Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-038-081221 (160-43084-22)		8/13/21	08:30 Eastern	Solid	Solid		X	1			Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-039-081221 (160-43084-23)		8/13/21	08:30 Eastern	Solid	Solid		X	1			Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-040-081221 (160-43084-24)		8/13/21	08:30 Eastern	Solid	Solid		X	1			Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-041-081221 (160-43084-25)		8/13/21	11:30 Eastern	Solid	Solid		X	1			Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-042-081221 (160-43084-26)		8/13/21	11:30 Eastern	Solid	Solid		X	1			Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-043-081221 (160-43084-27)		8/13/21	11:30 Eastern	Solid	Solid		X	1			Asbestos - PLM-EPA600-R-93/LAP-080.03
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.											
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
Unconfirmed						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Deliverable Requested: I, II, III, IV, Other (specify)				Primary Deliverable Rank: 2		Special Instructions/QC Requirements:					
Empty Kit Relinquished by:			Date:			Time:			Method of Shipment:		
Relinquished by: <i>Micha Kowitkijer</i>		Date/Time: 8/16/21 17:00		Company: ETA SN		Received by: <i>Linda Manuguis</i>		Date/Time: 08-17-2021 9:31AM		Company: RJ Lee Group	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:	
Custody Seals Intact: △ Yes △ No		Custody Seal No.:				Cooler Temperature(s) °C and Other Remarks:					

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Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-017-081221

Lab Sample ID: 160-43084-1

Date Collected: 08/12/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.201	U	0.219	0.219	3.00	0.366	pCi/g	08/27/21 13:56	09/07/21 17:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.6		40 - 110					08/27/21 13:56	09/07/21 17:24	1
Y Carrier	92.3		40 - 110					08/27/21 13:56	09/07/21 17:24	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.172	U	0.212	0.212	1.00	0.362	pCi/g	08/31/21 13:32	09/08/21 23:25	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0234	U	0.0658	0.0658	1.00	0.131	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	0.102		0.0780	0.0784	1.00	0.0997	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	68.4		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.129		0.0782	0.0789	1.00	0.0826	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-235/236	0.00980	U	0.0264	0.0264	1.00	0.0632	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-238	0.128		0.0746	0.0753	1.00	0.0648	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	65.5		30 - 110					08/21/21 14:07	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.855	U	1.02	1.03	5.00	1.76	pCi/g	09/10/21 08:46	09/13/21 03:08	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.160	U	0.140	0.141		0.298	pCi/g	08/19/21 11:02	09/11/21 20:56	1
Americium-241	0.0880	U	0.0898	0.0902		0.123	pCi/g	08/19/21 11:02	09/11/21 20:56	1
Bismuth-212	-0.144	U	0.694	0.694		1.24	pCi/g	08/19/21 11:02	09/11/21 20:56	1
Bismuth-214	0.331		0.0995	0.105		0.0913	pCi/g	08/19/21 11:02	09/11/21 20:56	1
Cesium-137	0.356		0.0811	0.0888		0.0626	pCi/g	08/19/21 11:02	09/11/21 20:56	1
Cobalt-60	-0.00306	U	0.0672	0.0672		0.0823	pCi/g	08/19/21 11:02	09/11/21 20:56	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-017-081221

Lab Sample ID: 160-43084-1

Date Collected: 08/12/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-152	0.0477	U	0.0946	0.0948		0.162	pCi/g	08/19/21 11:02	09/11/21 20:56	1
Europium-154	0.0385	U	0.0717	0.0718		0.107	pCi/g	08/19/21 11:02	09/11/21 20:56	1
Europium-155	0.0263	U	0.0840	0.0841		0.366	pCi/g	08/19/21 11:02	09/11/21 20:56	1
Lead-212	0.279		0.0788	0.0864		0.0994	pCi/g	08/19/21 11:02	09/11/21 20:56	1
Lead-214	0.293		0.0894	0.0942		0.0920	pCi/g	08/19/21 11:02	09/11/21 20:56	1
Potassium-40	2.43		0.748	0.787		0.713	pCi/g	08/19/21 11:02	09/11/21 20:56	1
Radium-226	0.331		0.0995	0.105	0.200	0.0913	pCi/g	08/19/21 11:02	09/11/21 20:56	1
Sodium-22	-0.0251	U	0.0484	0.0485		0.0856	pCi/g	08/19/21 11:02	09/11/21 20:56	1
Thorium-232	0.160	U	0.140	0.141		0.298	pCi/g	08/19/21 11:02	09/11/21 20:56	1
Zinc-65	-0.00440	U	0.0778	0.0778		0.244	pCi/g	08/19/21 11:02	09/11/21 20:56	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/19/21 11:02	09/11/21 20:56	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.0509	U	0.873	0.873	5.00	1.55	pCi/g	08/26/21 10:56	09/19/21 02:07	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	87.3		40 - 110					08/26/21 10:56	09/19/21 02:07	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.126	U	1.46	1.46	5.00	2.53	pCi/g	08/26/21 13:52	09/09/21 10:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	68.4		30 - 110					08/26/21 13:52	09/09/21 10:54	1

Client Sample ID: FSS-017-081221

Lab Sample ID: 160-43084-1

Date Collected: 08/12/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 97.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.4		0.22	0.013	mg/Kg	☼	09/07/21 07:45	09/08/21 05:11	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.8	ug/Kg	☼	09/03/21 16:10	09/03/21 18:53	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-018-081221

Lab Sample ID: 160-43084-2

Date Collected: 08/12/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0861	U	0.200	0.200	3.00	0.351	pCi/g	08/27/21 13:56	09/07/21 17:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.9		40 - 110					08/27/21 13:56	09/07/21 17:24	1
Y Carrier	92.0		40 - 110					08/27/21 13:56	09/07/21 17:24	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.101	U	0.199	0.199	1.00	0.349	pCi/g	08/31/21 13:32	09/08/21 23:48	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0430	U	0.0473	0.0475	1.00	0.0718	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	0.00239	U	0.0204	0.0204	1.00	0.0592	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	74.4		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.134		0.0762	0.0770	1.00	0.0785	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-235/236	0.0208	U	0.0335	0.0336	1.00	0.0576	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-238	0.205		0.0881	0.0897	1.00	0.0535	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	70.3		30 - 110					08/21/21 14:07	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.223	U	1.00	1.00	5.00	1.77	pCi/g	09/10/21 08:46	09/13/21 04:16	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.373		0.131	0.136		0.181	pCi/g	08/19/21 11:02	09/11/21 20:55	1
Americium-241	0.0462	U	0.0869	0.0870		0.114	pCi/g	08/19/21 11:02	09/11/21 20:55	1
Bismuth-212	0.159	U	0.262	0.263		0.458	pCi/g	08/19/21 11:02	09/11/21 20:55	1
Bismuth-214	0.286		0.0862	0.0910		0.0840	pCi/g	08/19/21 11:02	09/11/21 20:55	1
Cesium-137	0.351		0.0591	0.0691		0.0270	pCi/g	08/19/21 11:02	09/11/21 20:55	1
Cobalt-60	0.0260	U	0.0154	0.0156		0.0471	pCi/g	08/19/21 11:02	09/11/21 20:55	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-018-081221

Lab Sample ID: 160-43084-2

Date Collected: 08/12/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-152	-0.0367	U	0.0821	0.0822		0.141	pCi/g	08/19/21 11:02	09/11/21 20:55	1
Europium-154	0.0338	U	0.0547	0.0548		0.0937	pCi/g	08/19/21 11:02	09/11/21 20:55	1
Europium-155	0.0573	U	0.199	0.199		0.340	pCi/g	08/19/21 11:02	09/11/21 20:55	1
Lead-212	0.365		0.0983	0.109		0.142	pCi/g	08/19/21 11:02	09/11/21 20:55	1
Lead-214	0.283		0.0810	0.0860		0.0759	pCi/g	08/19/21 11:02	09/11/21 20:55	1
Potassium-40	4.81		0.798	0.932		0.253	pCi/g	08/19/21 11:02	09/11/21 20:55	1
Radium-226	0.286		0.0862	0.0910	0.200	0.0840	pCi/g	08/19/21 11:02	09/11/21 20:55	1
Sodium-22	-0.0505	U	0.0547	0.0550		0.0906	pCi/g	08/19/21 11:02	09/11/21 20:55	1
Thorium-232	0.373		0.131	0.136		0.181	pCi/g	08/19/21 11:02	09/11/21 20:55	1
Zinc-65	-0.0449	U	0.117	0.118		0.206	pCi/g	08/19/21 11:02	09/11/21 20:55	1
Other Detected			Count	Total						
			Uncert.	Uncert.						
Radionuclides	Result	Qualifier	(1.96σ+/-)	(1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208	0.155		0.0409	0.0438		0.0268	pCi/g	08/19/21 11:02	09/11/21 20:55	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.0430	U	0.865	0.865	5.00	1.52	pCi/g	08/26/21 10:56	09/19/21 03:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	84.6		40 - 110					08/26/21 10:56	09/19/21 03:14	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.943	U	1.35	1.35	5.00	2.48	pCi/g	08/26/21 13:52	09/09/21 13:06	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	74.4		30 - 110					08/26/21 13:52	09/09/21 13:06	1

Client Sample ID: FSS-018-081221

Lab Sample ID: 160-43084-2

Date Collected: 08/12/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 96.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	4.8		0.21	0.013	mg/Kg	☼	09/07/21 07:45	09/08/21 05:14	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	8.8	J	19	6.1	ug/Kg	☼	09/03/21 16:10	09/03/21 19:11	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-019-081221

Lab Sample ID: 160-43084-3

Date Collected: 08/12/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0153	U	0.169	0.169	3.00	0.310	pCi/g	08/27/21 13:56	09/07/21 17:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	77.9		40 - 110					08/27/21 13:56	09/07/21 17:24	1
Y Carrier	93.5		40 - 110					08/27/21 13:56	09/07/21 17:24	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0107	U	0.184	0.184	1.00	0.347	pCi/g	08/31/21 13:32	09/09/21 00:10	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0203	U	0.0485	0.0485	1.00	0.0987	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	0.00290	U	0.0248	0.0248	1.00	0.0717	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	60.8		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0475	U	0.0571	0.0573	1.00	0.0931	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-235/236	0.000	U	0.00644	0.00644	1.00	0.0394	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-238	0.208		0.0925	0.0941	1.00	0.0510	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.6		30 - 110					08/21/21 14:07	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.547	U	0.979	0.980	5.00	1.67	pCi/g	09/10/21 08:46	09/13/21 04:39	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.234	U	0.215	0.216		0.252	pCi/g	08/19/21 11:02	09/11/21 21:44	1
Americium-241	0.0717	U	0.111	0.112		0.189	pCi/g	08/19/21 11:02	09/11/21 21:44	1
Bismuth-212	0.000	U	0.332	0.332		1.00	pCi/g	08/19/21 11:02	09/11/21 21:44	1
Bismuth-214	0.261		0.0799	0.0842		0.0661	pCi/g	08/19/21 11:02	09/11/21 21:44	1
Cesium-137	0.0942		0.0326	0.0340		0.0217	pCi/g	08/19/21 11:02	09/11/21 21:44	1
Cobalt-60	-0.0314	U	0.0850	0.0850		0.0909	pCi/g	08/19/21 11:02	09/11/21 21:44	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-019-081221

Lab Sample ID: 160-43084-3

Date Collected: 08/12/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-152	0.270	U	0.128	0.131		0.367	pCi/g	08/19/21 11:02	09/11/21 21:44	1
Europium-154	0.0364	U	0.0510	0.0511		0.0938	pCi/g	08/19/21 11:02	09/11/21 21:44	1
Europium-155	-0.000489	U	0.142	0.142		0.530	pCi/g	08/19/21 11:02	09/11/21 21:44	1
Lead-212	0.280		0.0811	0.0885		0.112	pCi/g	08/19/21 11:02	09/11/21 21:44	1
Lead-214	0.0638	U	0.152	0.153		0.281	pCi/g	08/19/21 11:02	09/11/21 21:44	1
Potassium-40	4.15		0.912	1.00		0.551	pCi/g	08/19/21 11:02	09/11/21 21:44	1
Radium-226	0.261		0.0799	0.0842	0.200	0.0661	pCi/g	08/19/21 11:02	09/11/21 21:44	1
Sodium-22	0.0121	U	0.0347	0.0347		0.0653	pCi/g	08/19/21 11:02	09/11/21 21:44	1
Thorium-232	0.234	U	0.215	0.216		0.252	pCi/g	08/19/21 11:02	09/11/21 21:44	1
Zinc-65	-0.0208	U	0.107	0.107		0.245	pCi/g	08/19/21 11:02	09/11/21 21:44	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide	None						pCi/g	08/19/21 11:02	09/11/21 21:44	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.00705	U	0.934	0.934	5.00	1.63	pCi/g	08/26/21 10:56	09/19/21 04:20	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	80.7		40 - 110					08/26/21 10:56	09/19/21 04:20	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.42	U	1.60	1.61	5.00	2.92	pCi/g	08/26/21 13:52	09/09/21 14:12	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	60.8		30 - 110					08/26/21 13:52	09/09/21 14:12	1

Client Sample ID: FSS-019-081221

Lab Sample ID: 160-43084-3

Date Collected: 08/12/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 94.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.5		0.23	0.014	mg/Kg	☼	09/07/21 07:45	09/08/21 05:18	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.0	ug/Kg	☼	09/03/21 16:10	09/03/21 19:13	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-020-081221

Lab Sample ID: 160-43084-4

Date Collected: 08/12/21 10:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.169	U	0.182	0.183	3.00	0.305	pCi/g	08/27/21 13:56	09/07/21 17:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.2		40 - 110					08/27/21 13:56	09/07/21 17:26	1
Y Carrier	92.7		40 - 110					08/27/21 13:56	09/07/21 17:26	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0759	U	0.198	0.199	1.00	0.354	pCi/g	08/31/21 13:32	09/09/21 00:33	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0276	U	0.0506	0.0506	1.00	0.0963	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	0.00306	U	0.0262	0.0262	1.00	0.0758	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	59.0		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.133		0.0756	0.0764	1.00	0.0596	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-235/236	-0.00662	U	0.00918	0.00919	1.00	0.0742	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-238	0.0319	U	0.0429	0.0430	1.00	0.0709	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	64.2		30 - 110					08/21/21 14:07	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.665	U	0.987	0.990	5.00	1.69	pCi/g	09/10/21 08:46	09/13/21 05:01	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.334		0.107	0.112		0.244	pCi/g	08/19/21 11:02	09/11/21 21:47	1
Americium-241	0.00308	U	0.117	0.117		0.205	pCi/g	08/19/21 11:02	09/11/21 21:47	1
Bismuth-212	0.0167	U	0.538	0.538		0.992	pCi/g	08/19/21 11:02	09/11/21 21:47	1
Bismuth-214	0.233		0.103	0.106		0.111	pCi/g	08/19/21 11:02	09/11/21 21:47	1
Cesium-137	0.0290	U	0.0528	0.0528		0.0633	pCi/g	08/19/21 11:02	09/11/21 21:47	1
Cobalt-60	0.00645	U	0.00614	0.00618		0.0559	pCi/g	08/19/21 11:02	09/11/21 21:47	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-020-081221

Lab Sample ID: 160-43084-4

Date Collected: 08/12/21 10:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-152	0.0581	U	0.105	0.105		0.112	pCi/g	08/19/21 11:02	09/11/21 21:47	1
Europium-154	0.00243	U	0.00359	0.00360		0.0994	pCi/g	08/19/21 11:02	09/11/21 21:47	1
Europium-155	0.0450	U	0.0936	0.0938		0.229	pCi/g	08/19/21 11:02	09/11/21 21:47	1
Lead-212	0.329		0.0686	0.0803		0.0696	pCi/g	08/19/21 11:02	09/11/21 21:47	1
Lead-214	0.279		0.0746	0.0799		0.0810	pCi/g	08/19/21 11:02	09/11/21 21:47	1
Potassium-40	1.59		0.767	0.783		0.829	pCi/g	08/19/21 11:02	09/11/21 21:47	1
Radium-226	0.233		0.103	0.106	0.200	0.111	pCi/g	08/19/21 11:02	09/11/21 21:47	1
Sodium-22	0.00912	U	0.0283	0.0283		0.0540	pCi/g	08/19/21 11:02	09/11/21 21:47	1
Thorium-232	0.334		0.107	0.112		0.244	pCi/g	08/19/21 11:02	09/11/21 21:47	1
Zinc-65	0.000	U	0.0136	0.0136		0.193	pCi/g	08/19/21 11:02	09/11/21 21:47	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	0.0819		0.0369	0.0379		0.0394	pCi/g	08/19/21 11:02	09/11/21 21:47	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.262	U	0.863	0.863	5.00	1.50	pCi/g	08/26/21 10:56	09/19/21 05:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	85.9		40 - 110					08/26/21 10:56	09/19/21 05:26	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-1.32	U	1.62	1.62	5.00	2.94	pCi/g	08/26/21 13:52	09/09/21 15:18	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-236 (T)</i>	59.0		30 - 110					08/26/21 13:52	09/09/21 15:18	1

Client Sample ID: FSS-020-081221

Lab Sample ID: 160-43084-4

Date Collected: 08/12/21 10:00

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 96.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.66		0.28	0.017	mg/Kg	☼	09/07/21 07:45	09/08/21 05:21	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/03/21 16:10	09/03/21 19:16	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-021-081221

Lab Sample ID: 160-43084-5

Date Collected: 08/12/21 10:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.190	U	0.202	0.203	3.00	0.338	pCi/g	08/27/21 13:56	09/07/21 17:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.0		40 - 110					08/27/21 13:56	09/07/21 17:26	1
Y Carrier	94.2		40 - 110					08/27/21 13:56	09/07/21 17:26	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0770	U	0.209	0.209	1.00	0.377	pCi/g	08/31/21 13:32	09/09/21 00:55	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00973	U	0.0626	0.0626	1.00	0.137	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	0.00325	U	0.0397	0.0397	1.00	0.102	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	62.6		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0201	U	0.0696	0.0697	1.00	0.140	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-235/236	-0.0643	U	0.0432	0.0435	1.00	0.166	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-238	0.0631	U	0.0660	0.0662	1.00	0.101	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	62.7		30 - 110					08/21/21 14:07	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.701	U	0.963	0.966	5.00	1.63	pCi/g	09/10/21 08:46	09/13/21 05:24	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.242		0.0913	0.0944		0.0661	pCi/g	08/19/21 11:02	09/11/21 21:45	1
Americium-241	0.0405	U	0.0892	0.0893		0.153	pCi/g	08/19/21 11:02	09/11/21 21:45	1
Bismuth-212	0.283	U	0.434	0.435		0.745	pCi/g	08/19/21 11:02	09/11/21 21:45	1
Bismuth-214	0.181		0.0766	0.0788		0.0885	pCi/g	08/19/21 11:02	09/11/21 21:45	1
Cesium-137	0.0226	U	0.0403	0.0404		0.0698	pCi/g	08/19/21 11:02	09/11/21 21:45	1
Cobalt-60	-0.0316	U	0.0696	0.0697		0.0769	pCi/g	08/19/21 11:02	09/11/21 21:45	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-021-081221

Lab Sample ID: 160-43084-5

Date Collected: 08/12/21 10:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-152	0.0512	U	0.0861	0.0863		0.124	pCi/g	08/19/21 11:02	09/11/21 21:45	1
Europium-154	0.0571	U	0.0856	0.0858		0.0907	pCi/g	08/19/21 11:02	09/11/21 21:45	1
Europium-155	0.000	U	0.0592	0.0592		0.369	pCi/g	08/19/21 11:02	09/11/21 21:45	1
Lead-212	0.238		0.0530	0.0610		0.0518	pCi/g	08/19/21 11:02	09/11/21 21:45	1
Lead-214	0.228		0.0628	0.0670		0.0763	pCi/g	08/19/21 11:02	09/11/21 21:45	1
Potassium-40	1.73		0.485	0.516		0.261	pCi/g	08/19/21 11:02	09/11/21 21:45	1
Radium-226	0.181		0.0766	0.0788	0.200	0.0885	pCi/g	08/19/21 11:02	09/11/21 21:45	1
Sodium-22	-0.00790	U	0.0332	0.0332		0.0623	pCi/g	08/19/21 11:02	09/11/21 21:45	1
Thorium-232	0.242		0.0913	0.0944		0.0661	pCi/g	08/19/21 11:02	09/11/21 21:45	1
Zinc-65	0.0405	U	0.0807	0.0808		0.142	pCi/g	08/19/21 11:02	09/11/21 21:45	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	0.127		0.0327	0.0352		0.0162	pCi/g	08/19/21 11:02	09/11/21 21:45	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.953	U	0.998	1.00	5.00	1.68	pCi/g	08/26/21 10:56	09/19/21 06:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	76.6		40 - 110					08/26/21 10:56	09/19/21 06:32	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.514	U	1.64	1.64	5.00	2.92	pCi/g	08/26/21 13:52	09/09/21 16:24	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-236 (T)</i>	62.6		30 - 110					08/26/21 13:52	09/09/21 16:24	1

Client Sample ID: FSS-021-081221

Lab Sample ID: 160-43084-5

Date Collected: 08/12/21 10:00

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 97.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.70		0.25	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 05:39	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/03/21 16:10	09/03/21 19:18	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-022-081221

Lab Sample ID: 160-43084-6

Date Collected: 08/12/21 10:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.179	U	0.203	0.203	3.00	0.340	pCi/g	09/04/21 14:11	09/25/21 15:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	89.7		40 - 110					09/04/21 14:11	09/25/21 15:44	1
Y Carrier	81.9		40 - 110					09/04/21 14:11	09/25/21 15:44	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0592	U	0.178	0.179	1.00	0.345	pCi/g	08/31/21 13:32	09/09/21 01:18	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0885		0.0638	0.0642	1.00	0.0664	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	-0.00537	U	0.00744	0.00746	1.00	0.0602	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	60.1		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.140		0.0842	0.0850	1.00	0.0981	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-235/236	0.0158	U	0.0367	0.0367	1.00	0.0784	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-238	0.201		0.0892	0.0907	1.00	0.0492	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.3		30 - 110					08/21/21 14:07	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	1.00	U	0.945	0.951	5.00	1.57	pCi/g	09/10/21 08:46	09/13/21 05:46	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.459		0.144	0.151		0.0868	pCi/g	08/19/21 11:02	09/11/21 21:46	1
Americium-241	0.0320	U	0.133	0.134		0.231	pCi/g	08/19/21 11:02	09/11/21 21:46	1
Bismuth-212	0.102	U	0.827	0.827		1.48	pCi/g	08/19/21 11:02	09/11/21 21:46	1
Bismuth-214	0.0360	U	0.129	0.129		0.253	pCi/g	08/19/21 11:02	09/11/21 21:46	1
Cesium-137	-0.00133	U	0.0824	0.0824		0.113	pCi/g	08/19/21 11:02	09/11/21 21:46	1
Cobalt-60	0.0107	U	0.0680	0.0680		0.0820	pCi/g	08/19/21 11:02	09/11/21 21:46	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-022-081221

Lab Sample ID: 160-43084-6

Date Collected: 08/12/21 10:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-152	0.0767	U	0.128	0.129		0.137	pCi/g	08/19/21 11:02	09/11/21 21:46	1
Europium-154	0.0419	U	0.0733	0.0734		0.0918	pCi/g	08/19/21 11:02	09/11/21 21:46	1
Europium-155	0.0600	U	0.178	0.178		0.305	pCi/g	08/19/21 11:02	09/11/21 21:46	1
Lead-212	0.294		0.0830	0.0910		0.107	pCi/g	08/19/21 11:02	09/11/21 21:46	1
Lead-214	0.359		0.0925	0.0995		0.0822	pCi/g	08/19/21 11:02	09/11/21 21:46	1
Potassium-40	1.35		0.768	0.780		0.892	pCi/g	08/19/21 11:02	09/11/21 21:46	1
Radium-226	0.0360	U	0.129	0.129	0.200	0.253	pCi/g	08/19/21 11:02	09/11/21 21:46	1
Sodium-22	0.0398		0.0260	0.0263		0.0326	pCi/g	08/19/21 11:02	09/11/21 21:46	1
Thorium-232	0.459		0.144	0.151		0.0868	pCi/g	08/19/21 11:02	09/11/21 21:46	1
Zinc-65	0.0429	U	0.0985	0.0986		0.175	pCi/g	08/19/21 11:02	09/11/21 21:46	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/19/21 11:02	09/11/21 21:46	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.649	U	0.936	0.938	5.00	1.63	pCi/g	08/26/21 14:26	09/12/21 01:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	84.6		40 - 110					08/26/21 14:26	09/12/21 01:01	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.06	U	1.67	1.67	5.00	3.10	pCi/g	08/26/21 13:52	09/09/21 17:31	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	60.1		30 - 110					08/26/21 13:52	09/09/21 17:31	1

Client Sample ID: FSS-022-081221

Lab Sample ID: 160-43084-6

Date Collected: 08/12/21 10:00

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 92.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.91		0.23	0.014	mg/Kg	☼	09/07/21 07:45	09/08/21 05:57	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/03/21 16:10	09/03/21 19:21	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-023-081221

Lab Sample ID: 160-43084-7

Date Collected: 08/12/21 13:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.339		0.192	0.194	3.00	0.297	pCi/g	09/04/21 14:11	09/25/21 15:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	90.5		40 - 110					09/04/21 14:11	09/25/21 15:44	1
Y Carrier	90.5		40 - 110					09/04/21 14:11	09/25/21 15:44	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0248	U	0.193	0.193	1.00	0.356	pCi/g	08/31/21 13:32	09/09/21 01:41	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0528	U	0.0490	0.0492	1.00	0.0622	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	0.000	U	0.00493	0.00493	1.00	0.0302	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	64.9		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0329	U	0.0513	0.0513	1.00	0.0921	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-235/236	0.0346	U	0.0432	0.0433	1.00	0.0609	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-238	0.0883		0.0596	0.0600	1.00	0.0489	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	64.6		30 - 110					08/21/21 14:07	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.340	U	0.934	0.934	5.00	1.61	pCi/g	09/10/21 08:46	09/13/21 06:09	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.178		0.123	0.125		0.151	pCi/g	08/19/21 11:02	09/11/21 22:39	1
Americium-241	0.0544	U	0.0920	0.0922		0.157	pCi/g	08/19/21 11:02	09/11/21 22:39	1
Bismuth-212	0.00322	U	0.619	0.619		1.13	pCi/g	08/19/21 11:02	09/11/21 22:39	1
Bismuth-214	0.0807	U	0.171	0.172		0.284	pCi/g	08/19/21 11:02	09/11/21 22:39	1
Cesium-137	0.0112	U	0.0537	0.0537		0.0959	pCi/g	08/19/21 11:02	09/11/21 22:39	1
Cobalt-60	0.00313	U	0.0192	0.0192		0.0645	pCi/g	08/19/21 11:02	09/11/21 22:39	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-023-081221

Lab Sample ID: 160-43084-7

Date Collected: 08/12/21 13:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-152	0.0294	U	0.0381	0.0383		0.128	pCi/g	08/19/21 11:02	09/11/21 22:39	1
Europium-154	0.109		0.0590	0.0601		0.0908	pCi/g	08/19/21 11:02	09/11/21 22:39	1
Europium-155	-0.000464	U	0.121	0.121		0.472	pCi/g	08/19/21 11:02	09/11/21 22:39	1
Lead-212	0.250		0.0752	0.0816		0.0754	pCi/g	08/19/21 11:02	09/11/21 22:39	1
Lead-214	0.0230	U	0.0502	0.0502		0.0877	pCi/g	08/19/21 11:02	09/11/21 22:39	1
Potassium-40	2.03		0.644	0.675		0.523	pCi/g	08/19/21 11:02	09/11/21 22:39	1
Radium-226	0.0807	U	0.171	0.172	0.200	0.284	pCi/g	08/19/21 11:02	09/11/21 22:39	1
Sodium-22	-0.0429	U	0.0583	0.0585		0.0988	pCi/g	08/19/21 11:02	09/11/21 22:39	1
Thorium-232	0.178		0.123	0.125		0.151	pCi/g	08/19/21 11:02	09/11/21 22:39	1
Zinc-65	0.00280	U	0.0998	0.0998		0.187	pCi/g	08/19/21 11:02	09/11/21 22:39	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/19/21 11:02	09/11/21 22:39	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.07	U	0.811	0.818	5.00	1.36	pCi/g	08/26/21 14:26	09/12/21 02:07	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	99.2		40 - 110					08/26/21 14:26	09/12/21 02:07	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.575	U	1.38	1.38	5.00	2.43	pCi/g	08/26/21 13:52	09/09/21 18:37	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	64.9		30 - 110					08/26/21 13:52	09/09/21 18:37	1

Client Sample ID: FSS-023-081221

Lab Sample ID: 160-43084-7

Date Collected: 08/12/21 13:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 93.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.6		0.25	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 06:07	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/03/21 16:10	09/03/21 19:23	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-024-081221

Lab Sample ID: 160-43084-8

Date Collected: 08/12/21 13:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.237	U	0.165	0.166	3.00	0.261	pCi/g	09/04/21 14:11	09/25/21 15:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	92.8		40 - 110					09/04/21 14:11	09/25/21 15:45	1
Y Carrier	89.7		40 - 110					09/04/21 14:11	09/25/21 15:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.117	U	0.204	0.204	1.00	0.358	pCi/g	08/31/21 13:32	09/09/21 02:03	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0124	U	0.0456	0.0456	1.00	0.102	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	0.0249	U	0.0345	0.0346	1.00	0.0373	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	58.4		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0596	U	0.0713	0.0715	1.00	0.118	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-235/236	0.0322	U	0.0447	0.0448	1.00	0.0722	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-238	0.124		0.0738	0.0745	1.00	0.0691	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	69.7		30 - 110					08/21/21 14:07	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.631	U	0.733	0.736	5.00	1.24	pCi/g	09/14/21 15:20	09/17/21 02:01	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.250		0.158	0.159		0.162	pCi/g	08/19/21 11:02	09/11/21 22:38	1
Americium-241	-0.0530	U	0.0519	0.0522		0.203	pCi/g	08/19/21 11:02	09/11/21 22:38	1
Bismuth-212	-0.321	U	0.569	0.570		0.982	pCi/g	08/19/21 11:02	09/11/21 22:38	1
Bismuth-214	0.0213	U	0.0400	0.0401		0.207	pCi/g	08/19/21 11:02	09/11/21 22:38	1
Cesium-137	0.00247	U	0.0467	0.0467		0.0847	pCi/g	08/19/21 11:02	09/11/21 22:38	1
Cobalt-60	0.00121	U	0.0399	0.0399		0.0501	pCi/g	08/19/21 11:02	09/11/21 22:38	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-024-081221

Lab Sample ID: 160-43084-8

Date Collected: 08/12/21 13:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-152	0.0489	U	0.0882	0.0883		0.104	pCi/g	08/19/21 11:02	09/11/21 22:38	1
Europium-154	0.0510	U	0.0834	0.0836		0.0786	pCi/g	08/19/21 11:02	09/11/21 22:38	1
Europium-155	0.0598	U	0.209	0.210		0.358	pCi/g	08/19/21 11:02	09/11/21 22:38	1
Lead-212	0.227		0.0550	0.0621		0.0588	pCi/g	08/19/21 11:02	09/11/21 22:38	1
Lead-214	0.237		0.0625	0.0670		0.0640	pCi/g	08/19/21 11:02	09/11/21 22:38	1
Potassium-40	2.34		0.648	0.689		0.588	pCi/g	08/19/21 11:02	09/11/21 22:38	1
Radium-226	0.0213	U	0.0400	0.0401	0.200	0.207	pCi/g	08/19/21 11:02	09/11/21 22:38	1
Sodium-22	-0.0547	U	0.0583	0.0586		0.0963	pCi/g	08/19/21 11:02	09/11/21 22:38	1
Thorium-232	0.250		0.158	0.159		0.162	pCi/g	08/19/21 11:02	09/11/21 22:38	1
Zinc-65	0.000	U	0.0172	0.0172		0.195	pCi/g	08/19/21 11:02	09/11/21 22:38	1
Other Detected			Count	Total						
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Radionuclides	Result	Qualifier			LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
<i>Tl-208</i>	0.112		0.0345	0.0363		0.0289	pCi/g	08/19/21 11:02	09/11/21 22:38	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.726	U	0.833	0.836	5.00	1.45	pCi/g	08/26/21 14:26	09/12/21 03:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	92.1		40 - 110					08/26/21 14:26	09/12/21 03:13	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.454	U	1.98	1.98	5.00	3.64	pCi/g	08/26/21 13:52	09/09/21 19:43	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-236 (T)</i>	58.4		30 - 110					08/26/21 13:52	09/09/21 19:43	1

Client Sample ID: FSS-024-081221

Lab Sample ID: 160-43084-8

Date Collected: 08/12/21 13:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 89.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.74		0.25	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 06:11	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/03/21 16:10	09/03/21 19:26	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-025-081221

Lab Sample ID: 160-43084-9

Date Collected: 08/12/21 13:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.241	U	0.215	0.216	3.00	0.354	pCi/g	09/04/21 14:11	09/25/21 15:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	90.1		40 - 110					09/04/21 14:11	09/25/21 15:45	1
Y Carrier	84.1		40 - 110					09/04/21 14:11	09/25/21 15:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.250	U	0.218	0.219	1.00	0.355	pCi/g	08/31/21 13:32	09/09/21 02:26	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00918	U	0.0365	0.0365	1.00	0.0870	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	-0.00919	U	0.0104	0.0104	1.00	0.0758	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	55.1		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.170		0.0930	0.0940	1.00	0.109	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-235/236	0.0123	U	0.0240	0.0240	1.00	0.0368	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-238	0.214		0.0905	0.0922	1.00	0.0476	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	65.3		30 - 110					08/21/21 14:07	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.612	U	0.580	0.584	5.00	0.968	pCi/g	09/14/21 15:20	09/17/21 03:09	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.405		0.127	0.134		0.159	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Americium-241	-0.0288	U	0.133	0.133		0.229	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Bismuth-212	0.206	U	0.520	0.521		0.916	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Bismuth-214	0.316		0.0891	0.0948		0.0859	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Cesium-137	0.0188	U	0.0346	0.0347		0.0425	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Cobalt-60	0.0226	U	0.0429	0.0429		0.0493	pCi/g	08/19/21 11:02	09/11/21 22:40	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-025-081221

Lab Sample ID: 160-43084-9

Date Collected: 08/12/21 13:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-152	0.0718	U	0.113	0.113		0.125	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Europium-154	0.0301	U	0.0299	0.0300		0.110	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Europium-155	-0.0771	U	0.222	0.222		0.379	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Lead-212	0.541		0.0763	0.103		0.0604	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Lead-214	0.305		0.0844	0.0900		0.0786	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Potassium-40	3.17		0.663	0.735		0.266	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Radium-226	0.316		0.0891	0.0948	0.200	0.0859	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Sodium-22	0.0345		0.0214	0.0216		0.0254	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Thorium-232	0.405		0.127	0.134		0.159	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Zinc-65	-0.0173	U	0.104	0.104		0.188	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
<i>TI-208</i>	<i>0.143</i>		<i>0.0603</i>	<i>0.0620</i>		<i>0.0611</i>	<i>pCi/g</i>	<i>08/19/21 11:02</i>	<i>09/11/21 22:40</i>	<i>1</i>

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	1.14	U	0.859	0.867	5.00	1.46	pCi/g	08/26/21 14:26	09/12/21 04:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	<i>97.6</i>		<i>40 - 110</i>					<i>08/26/21 14:26</i>	<i>09/12/21 04:19</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	0.537	U	1.84	1.84	5.00	3.17	pCi/g	08/26/21 13:52	09/09/21 20:49	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-236 (T)</i>	<i>55.1</i>		<i>30 - 110</i>					<i>08/26/21 13:52</i>	<i>09/09/21 20:49</i>	<i>1</i>

Client Sample ID: FSS-025-081221

Lab Sample ID: 160-43084-9

Date Collected: 08/12/21 13:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 96.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.73		0.22	0.014	mg/Kg	☼	09/07/21 07:45	09/08/21 06:14	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	21	6.7	ug/Kg	☼	09/03/21 16:10	09/03/21 19:28	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-026-081221

Lab Sample ID: 160-43084-10

Date Collected: 08/12/21 14:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.179	U	0.203	0.204	3.00	0.342	pCi/g	09/04/21 14:11	09/25/21 15:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.8		40 - 110					09/04/21 14:11	09/25/21 15:45	1
Y Carrier	87.1		40 - 110					09/04/21 14:11	09/25/21 15:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.196	U	0.210	0.211	1.00	0.351	pCi/g	08/31/21 13:32	09/09/21 02:49	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0501	U	0.0494	0.0495	1.00	0.0623	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	0.0195	U	0.0313	0.0314	1.00	0.0539	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	61.6		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.160		0.0894	0.0904	1.00	0.105	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-235/236	0.00603	U	0.0251	0.0251	1.00	0.0676	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-238	0.179		0.0830	0.0843	1.00	0.0542	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	74.9		30 - 110					08/21/21 14:07	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.219	U	0.716	0.716	5.00	1.26	pCi/g	09/14/21 15:20	09/17/21 03:32	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.433		0.169	0.174		0.224	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Americium-241	0.0426	U	0.144	0.144		0.247	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Bismuth-212	0.0361	U	0.588	0.588		1.08	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Bismuth-214	0.265		0.0887	0.0927		0.0887	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Cesium-137	0.0175	U	0.0524	0.0524		0.0928	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Cobalt-60	-0.0559	U	0.0941	0.0942		0.105	pCi/g	08/19/21 11:02	09/11/21 22:40	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-026-081221

Lab Sample ID: 160-43084-10

Date Collected: 08/12/21 14:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-152	0.145		0.105	0.106		0.133	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Europium-154	0.00147	U	0.00261	0.00262		0.121	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Europium-155	0.0270	U	0.0748	0.0748		0.305	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Lead-212	0.324		0.0852	0.0946		0.110	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Lead-214	0.338		0.102	0.107		0.0880	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Potassium-40	3.68		0.854	0.931		0.672	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Radium-226	0.265		0.0887	0.0927	0.200	0.0887	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Sodium-22	0.0376		0.0246	0.0249		0.0308	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Thorium-232	0.433		0.169	0.174		0.224	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Zinc-65	-0.00415	U	0.0773	0.0773		0.230	pCi/g	08/19/21 11:02	09/11/21 22:40	1
Other Detected			Count	Total						
			Uncert.	Uncert.						
Radionuclides	Result	Qualifier	(1.96σ+/-)	(1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208	0.111		0.0427	0.0442		0.0421	pCi/g	08/19/21 11:02	09/11/21 22:40	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.838	U	0.808	0.812	5.00	1.39	pCi/g	08/26/21 14:26	09/12/21 06:31	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	102		40 - 110					08/26/21 14:26	09/12/21 06:31	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-1.44	U	1.60	1.61	5.00	2.94	pCi/g	08/26/21 13:52	09/09/21 21:55	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	61.6		30 - 110					08/26/21 13:52	09/09/21 21:55	1

Client Sample ID: FSS-026-081221

Lab Sample ID: 160-43084-10

Date Collected: 08/12/21 14:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 89.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.0		0.27	0.016	mg/Kg	☼	09/07/21 07:45	09/08/21 06:18	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	25		22	7.1	ug/Kg	☼	09/03/21 16:10	09/03/21 19:31	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-027-081221

Lab Sample ID: 160-43084-11

Date Collected: 08/12/21 14:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0597	U	0.168	0.168	3.00	0.320	pCi/g	09/04/21 14:11	09/25/21 15:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	85.6		40 - 110					09/04/21 14:11	09/25/21 15:45	1
Y Carrier	83.7		40 - 110					09/04/21 14:11	09/25/21 15:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0817	U	0.200	0.200	1.00	0.358	pCi/g	08/31/21 13:32	09/09/21 03:11	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0191	U	0.0308	0.0308	1.00	0.0529	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	0.00821	U	0.0221	0.0221	1.00	0.0530	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	61.9		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.212		0.104	0.105	1.00	0.110	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-235/236	0.0132	U	0.0258	0.0259	1.00	0.0396	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Uranium-238	0.182		0.0884	0.0897	1.00	0.0654	pCi/g	08/21/21 14:07	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	63.6		30 - 110					08/21/21 14:07	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.919	U	0.800	0.805	5.00	1.33	pCi/g	09/14/21 15:20	09/17/21 03:55	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.344		0.165	0.169		0.230	pCi/g	08/19/21 11:02	09/12/21 18:22	1
Americium-241	0.0146	U	0.121	0.121		0.209	pCi/g	08/19/21 11:02	09/12/21 18:22	1
Bismuth-212	0.252	U	0.491	0.492		0.854	pCi/g	08/19/21 11:02	09/12/21 18:22	1
Bismuth-214	0.259		0.0825	0.0866		0.0868	pCi/g	08/19/21 11:02	09/12/21 18:22	1
Cesium-137	-0.0401	U	0.0617	0.0618		0.105	pCi/g	08/19/21 11:02	09/12/21 18:22	1
Cobalt-60	0.00115	U	0.0380	0.0380		0.0477	pCi/g	08/19/21 11:02	09/12/21 18:22	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-027-081221

Lab Sample ID: 160-43084-11

Date Collected: 08/12/21 14:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-152	0.112	U	0.0868	0.0875		0.152	pCi/g	08/19/21 11:02	09/12/21 18:22	1
Europium-154	0.0272	U	0.0445	0.0446		0.0864	pCi/g	08/19/21 11:02	09/12/21 18:22	1
Europium-155	0.0395	U	0.134	0.134		0.367	pCi/g	08/19/21 11:02	09/12/21 18:22	1
Lead-212	0.381		0.0677	0.0832		0.0666	pCi/g	08/19/21 11:02	09/12/21 18:22	1
Lead-214	0.265		0.0779	0.0825		0.0784	pCi/g	08/19/21 11:02	09/12/21 18:22	1
Potassium-40	3.38		0.732	0.807		0.561	pCi/g	08/19/21 11:02	09/12/21 18:22	1
Radium-226	0.259		0.0825	0.0866	0.200	0.0868	pCi/g	08/19/21 11:02	09/12/21 18:22	1
Sodium-22	0.0145	U	0.0259	0.0259		0.0461	pCi/g	08/19/21 11:02	09/12/21 18:22	1
Thorium-232	0.344		0.165	0.169		0.230	pCi/g	08/19/21 11:02	09/12/21 18:22	1
Zinc-65	-0.0553	U	0.122	0.122		0.212	pCi/g	08/19/21 11:02	09/12/21 18:22	1
Other Detected			Count	Total						
			Uncert.	Uncert.						
Radionuclides	Result	Qualifier	(1.96σ+/-)	(1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.111		0.0335	0.0353		0.0275	pCi/g	08/19/21 11:02	09/12/21 18:22	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.23	U	0.934	0.942	5.00	1.57	pCi/g	08/26/21 14:26	09/12/21 07:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	87.6		40 - 110					08/26/21 14:26	09/12/21 07:38	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.141	U	1.69	1.69	5.00	3.00	pCi/g	08/26/21 13:52	09/09/21 23:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	61.9		30 - 110					08/26/21 13:52	09/09/21 23:02	1

Client Sample ID: FSS-027-081221

Lab Sample ID: 160-43084-11

Date Collected: 08/12/21 14:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 87.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.3		0.27	0.016	mg/Kg	☼	09/07/21 07:45	09/08/21 06:21	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	18	J	21	6.9	ug/Kg	☼	09/03/21 16:10	09/03/21 19:33	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-028-081221

Lab Sample ID: 160-43084-12

Date Collected: 08/12/21 14:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0813	U	0.174	0.174	3.00	0.305	pCi/g	09/04/21 14:11	09/25/21 15:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.7		40 - 110					09/04/21 14:11	09/25/21 15:45	1
Y Carrier	86.4		40 - 110					09/04/21 14:11	09/25/21 15:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.238	U	0.216	0.217	1.00	0.354	pCi/g	08/31/21 13:32	09/09/21 03:34	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0620		0.0520	0.0523	1.00	0.0522	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	0.000	U	0.00529	0.00529	1.00	0.0324	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	62.7		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.280		0.116	0.118	1.00	0.113	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Uranium-235/236	0.0607	U	0.0564	0.0566	1.00	0.0619	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Uranium-238	0.269		0.105	0.107	1.00	0.0634	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	62.8		30 - 110					08/21/21 14:08	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0547	U	0.689	0.689	5.00	1.25	pCi/g	09/14/21 15:20	09/17/21 04:17	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.674		0.186	0.198		0.144	pCi/g	08/19/21 11:02	09/12/21 18:21	1
Americium-241	0.0105	U	0.146	0.146		0.255	pCi/g	08/19/21 11:02	09/12/21 18:21	1
Bismuth-212	-0.453	U	0.774	0.775		1.33	pCi/g	08/19/21 11:02	09/12/21 18:21	1
Bismuth-214	0.227		0.0952	0.0980		0.105	pCi/g	08/19/21 11:02	09/12/21 18:21	1
Cesium-137	0.0327	U	0.0630	0.0631		0.109	pCi/g	08/19/21 11:02	09/12/21 18:21	1
Cobalt-60	0.0307	U	0.0227	0.0229		0.0323	pCi/g	08/19/21 11:02	09/12/21 18:21	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-028-081221

Lab Sample ID: 160-43084-12

Date Collected: 08/12/21 14:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-152	0.0834	U	0.120	0.120		0.146	pCi/g	08/19/21 11:02	09/12/21 18:21	1
Europium-154	0.0733	U	0.0882	0.0886		0.106	pCi/g	08/19/21 11:02	09/12/21 18:21	1
Europium-155	-0.00429	U	0.159	0.159		0.313	pCi/g	08/19/21 11:02	09/12/21 18:21	1
Lead-212	0.331		0.0891	0.0984		0.117	pCi/g	08/19/21 11:02	09/12/21 18:21	1
Lead-214	0.407		0.100	0.109		0.0818	pCi/g	08/19/21 11:02	09/12/21 18:21	1
Potassium-40	3.82		0.874	0.955		0.681	pCi/g	08/19/21 11:02	09/12/21 18:21	1
Radium-226	0.227		0.0952	0.0980	0.200	0.105	pCi/g	08/19/21 11:02	09/12/21 18:21	1
Sodium-22	-0.00706	U	0.0398	0.0398		0.0760	pCi/g	08/19/21 11:02	09/12/21 18:21	1
Thorium-232	0.674		0.186	0.198		0.144	pCi/g	08/19/21 11:02	09/12/21 18:21	1
Zinc-65	0.0411	U	0.109	0.109		0.194	pCi/g	08/19/21 11:02	09/12/21 18:21	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
<i>TI-208</i>	<i>0.171</i>		<i>0.0566</i>	<i>0.0592</i>		<i>0.0528</i>	<i>pCi/g</i>	<i>08/19/21 11:02</i>	<i>09/12/21 18:21</i>	<i>1</i>

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	1.64		0.763	0.781	5.00	1.24	pCi/g	08/26/21 14:26	09/12/21 08:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	<i>108</i>		<i>40 - 110</i>					<i>08/26/21 14:26</i>	<i>09/12/21 08:44</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	1.72	U	1.73	1.73	5.00	2.86	pCi/g	08/26/21 13:52	09/10/21 00:08	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-236 (T)</i>	<i>62.7</i>		<i>30 - 110</i>					<i>08/26/21 13:52</i>	<i>09/10/21 00:08</i>	<i>1</i>

Client Sample ID: FSS-028-081221

Lab Sample ID: 160-43084-12

Date Collected: 08/12/21 14:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 86.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.6		0.30	0.018	mg/Kg	☼	09/07/21 07:45	09/08/21 06:25	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	23		20	6.5	ug/Kg	☼	09/03/21 16:10	09/03/21 19:41	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-029-081321

Lab Sample ID: 160-43084-13

Date Collected: 08/13/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.183	U	0.171	0.172	3.00	0.282	pCi/g	09/04/21 14:11	09/25/21 15:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	88.4		40 - 110					09/04/21 14:11	09/25/21 15:45	1
Y Carrier	90.8		40 - 110					09/04/21 14:11	09/25/21 15:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0489	U	0.193	0.193	1.00	0.350	pCi/g	08/31/21 13:32	09/09/21 03:57	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0555	U	0.0623	0.0624	1.00	0.0926	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	0.0243	U	0.0391	0.0391	1.00	0.0672	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	50.5		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0691	U	0.0687	0.0690	1.00	0.105	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Uranium-235/236	-0.0232	U	0.0337	0.0338	1.00	0.120	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Uranium-238	0.141		0.0817	0.0826	1.00	0.0835	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	62.9		30 - 110					08/21/21 14:08	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.416	U	0.739	0.741	5.00	1.28	pCi/g	09/14/21 15:20	09/17/21 04:40	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.452		0.114	0.123		0.161	pCi/g	08/19/21 11:02	09/12/21 19:05	1
Americium-241	0.0755	U	0.110	0.111		0.187	pCi/g	08/19/21 11:02	09/12/21 19:05	1
Bismuth-212	0.287	U	0.466	0.467		0.802	pCi/g	08/19/21 11:02	09/12/21 19:05	1
Bismuth-214	0.285		0.0877	0.0923		0.0872	pCi/g	08/19/21 11:02	09/12/21 19:05	1
Cesium-137	0.000	U	0.0457	0.0457		0.0924	pCi/g	08/19/21 11:02	09/12/21 19:05	1
Cobalt-60	-0.00443	U	0.00799	0.00800		0.0792	pCi/g	08/19/21 11:02	09/12/21 19:05	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-029-081321

Lab Sample ID: 160-43084-13

Date Collected: 08/13/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-152	0.0598	U	0.0902	0.0904		0.114	pCi/g	08/19/21 11:02	09/12/21 19:05	1
Europium-154	0.00817	U	0.00999	0.0100		0.105	pCi/g	08/19/21 11:02	09/12/21 19:05	1
Europium-155	-0.000837	U	0.129	0.129		0.375	pCi/g	08/19/21 11:02	09/12/21 19:05	1
Lead-212	0.448		0.0717	0.0915		0.0624	pCi/g	08/19/21 11:02	09/12/21 19:05	1
Lead-214	0.290		0.0767	0.0822		0.108	pCi/g	08/19/21 11:02	09/12/21 19:05	1
Potassium-40	5.57		0.933	1.09		0.586	pCi/g	08/19/21 11:02	09/12/21 19:05	1
Radium-226	0.285		0.0877	0.0923	0.200	0.0872	pCi/g	08/19/21 11:02	09/12/21 19:05	1
Sodium-22	-0.0545	U	0.0581	0.0584		0.0959	pCi/g	08/19/21 11:02	09/12/21 19:05	1
Thorium-232	0.452		0.114	0.123		0.161	pCi/g	08/19/21 11:02	09/12/21 19:05	1
Zinc-65	0.000	U	0.0515	0.0515		0.206	pCi/g	08/19/21 11:02	09/12/21 19:05	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/19/21 11:02	09/12/21 19:05	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.48		0.813	0.826	5.00	1.34	pCi/g	08/26/21 14:26	09/12/21 09:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	100		40 - 110					08/26/21 14:26	09/12/21 09:50	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.897	U	1.95	1.95	5.00	3.47	pCi/g	08/26/21 13:52	09/10/21 01:14	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	50.5		30 - 110					08/26/21 13:52	09/10/21 01:14	1

Client Sample ID: FSS-029-081321

Lab Sample ID: 160-43084-13

Date Collected: 08/13/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 96.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.9		0.24	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 06:28	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	26		19	6.2	ug/Kg	☼	09/03/21 16:10	09/03/21 19:44	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-030-081321

Lab Sample ID: 160-43084-14

Date Collected: 08/13/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0765	U	0.181	0.181	3.00	0.318	pCi/g	09/04/21 14:11	09/25/21 15:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	88.2		40 - 110					09/04/21 14:11	09/25/21 15:46	1
Y Carrier	93.1		40 - 110					09/04/21 14:11	09/25/21 15:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.139	U	0.207	0.208	1.00	0.360	pCi/g	08/31/21 13:32	09/09/21 04:19	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00338	U	0.0509	0.0509	1.00	0.123	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	0.000	U	0.0297	0.0297	1.00	0.0904	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	49.0		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0871	U	0.0932	0.0935	1.00	0.151	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Uranium-235/236	0.00747	U	0.0311	0.0311	1.00	0.0837	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Uranium-238	0.0809	U	0.0677	0.0681	1.00	0.0852	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	56.8		30 - 110					08/21/21 14:08	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.0437	U	0.719	0.719	5.00	1.29	pCi/g	09/14/21 15:20	09/17/21 05:02	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.189		0.102	0.104		0.146	pCi/g	08/19/21 11:02	09/12/21 19:06	1
Americium-241	0.0543	U	0.136	0.136		0.233	pCi/g	08/19/21 11:02	09/12/21 19:06	1
Bismuth-212	-0.333	U	0.764	0.765		1.33	pCi/g	08/19/21 11:02	09/12/21 19:06	1
Bismuth-214	0.220		0.0933	0.0960		0.0881	pCi/g	08/19/21 11:02	09/12/21 19:06	1
Cesium-137	-0.00281	U	0.0470	0.0470		0.0944	pCi/g	08/19/21 11:02	09/12/21 19:06	1
Cobalt-60	0.0240	U	0.0157	0.0158		0.0597	pCi/g	08/19/21 11:02	09/12/21 19:06	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-030-081321

Lab Sample ID: 160-43084-14

Date Collected: 08/13/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-152	0.00964	U	0.0173	0.0173		0.172	pCi/g	08/19/21 11:02	09/12/21 19:06	1
Europium-154	0.0731	U	0.0945	0.0948		0.114	pCi/g	08/19/21 11:02	09/12/21 19:06	1
Europium-155	-0.00433	U	0.147	0.147		0.307	pCi/g	08/19/21 11:02	09/12/21 19:06	1
Lead-212	0.241		0.0773	0.0831		0.104	pCi/g	08/19/21 11:02	09/12/21 19:06	1
Lead-214	0.189		0.103	0.105		0.161	pCi/g	08/19/21 11:02	09/12/21 19:06	1
Potassium-40	3.32		0.830	0.895		0.688	pCi/g	08/19/21 11:02	09/12/21 19:06	1
Radium-226	0.220		0.0933	0.0960	0.200	0.0881	pCi/g	08/19/21 11:02	09/12/21 19:06	1
Sodium-22	0.00714	U	0.0295	0.0295		0.0577	pCi/g	08/19/21 11:02	09/12/21 19:06	1
Thorium-232	0.189		0.102	0.104		0.146	pCi/g	08/19/21 11:02	09/12/21 19:06	1
Zinc-65	-0.00425	U	0.130	0.130		0.165	pCi/g	08/19/21 11:02	09/12/21 19:06	1
Other Detected Radionuclides			Count	Total						
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/19/21 11:02	09/12/21 19:06	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	1.13	U	0.783	0.791	5.00	1.31	pCi/g	08/26/21 14:26	09/12/21 10:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	97.3		40 - 110					08/26/21 14:26	09/12/21 10:56	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	0.000	U	2.09	2.09	5.00	3.67	pCi/g	08/26/21 13:52	09/10/21 02:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	49.0		30 - 110					08/26/21 13:52	09/10/21 02:20	1

Client Sample ID: FSS-030-081321

Lab Sample ID: 160-43084-14

Date Collected: 08/13/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 97.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.9		0.24	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 06:32	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/03/21 16:10	09/03/21 19:46	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-031-081321

Lab Sample ID: 160-43084-15

Date Collected: 08/13/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.354		0.203	0.205	3.00	0.312	pCi/g	09/04/21 14:11	09/25/21 15:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.5		40 - 110					09/04/21 14:11	09/25/21 15:46	1
Y Carrier	89.0		40 - 110					09/04/21 14:11	09/25/21 15:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.138	U	0.208	0.208	1.00	0.362	pCi/g	08/31/21 13:32	09/09/21 04:42	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0277	U	0.0181	0.0182	1.00	0.105	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	0.0339	U	0.0423	0.0424	1.00	0.0596	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	55.3		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.111		0.0762	0.0767	1.00	0.0928	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Uranium-235/236	0.0459	U	0.0522	0.0523	1.00	0.0734	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Uranium-238	0.105		0.0691	0.0696	1.00	0.0702	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.2		30 - 110					08/21/21 14:08	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.0729	U	0.708	0.708	5.00	1.26	pCi/g	09/14/21 15:20	09/17/21 05:25	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.279		0.0924	0.0965		0.0687	pCi/g	08/19/21 11:02	09/12/21 19:07	1
Americium-241	0.0458	U	0.0966	0.0967		0.166	pCi/g	08/19/21 11:02	09/12/21 19:07	1
Bismuth-212	0.186	U	0.489	0.489		0.865	pCi/g	08/19/21 11:02	09/12/21 19:07	1
Bismuth-214	-0.0148	U	0.102	0.102		0.182	pCi/g	08/19/21 11:02	09/12/21 19:07	1
Cesium-137	0.0182	U	0.0406	0.0406		0.0712	pCi/g	08/19/21 11:02	09/12/21 19:07	1
Cobalt-60	-0.00608	U	0.0410	0.0410		0.0503	pCi/g	08/19/21 11:02	09/12/21 19:07	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-031-081321

Lab Sample ID: 160-43084-15

Date Collected: 08/13/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-152	0.107	U	0.0506	0.0518		0.114	pCi/g	08/19/21 11:02	09/12/21 19:07	1
Europium-154	0.0116	U	0.0451	0.0452		0.0792	pCi/g	08/19/21 11:02	09/12/21 19:07	1
Europium-155	0.0169	U	0.0635	0.0635		0.385	pCi/g	08/19/21 11:02	09/12/21 19:07	1
Lead-212	0.206		0.0527	0.0588		0.0571	pCi/g	08/19/21 11:02	09/12/21 19:07	1
Lead-214	0.168		0.0948	0.0964		0.103	pCi/g	08/19/21 11:02	09/12/21 19:07	1
Potassium-40	2.65		0.612	0.667		0.271	pCi/g	08/19/21 11:02	09/12/21 19:07	1
Radium-226	-0.0148	U	0.102	0.102	0.200	0.182	pCi/g	08/19/21 11:02	09/12/21 19:07	1
Sodium-22	0.0387		0.0229	0.0232		0.0260	pCi/g	08/19/21 11:02	09/12/21 19:07	1
Thorium-232	0.279		0.0924	0.0965		0.0687	pCi/g	08/19/21 11:02	09/12/21 19:07	1
Zinc-65	0.000	U	0.0123	0.0123		0.141	pCi/g	08/19/21 11:02	09/12/21 19:07	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	0.0965		0.0345	0.0358		0.0265	pCi/g	08/19/21 11:02	09/12/21 19:07	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.10	U	0.803	0.811	5.00	1.35	pCi/g	08/26/21 14:26	09/12/21 12:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	97.6		40 - 110					08/26/21 14:26	09/12/21 12:02	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	0.0796	U	1.79	1.79	5.00	3.08	pCi/g	08/26/21 13:52	09/10/21 03:26	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-236 (T)</i>	55.3		30 - 110					08/26/21 13:52	09/10/21 03:26	1

Client Sample ID: FSS-031-081321

Lab Sample ID: 160-43084-15

Date Collected: 08/13/21 09:00

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 96.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.0		0.22	0.013	mg/Kg	☼	09/07/21 07:45	09/08/21 06:35	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/03/21 16:10	09/03/21 19:49	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-032-081321

Lab Sample ID: 160-43084-16

Date Collected: 08/13/21 10:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.144	U	0.178	0.179	3.00	0.302	pCi/g	09/04/21 14:11	09/25/21 15:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	85.1		40 - 110					09/04/21 14:11	09/25/21 15:46	1
Y Carrier	89.7		40 - 110					09/04/21 14:11	09/25/21 15:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.251	U	0.192	0.193	1.00	0.299	pCi/g	08/31/21 13:36	09/03/21 11:23	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0253	U	0.0525	0.0526	1.00	0.102	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	0.0337		0.0382	0.0383	1.00	0.0337	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	58.1		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.375		0.132	0.135	1.00	0.111	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Uranium-235/236	0.0261	U	0.0461	0.0462	1.00	0.0872	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Uranium-238	0.246		0.101	0.103	1.00	0.0587	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	67.3		30 - 110					08/21/21 14:08	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.493	U	0.732	0.734	5.00	1.26	pCi/g	09/14/21 15:20	09/17/21 05:48	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.835		0.198	0.215		0.0904	pCi/g	08/19/21 11:02	09/12/21 19:08	1
Americium-241	0.0945	U	0.164	0.164		0.279	pCi/g	08/19/21 11:02	09/12/21 19:08	1
Bismuth-212	0.0193	U	0.761	0.761		1.38	pCi/g	08/19/21 11:02	09/12/21 19:08	1
Bismuth-214	0.406		0.145	0.151		0.132	pCi/g	08/19/21 11:02	09/12/21 19:08	1
Cesium-137	0.0403	U	0.0623	0.0624		0.106	pCi/g	08/19/21 11:02	09/12/21 19:08	1
Cobalt-60	0.0301	U	0.0241	0.0243		0.0370	pCi/g	08/19/21 11:02	09/12/21 19:08	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-032-081321

Lab Sample ID: 160-43084-16

Date Collected: 08/13/21 10:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-152	0.126	U	0.182	0.182		0.159	pCi/g	08/19/21 11:02	09/12/21 19:08	1
Europium-154	0.157		0.0580	0.0602		0.108	pCi/g	08/19/21 11:02	09/12/21 19:08	1
Europium-155	-0.149	U	0.199	0.199		0.751	pCi/g	08/19/21 11:02	09/12/21 19:08	1
Lead-212	0.661		0.117	0.144		0.149	pCi/g	08/19/21 11:02	09/12/21 19:08	1
Lead-214	0.504		0.116	0.127		0.133	pCi/g	08/19/21 11:02	09/12/21 19:08	1
Potassium-40	3.86		0.915	0.993		0.587	pCi/g	08/19/21 11:02	09/12/21 19:08	1
Radium-226	0.406		0.145	0.151	0.200	0.132	pCi/g	08/19/21 11:02	09/12/21 19:08	1
Sodium-22	-0.00161	U	0.0341	0.0341		0.0697	pCi/g	08/19/21 11:02	09/12/21 19:08	1
Thorium-232	0.835		0.198	0.215		0.0904	pCi/g	08/19/21 11:02	09/12/21 19:08	1
Zinc-65	-0.0222	U	0.0689	0.0689		0.280	pCi/g	08/19/21 11:02	09/12/21 19:08	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
TI-208	0.270		0.0692	0.0744		0.0572	pCi/g	08/19/21 11:02	09/12/21 19:08	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.935	U	0.857	0.862	5.00	1.48	pCi/g	08/26/21 14:26	09/12/21 13:09	1
Carrier			Limits					Prepared	Analyzed	Dil Fac
Ni			40 - 110					08/26/21 14:26	09/12/21 13:09	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.374	U	1.64	1.64	5.00	2.86	pCi/g	08/26/21 13:52	09/10/21 04:33	1
Tracer			Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)			30 - 110					08/26/21 13:52	09/10/21 04:33	1

Client Sample ID: FSS-032-081321

Lab Sample ID: 160-43084-16

Date Collected: 08/13/21 10:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 96.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.93		0.29	0.018	mg/Kg	☼	09/07/21 07:45	09/08/21 06:46	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.0	ug/Kg	☼	09/03/21 16:10	09/03/21 19:51	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-033-081321

Lab Sample ID: 160-43084-17

Date Collected: 08/13/21 10:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.235	U	0.224	0.225	3.00	0.371	pCi/g	09/04/21 14:11	09/25/21 15:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	86.3		40 - 110					09/04/21 14:11	09/25/21 15:46	1
Y Carrier	90.1		40 - 110					09/04/21 14:11	09/25/21 15:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.379		0.212	0.215	1.00	0.317	pCi/g	08/31/21 13:36	09/03/21 11:46	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00282	U	0.0254	0.0254	1.00	0.0803	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	0.00283	U	0.0242	0.0242	1.00	0.0699	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	61.8		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.133		0.0728	0.0736	1.00	0.0554	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Uranium-235/236	0.00308	U	0.0263	0.0263	1.00	0.0761	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Uranium-238	0.165		0.0799	0.0810	1.00	0.0477	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.3		30 - 110					08/21/21 14:08	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	1.05	U	0.783	0.791	5.00	1.28	pCi/g	09/14/21 15:20	09/17/21 06:11	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.0646	U	0.182	0.182		0.207	pCi/g	08/19/21 11:02	09/12/21 19:46	1
Americium-241	0.0575	U	0.0953	0.0954		0.162	pCi/g	08/19/21 11:02	09/12/21 19:46	1
Bismuth-212	-0.265	U	0.564	0.564		0.988	pCi/g	08/19/21 11:02	09/12/21 19:46	1
Bismuth-214	-0.0244	U	0.114	0.114		0.235	pCi/g	08/19/21 11:02	09/12/21 19:46	1
Cesium-137	0.405		0.0669	0.0786		0.0212	pCi/g	08/19/21 11:02	09/12/21 19:46	1
Cobalt-60	-0.00315	U	0.00542	0.00543		0.0887	pCi/g	08/19/21 11:02	09/12/21 19:46	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-033-081321

Lab Sample ID: 160-43084-17

Date Collected: 08/13/21 10:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-152	0.193		0.0945	0.0965		0.108	pCi/g	08/19/21 11:02	09/12/21 19:46	1
Europium-154	-0.00641	U	0.0526	0.0526		0.0921	pCi/g	08/19/21 11:02	09/12/21 19:46	1
Europium-155	0.0847	U	0.285	0.286		0.485	pCi/g	08/19/21 11:02	09/12/21 19:46	1
Lead-212	0.297		0.0928	0.100		0.0813	pCi/g	08/19/21 11:02	09/12/21 19:46	1
Lead-214	-0.00502	U	0.151	0.151		0.263	pCi/g	08/19/21 11:02	09/12/21 19:46	1
Potassium-40	2.51		0.718	0.760		0.538	pCi/g	08/19/21 11:02	09/12/21 19:46	1
Radium-226	-0.0244	U	0.114	0.114	0.200	0.235	pCi/g	08/19/21 11:02	09/12/21 19:46	1
Sodium-22	-0.00147	U	0.0312	0.0312		0.0638	pCi/g	08/19/21 11:02	09/12/21 19:46	1
Thorium-232	0.0646	U	0.182	0.182		0.207	pCi/g	08/19/21 11:02	09/12/21 19:46	1
Zinc-65	-0.0203	U	0.101	0.101		0.176	pCi/g	08/19/21 11:02	09/12/21 19:46	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/19/21 11:02	09/12/21 19:46	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.70		0.807	0.825	5.00	1.31	pCi/g	08/26/21 14:26	09/12/21 14:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	107		40 - 110					08/26/21 14:26	09/12/21 14:15	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.24	U	1.65	1.65	5.00	3.04	pCi/g	08/26/21 13:52	09/10/21 05:39	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	61.8		30 - 110					08/26/21 13:52	09/10/21 05:39	1

Client Sample ID: FSS-033-081321

Lab Sample ID: 160-43084-17

Date Collected: 08/13/21 10:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 97.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.84		0.21	0.013	mg/Kg	☼	09/07/21 07:45	09/08/21 06:49	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/03/21 16:10	09/03/21 19:54	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-034-081321

Lab Sample ID: 160-43084-18

Date Collected: 08/13/21 10:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.126	U	0.182	0.182	3.00	0.312	pCi/g	09/04/21 14:11	09/25/21 15:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.7		40 - 110					09/04/21 14:11	09/25/21 15:46	1
Y Carrier	91.2		40 - 110					09/04/21 14:11	09/25/21 15:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.244	U	0.197	0.198	1.00	0.311	pCi/g	08/31/21 13:36	09/03/21 12:09	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0226	U	0.0469	0.0469	1.00	0.0913	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Plutonium-239/240	-0.0100	U	0.0241	0.0241	1.00	0.0824	pCi/g	08/21/21 12:59	09/03/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	73.4		30 - 110					08/21/21 12:59	09/03/21 14:01	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.136		0.0764	0.0773	1.00	0.0864	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Uranium-235/236	0.0136	U	0.0396	0.0396	1.00	0.0856	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Uranium-238	0.164		0.0747	0.0759	1.00	0.0423	pCi/g	08/21/21 14:08	09/02/21 15:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	76.9		30 - 110					08/21/21 14:08	09/02/21 15:02	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.749	U	0.761	0.765	5.00	1.28	pCi/g	09/14/21 15:20	09/17/21 06:33	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.473		0.146	0.154		0.164	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Americium-241	0.0899	U	0.0838	0.0843		0.100	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Bismuth-212	0.0202	U	0.495	0.495		0.910	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Bismuth-214	0.259		0.0943	0.0979		0.0988	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Cesium-137	0.0275	U	0.0518	0.0519		0.0895	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Cobalt-60	-0.0159	U	0.0588	0.0588		0.0676	pCi/g	08/19/21 11:02	09/12/21 19:48	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-034-081321

Lab Sample ID: 160-43084-18

Date Collected: 08/13/21 10:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-152	0.111		0.0604	0.0615		0.109	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Europium-154	0.00742	U	0.0135	0.0135		0.101	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Europium-155	-0.0522	U	0.0759	0.0761		0.192	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Lead-212	0.401		0.0740	0.0898		0.0632	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Lead-214	0.223		0.0656	0.0695		0.0848	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Potassium-40	2.00		0.615	0.646		0.596	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Radium-226	0.259		0.0943	0.0979	0.200	0.0988	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Sodium-22	0.00118	U	0.0237	0.0237		0.0490	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Thorium-232	0.473		0.146	0.154		0.164	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Zinc-65	0.000	U	0.0123	0.0123		0.230	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Other Detected			Count	Total						
			Uncert.	Uncert.						
Radionuclides	Result	Qualifier	(1.96σ+/-)	(1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208	0.180		0.0425	0.0463		0.0292	pCi/g	08/19/21 11:02	09/12/21 19:48	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.989	U	0.744	0.750	5.00	1.25	pCi/g	08/26/21 14:26	09/12/21 15:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	105		40 - 110					08/26/21 14:26	09/12/21 15:21	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	0.852	U	1.52	1.52	5.00	2.60	pCi/g	08/26/21 13:52	09/10/21 06:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	73.4		30 - 110					08/26/21 13:52	09/10/21 06:45	1

Client Sample ID: FSS-034-081321

Lab Sample ID: 160-43084-18

Date Collected: 08/13/21 10:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 97.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.55		0.23	0.014	mg/Kg	☼	09/07/21 07:45	09/08/21 06:53	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/03/21 16:10	09/03/21 19:56	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-035-081321

Lab Sample ID: 160-43084-19

Date Collected: 08/13/21 09:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.303	U	0.195	0.196	3.00	0.307	pCi/g	09/04/21 14:11	09/25/21 15:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	85.3		40 - 110					09/04/21 14:11	09/25/21 15:46	1
Y Carrier	90.5		40 - 110					09/04/21 14:11	09/25/21 15:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.244	U	0.205	0.206	1.00	0.330	pCi/g	08/31/21 13:36	09/03/21 12:31	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0338	U	0.0355	0.0356	1.00	0.0492	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Plutonium-239/240	0.0159	U	0.0221	0.0221	1.00	0.0239	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	89.4		30 - 110					08/21/21 14:10	09/02/21 22:06	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.108		0.0566	0.0573	1.00	0.0416	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-235/236	0.00693	U	0.0187	0.0187	1.00	0.0447	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-238	0.122		0.0601	0.0609	1.00	0.0415	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	93.1		30 - 110					08/21/21 14:26	09/02/21 14:56	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.420	U	0.651	0.652	5.00	1.12	pCi/g	09/14/21 15:20	09/17/21 06:56	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.0969	U	0.172	0.172		0.236	pCi/g	08/19/21 11:02	09/12/21 19:47	1
Americium-241	0.00477	U	0.0967	0.0967		0.130	pCi/g	08/19/21 11:02	09/12/21 19:47	1
Bismuth-212	0.234	U	0.384	0.385		0.665	pCi/g	08/19/21 11:02	09/12/21 19:47	1
Bismuth-214	0.128	U	0.0649	0.0662		0.225	pCi/g	08/19/21 11:02	09/12/21 19:47	1
Cesium-137	-0.0234	U	0.0432	0.0433		0.0749	pCi/g	08/19/21 11:02	09/12/21 19:47	1
Cobalt-60	0.0154	U	0.0415	0.0415		0.0491	pCi/g	08/19/21 11:02	09/12/21 19:47	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-035-081321

Lab Sample ID: 160-43084-19

Date Collected: 08/13/21 09:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-152	0.0969	U	0.0951	0.0956		0.124	pCi/g	08/19/21 11:02	09/12/21 19:47	1
Europium-154	0.0666	U	0.0349	0.0355		0.0797	pCi/g	08/19/21 11:02	09/12/21 19:47	1
Europium-155	0.0514	U	0.174	0.174		0.298	pCi/g	08/19/21 11:02	09/12/21 19:47	1
Lead-212	0.299		0.0589	0.0700		0.0550	pCi/g	08/19/21 11:02	09/12/21 19:47	1
Lead-214	0.285		0.0604	0.0670		0.0699	pCi/g	08/19/21 11:02	09/12/21 19:47	1
Potassium-40	2.33		0.567	0.613		0.264	pCi/g	08/19/21 11:02	09/12/21 19:47	1
Radium-226	0.128	U	0.0649	0.0662	0.200	0.225	pCi/g	08/19/21 11:02	09/12/21 19:47	1
Sodium-22	0.0172	U	0.0150	0.0151		0.0253	pCi/g	08/19/21 11:02	09/12/21 19:47	1
Thorium-232	0.0969	U	0.172	0.172		0.236	pCi/g	08/19/21 11:02	09/12/21 19:47	1
Zinc-65	0.000	U	0.0239	0.0239		0.175	pCi/g	08/19/21 11:02	09/12/21 19:47	1
Other Detected			Count	Total						
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radionuclides										
<i>Tl-208</i>	0.0976		0.0285	0.0302		0.0164	pCi/g	08/19/21 11:02	09/12/21 19:47	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.24	U	0.811	0.821	5.00	1.36	pCi/g	08/26/21 14:26	09/12/21 16:27	1
Carrier			%Yield	Qualifier	Limits			Prepared	Analyzed	Dil Fac
<i>Ni</i>	98.5		40 - 110					08/26/21 14:26	09/12/21 16:27	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.971	U	1.08	1.09	5.00	1.99	pCi/g	08/21/21 14:26	09/11/21 13:45	1
Tracer			%Yield	Qualifier	Limits			Prepared	Analyzed	Dil Fac
<i>Pu-236 (T)</i>	89.4		30 - 110					08/21/21 14:26	09/11/21 13:45	1

Client Sample ID: FSS-035-081321

Lab Sample ID: 160-43084-19

Date Collected: 08/13/21 09:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 96.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.40		0.25	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 06:56	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.0	ug/Kg	☼	09/03/21 16:10	09/03/21 19:59	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-036-081321

Lab Sample ID: 160-43084-20

Date Collected: 08/13/21 09:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0722	U	0.207	0.207	3.00	0.387	pCi/g	09/04/21 14:11	09/25/21 15:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.2		40 - 110					09/04/21 14:11	09/25/21 15:48	1
Y Carrier	86.4		40 - 110					09/04/21 14:11	09/25/21 15:48	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.409		0.219	0.222	1.00	0.325	pCi/g	08/31/21 13:36	09/03/21 12:54	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0228	U	0.0337	0.0338	1.00	0.0589	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Plutonium-239/240	-0.00622	U	0.00704	0.00706	1.00	0.0513	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	86.5		30 - 110					08/21/21 14:10	09/02/21 22:06	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.244		0.0885	0.0908	1.00	0.0742	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-235/236	0.0114	U	0.0265	0.0265	1.00	0.0564	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-238	0.130		0.0610	0.0619	1.00	0.0354	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	93.2		30 - 110					08/21/21 14:26	09/02/21 14:56	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0165	U	0.691	0.691	5.00	1.25	pCi/g	09/14/21 15:20	09/17/21 07:18	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.306		0.198	0.201		0.210	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Americium-241	0.0656	U	0.164	0.164		0.281	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Bismuth-212	-0.0201	U	0.576	0.576		1.07	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Bismuth-214	0.108	U	0.0991	0.0997		0.347	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Cesium-137	-0.0283	U	0.115	0.115		0.0857	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Cobalt-60	-0.00160	U	0.0498	0.0498		0.0648	pCi/g	08/19/21 11:02	09/12/21 19:48	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-036-081321

Lab Sample ID: 160-43084-20

Date Collected: 08/13/21 09:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-152	0.129	U	0.0673	0.0686		0.183	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Europium-154	0.0616	U	0.0967	0.0969		0.118	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Europium-155	0.0179	U	0.0486	0.0486		0.219	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Lead-212	0.339		0.0963	0.105		0.106	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Lead-214	0.0716	U	0.126	0.126		0.199	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Potassium-40	0.996	U	1.04	1.04		1.22	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Radium-226	0.108	U	0.0991	0.0997	0.200	0.347	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Sodium-22	0.000	U	0.00912	0.00912		0.0343	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Thorium-232	0.306		0.198	0.201		0.210	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Zinc-65	0.0412	U	0.133	0.133		0.238	pCi/g	08/19/21 11:02	09/12/21 19:48	1
Other Detected			Count	Total						
			Uncert.	Uncert.						
Radionuclides	Result	Qualifier	(1.96σ+/-)	(1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208	0.153		0.0498	0.0521		0.0456	pCi/g	08/19/21 11:02	09/12/21 19:48	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.861	U	0.830	0.835	5.00	1.42	pCi/g	08/26/21 14:26	09/12/21 17:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	99.8		40 - 110					08/26/21 14:26	09/12/21 17:33	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-1.27	U	1.14	1.15	5.00	2.14	pCi/g	08/21/21 14:26	09/11/21 15:57	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	86.5		30 - 110					08/21/21 14:26	09/11/21 15:57	1

Client Sample ID: FSS-036-081321

Lab Sample ID: 160-43084-20

Date Collected: 08/13/21 09:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 96.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.1		0.30	0.018	mg/Kg	☼	09/07/21 07:45	09/08/21 07:00	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/03/21 16:10	09/03/21 20:42	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-037-081321

Lab Sample ID: 160-43084-21

Date Collected: 08/13/21 09:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.156	U	0.194	0.195	3.00	0.329	pCi/g	09/04/21 14:11	09/25/21 15:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.2		40 - 110					09/04/21 14:11	09/25/21 15:48	1
Y Carrier	91.6		40 - 110					09/04/21 14:11	09/25/21 15:48	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.258	U	0.201	0.203	1.00	0.319	pCi/g	08/31/21 13:36	09/03/21 13:17	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0575	U	0.0507	0.0510	1.00	0.0586	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Plutonium-239/240	-0.00262	U	0.00513	0.00514	1.00	0.0507	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	65.2		30 - 110					08/21/21 14:10	09/02/21 22:06	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0970		0.0564	0.0569	1.00	0.0541	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-235/236	0.00473	U	0.0197	0.0197	1.00	0.0530	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-238	0.0474		0.0399	0.0401	1.00	0.0469	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	89.7		30 - 110					08/21/21 14:26	09/02/21 14:56	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.149	U	0.714	0.715	5.00	1.28	pCi/g	09/14/21 15:20	09/17/21 07:41	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.339		0.158	0.162		0.232	pCi/g	08/19/21 13:00	09/11/21 09:27	1
Americium-241	0.0549	U	0.137	0.137		0.235	pCi/g	08/19/21 13:00	09/11/21 09:27	1
Bismuth-212	0.0125	U	0.694	0.694		1.27	pCi/g	08/19/21 13:00	09/11/21 09:27	1
Bismuth-214	-0.00434	U	0.0146	0.0146		0.294	pCi/g	08/19/21 13:00	09/11/21 09:27	1
Cesium-137	0.0198	U	0.0468	0.0468		0.0826	pCi/g	08/19/21 13:00	09/11/21 09:27	1
Cobalt-60	0.00299	U	0.0466	0.0466		0.0603	pCi/g	08/19/21 13:00	09/11/21 09:27	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-037-081321

Lab Sample ID: 160-43084-21

Date Collected: 08/13/21 09:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-152	0.136	U	0.118	0.118		0.146	pCi/g	08/19/21 13:00	09/11/21 09:27	1
Europium-154	0.0610	U	0.0990	0.0992		0.105	pCi/g	08/19/21 13:00	09/11/21 09:27	1
Europium-155	-0.00438	U	0.209	0.209		0.312	pCi/g	08/19/21 13:00	09/11/21 09:27	1
Lead-212	0.328		0.0872	0.0966		0.112	pCi/g	08/19/21 13:00	09/11/21 09:27	1
Lead-214	0.332		0.0944	0.100		0.0820	pCi/g	08/19/21 13:00	09/11/21 09:27	1
Potassium-40	2.08		0.836	0.862		0.873	pCi/g	08/19/21 13:00	09/11/21 09:27	1
Radium-226	-0.00434	U	0.0146	0.0146	0.200	0.294	pCi/g	08/19/21 13:00	09/11/21 09:27	1
Sodium-22	0.00721	U	0.0298	0.0298		0.0583	pCi/g	08/19/21 13:00	09/11/21 09:27	1
Thorium-232	0.339		0.158	0.162		0.232	pCi/g	08/19/21 13:00	09/11/21 09:27	1
Zinc-65	-0.00430	U	0.0853	0.0853		0.210	pCi/g	08/19/21 13:00	09/11/21 09:27	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	0.149		0.0570	0.0589		0.0545	pCi/g	08/19/21 13:00	09/11/21 09:27	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.697	U	0.721	0.725	5.00	1.24	pCi/g	08/26/21 14:26	09/12/21 18:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	101		40 - 110					08/26/21 14:26	09/12/21 18:40	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-1.51	U	1.48	1.49	5.00	2.75	pCi/g	08/21/21 14:26	09/11/21 17:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-236 (T)</i>	65.2		30 - 110					08/21/21 14:26	09/11/21 17:03	1

Client Sample ID: FSS-037-081321

Lab Sample ID: 160-43084-21

Date Collected: 08/13/21 09:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 97.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.59		0.21	0.013	mg/Kg	☼	09/07/21 07:45	09/08/21 07:03	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	6.0	ug/Kg	☼	09/03/21 16:10	09/03/21 20:45	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-038-081321

Lab Sample ID: 160-43084-22

Date Collected: 08/13/21 08:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.121	U	0.187	0.187	3.00	0.355	pCi/g	09/04/21 14:11	09/25/21 15:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	85.7		40 - 110					09/04/21 14:11	09/25/21 15:48	1
Y Carrier	90.5		40 - 110					09/04/21 14:11	09/25/21 15:48	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.210	U	0.204	0.205	1.00	0.337	pCi/g	08/31/21 13:36	09/03/21 13:39	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0343	U	0.0362	0.0363	1.00	0.0443	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Plutonium-239/240	0.00687	U	0.0185	0.0185	1.00	0.0443	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	75.8		30 - 110					08/21/21 14:10	09/02/21 22:06	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.176		0.0749	0.0763	1.00	0.0596	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-235/236	0.000	U	0.00462	0.00462	1.00	0.0283	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-238	0.144		0.0687	0.0697	1.00	0.0620	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	87.1		30 - 110					08/21/21 14:26	09/02/21 14:56	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.852	U	0.683	0.689	5.00	1.13	pCi/g	09/14/21 15:20	09/17/21 08:04	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.346		0.214	0.216		0.208	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Americium-241	0.0327	U	0.135	0.135		0.232	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Bismuth-212	0.0916	U	0.571	0.571		1.04	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Bismuth-214	0.0960	U	0.125	0.126		0.270	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Cesium-137	0.0829		0.0372	0.0382		0.0324	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Cobalt-60	0.00493	U	0.00829	0.00830		0.0892	pCi/g	08/19/21 13:00	09/11/21 15:18	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-038-081321

Lab Sample ID: 160-43084-22

Date Collected: 08/13/21 08:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-152	0.125	U	0.0874	0.0883		0.135	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Europium-154	0.0448	U	0.0488	0.0491		0.0860	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Europium-155	0.0375	U	0.272	0.272		0.464	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Lead-212	0.398		0.124	0.134		0.111	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Lead-214	0.0525	U	0.135	0.135		0.248	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Potassium-40	4.45		0.933	1.03		0.541	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Radium-226	0.0960	U	0.125	0.126	0.200	0.270	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Sodium-22	-0.00148	U	0.0314	0.0314		0.0641	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Thorium-232	0.346		0.214	0.216		0.208	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Zinc-65	0.0383	U	0.107	0.107		0.191	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
TI-208	0.113		0.0516	0.0529		0.0537	pCi/g	08/19/21 13:00	09/11/21 15:18	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.42		0.842	0.854	5.00	1.39	pCi/g	08/26/21 14:26	09/12/21 19:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	95.3		40 - 110					08/26/21 14:26	09/12/21 19:46	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.296	U	1.41	1.41	5.00	2.55	pCi/g	08/21/21 14:26	09/11/21 18:10	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	75.8		30 - 110					08/21/21 14:26	09/11/21 18:10	1

Client Sample ID: FSS-038-081321

Lab Sample ID: 160-43084-22

Date Collected: 08/13/21 08:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 79.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.9		0.28	0.017	mg/Kg	☼	09/07/21 07:45	09/08/21 07:07	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	18	U	23	7.6	ug/Kg	☼	09/03/21 16:10	09/03/21 20:47	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-039-081321

Lab Sample ID: 160-43084-23

Date Collected: 08/13/21 08:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0586	U	0.173	0.173	3.00	0.324	pCi/g	09/04/21 14:11	09/25/21 15:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	86.7		40 - 110					09/04/21 14:11	09/25/21 15:48	1
Y Carrier	90.1		40 - 110					09/04/21 14:11	09/25/21 15:48	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.228	U	0.213	0.214	1.00	0.348	pCi/g	08/31/21 13:36	09/03/21 14:02	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00239	U	0.00469	0.00470	1.00	0.0464	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Plutonium-239/240	0.00959	U	0.0188	0.0188	1.00	0.0288	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	73.8		30 - 110					08/21/21 14:10	09/02/21 22:06	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.141		0.0773	0.0782	1.00	0.0889	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-235/236	0.0288	U	0.0359	0.0359	1.00	0.0506	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-238	0.151		0.0721	0.0732	1.00	0.0560	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	79.5		30 - 110					08/21/21 14:26	09/02/21 14:56	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.592	U	0.744	0.746	5.00	1.26	pCi/g	09/14/21 15:20	09/17/21 08:26	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.284		0.0983	0.102		0.0654	pCi/g	08/19/21 13:00	09/11/21 15:16	1
Americium-241	0.0425	U	0.0997	0.0998		0.171	pCi/g	08/19/21 13:00	09/11/21 15:16	1
Bismuth-212	-0.226	U	0.562	0.563		0.985	pCi/g	08/19/21 13:00	09/11/21 15:16	1
Bismuth-214	0.230		0.0909	0.0939		0.0880	pCi/g	08/19/21 13:00	09/11/21 15:16	1
Cesium-137	-0.00526	U	0.0543	0.0543		0.0969	pCi/g	08/19/21 13:00	09/11/21 15:16	1
Cobalt-60	-0.0301	U	0.0786	0.0787		0.0865	pCi/g	08/19/21 13:00	09/11/21 15:16	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-039-081321

Lab Sample ID: 160-43084-23

Date Collected: 08/13/21 08:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-152	0.0800	U	0.116	0.117		0.103	pCi/g	08/19/21 13:00	09/11/21 15:16	1
Europium-154	0.0970		0.0475	0.0486		0.0768	pCi/g	08/19/21 13:00	09/11/21 15:16	1
Europium-155	0.0385	U	0.0921	0.0922		0.159	pCi/g	08/19/21 13:00	09/11/21 15:16	1
Lead-212	0.239		0.0509	0.0592		0.0445	pCi/g	08/19/21 13:00	09/11/21 15:16	1
Lead-214	0.181		0.0732	0.0754		0.0712	pCi/g	08/19/21 13:00	09/11/21 15:16	1
Potassium-40	3.11		0.709	0.775		0.563	pCi/g	08/19/21 13:00	09/11/21 15:16	1
Radium-226	0.230		0.0909	0.0939	0.200	0.0880	pCi/g	08/19/21 13:00	09/11/21 15:16	1
Sodium-22	0.0156	U	0.0344	0.0344		0.0617	pCi/g	08/19/21 13:00	09/11/21 15:16	1
Thorium-232	0.284		0.0983	0.102		0.0654	pCi/g	08/19/21 13:00	09/11/21 15:16	1
Zinc-65	0.000	U	0.0286	0.0286		0.180	pCi/g	08/19/21 13:00	09/11/21 15:16	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			(1.96σ+/-)	(1.96σ+/-)						
	0.109		0.0337	0.0354		0.0276	pCi/g	08/19/21 13:00	09/11/21 15:16	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.821	U	0.827	0.832	5.00	1.42	pCi/g	08/26/21 14:26	09/12/21 20:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	97.5		40 - 110					08/26/21 14:26	09/12/21 20:52	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-1.37	U	1.33	1.34	5.00	2.47	pCi/g	08/21/21 14:26	09/11/21 19:16	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	73.8		30 - 110					08/21/21 14:26	09/11/21 19:16	1

Client Sample ID: FSS-039-081321

Lab Sample ID: 160-43084-23

Date Collected: 08/13/21 08:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 96.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.8		0.24	0.015	mg/Kg	☼	09/07/21 07:45	09/08/21 07:10	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.2	ug/Kg	☼	09/03/21 16:10	09/03/21 20:50	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-040-081321

Lab Sample ID: 160-43084-24

Date Collected: 08/13/21 08:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0256	U	0.167	0.167	3.00	0.302	pCi/g	09/04/21 14:11	09/25/21 15:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.3		40 - 110					09/04/21 14:11	09/25/21 15:48	1
Y Carrier	93.1		40 - 110					09/04/21 14:11	09/25/21 15:48	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.253	U	0.206	0.207	1.00	0.331	pCi/g	08/31/21 13:36	09/03/21 14:25	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0573	U	0.0504	0.0506	1.00	0.0638	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Plutonium-239/240	-0.00239	U	0.00468	0.00469	1.00	0.0463	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	74.6		30 - 110					08/21/21 14:10	09/02/21 22:06	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.169		0.0742	0.0755	1.00	0.0462	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-235/236	0.00256	U	0.0219	0.0219	1.00	0.0634	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-238	0.171		0.0740	0.0753	1.00	0.0398	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	81.8		30 - 110					08/21/21 14:26	09/02/21 14:56	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.703	U	0.787	0.791	5.00	1.33	pCi/g	09/14/21 15:20	09/17/21 08:49	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.308		0.0812	0.0868		0.114	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Americium-241	0.0428	U	0.0942	0.0943		0.162	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Bismuth-212	0.159	U	0.395	0.395		0.702	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Bismuth-214	0.0659	U	0.0773	0.0776		0.215	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Cesium-137	-0.0124	U	0.0380	0.0381		0.0678	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Cobalt-60	-0.00795	U	0.0537	0.0537		0.0627	pCi/g	08/19/21 13:00	09/11/21 15:18	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-040-081321

Lab Sample ID: 160-43084-24

Date Collected: 08/13/21 08:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-152	0.0405	U	0.0397	0.0399		0.130	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Europium-154	-0.000624	U	0.00132	0.00132		0.0934	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Europium-155	0.0149	U	0.0767	0.0767		0.307	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Lead-212	0.228		0.0510	0.0586		0.0497	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Lead-214	0.204		0.0589	0.0625		0.0832	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Potassium-40	3.71		0.700	0.793		0.253	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Radium-226	0.0659	U	0.0773	0.0776	0.200	0.215	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Sodium-22	0.00877	U	0.0337	0.0337		0.0627	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Thorium-232	0.308		0.0812	0.0868		0.114	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Zinc-65	0.0394	U	0.0769	0.0770		0.135	pCi/g	08/19/21 13:00	09/11/21 15:18	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/19/21 13:00	09/11/21 15:18	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.31	U	0.803	0.814	5.00	1.34	pCi/g	08/26/21 14:26	09/12/21 21:58	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	104		40 - 110					08/26/21 14:26	09/12/21 21:58	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.839	U	1.37	1.37	5.00	2.51	pCi/g	08/21/21 14:26	09/11/21 20:22	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	74.6		30 - 110					08/21/21 14:26	09/11/21 20:22	1

Client Sample ID: FSS-040-081321

Lab Sample ID: 160-43084-24

Date Collected: 08/13/21 08:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 96.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.0		0.21	0.013	mg/Kg	☼	09/07/21 07:45	09/08/21 07:14	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.8	ug/Kg	☼	09/03/21 16:10	09/03/21 20:52	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-041-081321

Lab Sample ID: 160-43084-25

Date Collected: 08/13/21 11:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0959	U	0.179	0.179	3.00	0.311	pCi/g	09/04/21 14:11	09/25/21 15:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.1		40 - 110					09/04/21 14:11	09/25/21 15:48	1
Y Carrier	92.7		40 - 110					09/04/21 14:11	09/25/21 15:48	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.258	U	0.203	0.204	1.00	0.323	pCi/g	08/31/21 13:36	09/03/21 14:47	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0175	U	0.0255	0.0255	1.00	0.0911	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Plutonium-239/240	0.0100	U	0.0295	0.0295	1.00	0.0669	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	68.3		30 - 110					08/21/21 14:10	09/02/21 22:06	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0940		0.0556	0.0561	1.00	0.0256	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-235/236	0.000	U	0.00521	0.00521	1.00	0.0319	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-238	0.0704		0.0507	0.0510	1.00	0.0528	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	83.8		30 - 110					08/21/21 14:26	09/02/21 14:56	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.482	U	0.763	0.764	5.00	1.31	pCi/g	09/14/21 15:20	09/17/21 09:12	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.0985	U	0.180	0.180		0.216	pCi/g	08/19/21 13:00	09/11/21 15:54	1
Americium-241	-0.0646	U	0.114	0.114		0.195	pCi/g	08/19/21 13:00	09/11/21 15:54	1
Bismuth-212	-0.343	U	0.685	0.686		1.19	pCi/g	08/19/21 13:00	09/11/21 15:54	1
Bismuth-214	0.0999	U	0.0607	0.0616		0.278	pCi/g	08/19/21 13:00	09/11/21 15:54	1
Cesium-137	0.0150	U	0.0614	0.0614		0.109	pCi/g	08/19/21 13:00	09/11/21 15:54	1
Cobalt-60	0.0359		0.0179	0.0182		0.0354	pCi/g	08/19/21 13:00	09/11/21 15:54	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-041-081321

Lab Sample ID: 160-43084-25

Date Collected: 08/13/21 11:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-152	0.258		0.113	0.116		0.102	pCi/g	08/19/21 13:00	09/11/21 15:54	1
Europium-154	0.0327	U	0.0242	0.0245		0.0810	pCi/g	08/19/21 13:00	09/11/21 15:54	1
Europium-155	-0.000498	U	0.229	0.229		0.373	pCi/g	08/19/21 13:00	09/11/21 15:54	1
Lead-212	0.0227	U	0.0811	0.0812		0.140	pCi/g	08/19/21 13:00	09/11/21 15:54	1
Lead-214	0.0155	U	0.0382	0.0382		0.246	pCi/g	08/19/21 13:00	09/11/21 15:54	1
Potassium-40	1.33		0.566	0.581		0.561	pCi/g	08/19/21 13:00	09/11/21 15:54	1
Radium-226	0.0999	U	0.0607	0.0616	0.200	0.278	pCi/g	08/19/21 13:00	09/11/21 15:54	1
Sodium-22	-0.0154	U	0.0384	0.0384		0.0707	pCi/g	08/19/21 13:00	09/11/21 15:54	1
Thorium-232	0.0985	U	0.180	0.180		0.216	pCi/g	08/19/21 13:00	09/11/21 15:54	1
Zinc-65	-0.0212	U	0.108	0.108		0.201	pCi/g	08/19/21 13:00	09/11/21 15:54	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/19/21 13:00	09/11/21 15:54	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.745	U	0.785	0.788	5.00	1.35	pCi/g	08/26/21 14:26	09/12/21 23:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	98.4		40 - 110					08/26/21 14:26	09/12/21 23:04	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.18	U	1.44	1.44	5.00	2.63	pCi/g	08/21/21 14:26	09/11/21 21:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	68.3		30 - 110					08/21/21 14:26	09/11/21 21:28	1

Client Sample ID: FSS-041-081321

Lab Sample ID: 160-43084-25

Date Collected: 08/13/21 11:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 96.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.73		0.25	0.015	mg/Kg	☼	09/01/21 14:58	09/02/21 11:08	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.6	ug/Kg	☼	09/03/21 16:10	09/03/21 20:55	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-042-081321

Lab Sample ID: 160-43084-26

Date Collected: 08/13/21 11:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0893	U	0.198	0.198	3.00	0.345	pCi/g	09/04/21 14:31	09/20/21 14:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.6		40 - 110					09/04/21 14:31	09/20/21 14:45	1
Y Carrier	90.1		40 - 110					09/04/21 14:31	09/20/21 14:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.295	U	0.209	0.211	1.00	0.328	pCi/g	08/31/21 13:36	09/03/21 15:10	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0196	U	0.0468	0.0468	1.00	0.0952	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Plutonium-239/240	-0.00280	U	0.00548	0.00549	1.00	0.0541	pCi/g	08/21/21 14:10	09/02/21 22:06	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	62.8		30 - 110					08/21/21 14:10	09/02/21 22:06	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0992		0.0652	0.0657	1.00	0.0663	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-235/236	0.0123	U	0.0242	0.0242	1.00	0.0370	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-238	0.0446	U	0.0439	0.0441	1.00	0.0555	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	71.1		30 - 110					08/21/21 14:26	09/02/21 14:56	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.589	U	0.774	0.776	5.00	1.33	pCi/g	09/14/21 15:20	09/17/21 09:34	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.0737	U	0.110	0.110		0.157	pCi/g	08/19/21 13:00	09/11/21 15:53	1
Americium-241	0.0331	U	0.0700	0.0701		0.121	pCi/g	08/19/21 13:00	09/11/21 15:53	1
Bismuth-212	-0.208	U	0.453	0.454		0.796	pCi/g	08/19/21 13:00	09/11/21 15:53	1
Bismuth-214	0.184		0.0838	0.0858		0.0891	pCi/g	08/19/21 13:00	09/11/21 15:53	1
Cesium-137	0.0631		0.0350	0.0356		0.0492	pCi/g	08/19/21 13:00	09/11/21 15:53	1
Cobalt-60	-0.0281	U	0.0695	0.0695		0.0771	pCi/g	08/19/21 13:00	09/11/21 15:53	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-042-081321

Lab Sample ID: 160-43084-26

Date Collected: 08/13/21 11:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-152	0.0322	U	0.0464	0.0465		0.111	pCi/g	08/19/21 13:00	09/11/21 15:53	1
Europium-154	0.0366	U	0.0695	0.0696		0.0776	pCi/g	08/19/21 13:00	09/11/21 15:53	1
Europium-155	-0.0620	U	0.0823	0.0826		0.368	pCi/g	08/19/21 13:00	09/11/21 15:53	1
Lead-212	0.131		0.0430	0.0461		0.0505	pCi/g	08/19/21 13:00	09/11/21 15:53	1
Lead-214	0.184		0.0696	0.0721		0.0703	pCi/g	08/19/21 13:00	09/11/21 15:53	1
Potassium-40	2.09		0.735	0.764		0.720	pCi/g	08/19/21 13:00	09/11/21 15:53	1
Radium-226	0.184		0.0838	0.0858	0.200	0.0891	pCi/g	08/19/21 13:00	09/11/21 15:53	1
Sodium-22	-0.0272	U	0.0431	0.0432		0.0745	pCi/g	08/19/21 13:00	09/11/21 15:53	1
Thorium-232	0.0737	U	0.110	0.110		0.157	pCi/g	08/19/21 13:00	09/11/21 15:53	1
Zinc-65	0.000	U	0.0410	0.0410		0.163	pCi/g	08/19/21 13:00	09/11/21 15:53	1
Other Detected			Count	Total						
			Uncert.	Uncert.						
Radionuclides	Result	Qualifier	(1.96σ+/-)	(1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208	0.0752		0.0352	0.0360		0.0363	pCi/g	08/19/21 13:00	09/11/21 15:53	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.998	U	0.959	0.964	5.00	1.62	pCi/g	09/08/21 16:09	09/17/21 04:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	89.6		40 - 110					09/08/21 16:09	09/17/21 04:12	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-1.12	U	1.65	1.66	5.00	3.05	pCi/g	08/21/21 14:26	09/11/21 22:34	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-236 (T)	62.8		30 - 110					08/21/21 14:26	09/11/21 22:34	1

Client Sample ID: FSS-042-081321

Lab Sample ID: 160-43084-26

Date Collected: 08/13/21 11:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 94.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.54		0.25	0.015	mg/Kg	☼	09/01/21 14:58	09/02/21 11:25	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.0	ug/Kg	☼	09/03/21 16:10	09/03/21 20:57	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-043-081321

Lab Sample ID: 160-43084-27

Date Collected: 08/13/21 11:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0244	U	0.195	0.195	3.00	0.359	pCi/g	09/04/21 14:31	09/20/21 14:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.2		40 - 110					09/04/21 14:31	09/20/21 14:45	1
Y Carrier	90.5		40 - 110					09/04/21 14:31	09/20/21 14:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.347		0.220	0.222	1.00	0.340	pCi/g	08/31/21 13:36	09/03/21 15:33	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00759	U	0.0238	0.0238	1.00	0.0797	pCi/g	09/11/21 13:28	09/20/21 20:52	1
Plutonium-239/240	0.00760	U	0.0205	0.0205	1.00	0.0491	pCi/g	09/11/21 13:28	09/20/21 20:52	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.8		30 - 110					09/11/21 13:28	09/20/21 20:52	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0884		0.0550	0.0555	1.00	0.0472	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-235/236	0.0105	U	0.0205	0.0206	1.00	0.0314	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Uranium-238	0.0441	U	0.0410	0.0411	1.00	0.0520	pCi/g	08/21/21 14:26	09/02/21 14:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	79.5		30 - 110					08/21/21 14:26	09/02/21 14:56	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.574	U	0.762	0.764	5.00	1.30	pCi/g	09/14/21 15:20	09/17/21 09:57	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.144		0.0973	0.0984		0.108	pCi/g	08/19/21 13:00	09/11/21 15:52	1
Americium-241	-0.0518	U	0.114	0.114		0.194	pCi/g	08/19/21 13:00	09/11/21 15:52	1
Bismuth-212	0.209	U	0.416	0.416		0.727	pCi/g	08/19/21 13:00	09/11/21 15:52	1
Bismuth-214	0.0507	U	0.0639	0.0642		0.139	pCi/g	08/19/21 13:00	09/11/21 15:52	1
Cesium-137	0.0120	U	0.0223	0.0223		0.0394	pCi/g	08/19/21 13:00	09/11/21 15:52	1
Cobalt-60	0.000	U	0.00894	0.00894		0.0238	pCi/g	08/19/21 13:00	09/11/21 15:52	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43084-1

Client Sample ID: FSS-043-081321

Lab Sample ID: 160-43084-27

Date Collected: 08/13/21 11:30

Matrix: Solid

Date Received: 08/14/21 09:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-152	0.0415	U	0.0508	0.0510		0.118	pCi/g	08/19/21 13:00	09/11/21 15:52	1
Europium-154	0.0457	U	0.0584	0.0586		0.0627	pCi/g	08/19/21 13:00	09/11/21 15:52	1
Europium-155	-0.0278	U	0.160	0.160		0.276	pCi/g	08/19/21 13:00	09/11/21 15:52	1
Lead-212	0.175		0.0454	0.0505		0.0487	pCi/g	08/19/21 13:00	09/11/21 15:52	1
Lead-214	0.178		0.0566	0.0595		0.0557	pCi/g	08/19/21 13:00	09/11/21 15:52	1
Potassium-40	1.79		0.605	0.631		0.459	pCi/g	08/19/21 13:00	09/11/21 15:52	1
Radium-226	0.0507	U	0.0639	0.0642	0.200	0.139	pCi/g	08/19/21 13:00	09/11/21 15:52	1
Sodium-22	0.0187	U	0.0149	0.0151		0.0229	pCi/g	08/19/21 13:00	09/11/21 15:52	1
Thorium-232	0.144		0.0973	0.0984		0.108	pCi/g	08/19/21 13:00	09/11/21 15:52	1
Zinc-65	-0.0613	U	0.111	0.111		0.192	pCi/g	08/19/21 13:00	09/11/21 15:52	1
Other Detected			Count	Total						
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radionuclides										
<i>TI-208</i>	0.0625		0.0220	0.0229		0.0149	pCi/g	08/19/21 13:00	09/11/21 15:52	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.785	U	0.886	0.890	5.00	1.51	pCi/g	09/08/21 16:09	09/17/21 05:18	1
Carrier			%Yield	Qualifier	Limits			Prepared	Analyzed	Dil Fac
<i>Ni</i>	102		40 - 110					09/08/21 16:09	09/17/21 05:18	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	1.07	U	1.39	1.40	5.00	2.41	pCi/g	09/12/21 17:27	09/23/21 18:29	1
Tracer			%Yield	Qualifier	Limits			Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	67.8		30 - 110					09/12/21 17:27	09/23/21 18:29	1

Client Sample ID: FSS-043-081321

Lab Sample ID: 160-43084-27

Date Collected: 08/13/21 11:30

Matrix: Solid

Date Received: 08/14/21 09:20

Percent Solids: 93.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.79		0.24	0.015	mg/Kg	☼	09/01/21 14:58	09/02/21 11:29	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.1	ug/Kg	☼	09/03/21 16:10	09/03/21 21:00	1

Laboratory Report

Eurofins TestAmerica, St. Louis
13715 Rider Trail North
Earth City, MO 63045
United States
Attention: Ivan H Vania
Telephone: 314-298-8566

Report Date 09/27/2021
Sample Receipt Date 08/17/2021
RJ Lee Group Job No. AOH1063128-0
Authorization/P.O. No. 160-43084-1
Client Job No./Name

Analysis: Asbestos in Bulk Samples by Point Count

Method: NYELAP Method 198.1

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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10545957.HPL	FSS-017-081221 (160-43084-1)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/24/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10545958.HPL	FSS-018-081221 (160-43084-2)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/24/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10545959.HPL	FSS-019-081221 (160-43084-3)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/24/2021
Description:		Beige Powder 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43084-1

RJ Lee Group Job No: AOH1063128-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10545960.HPL	FSS-020-081221 (160-43084-4)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/24/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10545961.HPL	FSS-021-081221 (160-43084-5)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/24/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10545962.HPL	FSS-022-081221 (160-43084-6)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/24/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10545963.HPL	FSS-023-081221 (160-43084-7)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/24/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10545964.HPL	FSS-024-081221 (160-43084-8)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/24/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43084-1

RJ Lee Group Job No: AOH1063128-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10545965.HPL	FSS-025-081221 (160-43084-9)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/24/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10545966.HPL	FSS-026-081221 (160-43084-10)	Yes	1	ND		100.00	Q, AM, F, OP, M	EAF-09/27/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10545967.HPL	FSS-027-081221 (160-43084-11)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/24/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10545968.HPL	FSS-028-081221 (160-43084-12)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/24/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10545969.HPL	FSS-029-081221 (160-43084-13)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/24/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43084-1

RJ Lee Group Job No: AOH1063128-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10545970.HPL	FSS-030-081221 (160-43084-14)	Yes	1	ND		100.00	Q, AM, F, OP, MI, M	EAF-09/24/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10545971.HPL	FSS-031-081221 (160-43084-15)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/27/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss: 0.0%								
10545972.HPL	FSS-032-081221 (160-43084-16)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/27/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss: 0.0%								
10545973.HPL	FSS-033-081221 (160-43084-17)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/27/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss: 0.0%								

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Client Job No./Name: 160-43084-1

RJ Lee Group Job No: AOH1063128-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10545974.HPL	FSS-034-081221 (160-43084-18)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/27/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							
10545975.HPL	FSS-035-081221 (160-43084-19)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/27/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							
10545976.HPL	FSS-036-081221 (160-43084-20)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/27/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							
10545977.HPL	FSS-037-081221 (160-43084-21)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/27/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							

Client Job No./Name: 160-43084-1

RJ Lee Group Job No: AOH1063128-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10545978.HPL	FSS-038-081221 (160-43084-22)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/27/2021
Description:	Pale Brown Sediment							
	Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss:	0.0%							
10545979.HPL	FSS-039-081221 (160-43084-23)	Yes	1	ND		100.00	Q, AM, F, OP, MI, M	EAF-09/25/2021
Description:	Beige Sediment							
	4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss:	0.0%							
10545980.HPL	FSS-040-081221 (160-43084-24)	Yes	1	ND		100.00	Q, AM, OP, MI, M	EAF-09/25/2021
Description:	Beige Sediment							
	4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss:	0.0%							
10545981.HPL	FSS-041-081221 (160-43084-25)	Yes	1	ND		100.00	Q, AM, OP, MI, M	EAF-09/25/2021
Description:	Beige Sediment							
	4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss:	0.0%							
10545982.HPL	FSS-042-081221 (160-43084-26)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/27/2021
Description:	Beige Sediment							
	4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss:	0.0%							

Client Job No./Name: 160-43084-1

RJ Lee Group Job No: AOH1063128-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10545983.HPL	FSS-043-081221 (160-43084-27)	Yes	1	ND		100.00	Q, OP, MI, M	EAF-09/25/2021

Description: Beige Sediment
4 Slides Scanned. No Asbestos Detected.
NY ELAP Method 198.1.

Weight Loss: 0.0%

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43113-1	FSS-044-081721	Solid	08/17/21 08:30	08/18/21 13:02
160-43113-2	FSS-045-081721	Solid	08/17/21 08:30	08/18/21 13:02
160-43113-3	FSS-046-081721	Solid	08/17/21 08:30	08/18/21 13:02
160-43113-4	FSS-047-081721	Solid	08/17/21 08:45	08/18/21 13:02
160-43113-5	FSS-048-081721	Solid	08/17/21 08:45	08/18/21 13:02
160-43113-6	FSS-049-081721	Solid	08/17/21 08:45	08/18/21 13:02
160-43113-7	FSS-050-081721	Solid	08/17/21 10:30	08/18/21 13:02
160-43113-8	FSS-051-081721	Solid	08/17/21 10:30	08/18/21 13:02
160-43113-9	FSS-052-081721	Solid	08/17/21 10:30	08/18/21 13:02
160-43113-10	FSS-053-081721	Solid	08/17/21 10:00	08/18/21 13:02
160-43113-11	FSS-054-081721	Solid	08/17/21 10:00	08/18/21 13:02
160-43113-12	FSS-055-081721	Solid	08/17/21 10:00	08/18/21 13:02
160-43113-13	FSS-056-081721	Solid	08/17/21 08:00	08/18/21 13:02
160-43113-14	FSS-256-081721	Solid	08/17/21 08:00	08/18/21 13:02
160-43113-15	FSS-057-081721	Solid	08/17/21 08:00	08/18/21 13:02
160-43113-16	FSS-257-081721	Solid	08/17/21 08:00	08/18/21 13:02
160-43113-17	FSS-058-081721	Solid	08/17/21 08:00	08/18/21 13:02
160-43113-18	FSS-258-081721	Solid	08/17/21 08:00	08/18/21 13:02

Euofins TestAmerica, St. Louis
 13715 Rider Trail North
 Earth City, MO 63045-1205
 phone 314.298.8566 fax 314.298.8757

Chain of Custody Record



TestAmerica Laboratories, Inc. d/b/a Euofins TestAmerica



160-43113 Chain of Custody

DW NPDES RCRA Other:

Client Contact		Project Manager: Dan Ours		Site Contact: Doug Beard		Date: 08-17-21		COC No:										
Email: d.ours@pm-remediations.com		Tel/Fax: (315) 336-7721 ext. 218		Lab Contact: Ivan Vania		Carrier: Fed Ex		1 of 2 COCs										
Address 181 Kenwood Avenue		Oneida, NY 13421		Analysis Turnaround Time				SAMPLER: J. Gollhofer										
Phone (315) 336-7721 ext. 218		TAT if different from Below 30 Days		CALENDAR DAYS <input type="checkbox"/> WORKING DAYS				For Lab Use Only:										
FAX (315) 336-7722		<input type="checkbox"/> 2 weeks		<input type="checkbox"/> 1 week				Walk-in Client:										
Project Name: BNL 705 Stack Demo		<input type="checkbox"/> 2 days		<input type="checkbox"/> 1 day				Lab Sampling:										
Site: BNL								Job / SDG No.:										
P O # 1085-20-01-01																		
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Gamma Spec: Ra-226+detcts	Asbestos - EPA600 R-93	Lead (ICP/MS) - 6020B	Mercury - EPA 7470A	Ni-63	Tritium	C-14	Alpha Spec Pu 238, 239, 240	Alpha Spec U 234, 235, 238	Pu 241 by LSC	Sample Specific Notes:
FSS-044-081721	17-Aug	8:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - SS02 0"-6"
FSS-045-081721	17-Aug	8:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - SS02 6"-12"
FSS-046-081721	17-Aug	8:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - SS02 18"-24"
FSS-047-081721	17-Aug	8:45	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - SS03 0"-6"
FSS-048-081721	17-Aug	8:45	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - SS03 6"-12"
FSS-049-081721	17-Aug	8:45	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - SS03 18"-24"
FSS-050-081721	17-Aug	10:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - SS04 0"-6"
FSS-051-081721	17-Aug	10:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - SS04 6"-12"
FSS-052-081721	17-Aug	10:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - SS04 18"-24"
FSS-053-081721	17-Aug	10:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - SS05 0"-6"
FSS-054-081721	17-Aug	10:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - SS05 6"-12"
FSS-055-081721	17-Aug	10:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - SS05 18"-24"

Preservation Used: 1=Ice, 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6=Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Return to Client Disposal by Lab Archive for Months

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu154, Eu155

Custody Seal No.:	Cooler Temp. (°C): Obs'd:	Therm ID No.:
Company: Cabrera Services, Inc.	Received by: Fed Ex	Company:
Date/Time: 8-17-21/17:00	Received: AUG 18 2021 MICHA RENNINGS	Date/Time: 8/18/21
Company:	Received in Laboratory by:	Company:
Date/Time:		Date/Time:

Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Client Contact		Project Manager: Dan Ours		Site Contact: Doug Beard		Date: 08-17-21		COC No: 2 of 2 COCs			
Email: d.ours@fpm-remediations.com		Tel/Fax: (315) 336-7721 ext. 218		Lab Contact: Ivan Vania		Carrier: Fed Ex		TALS Project #:			
<input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT: if different from Below <u>30</u> Days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Analysis Turnaround Time		Alpha Spec Pu 238,239,240		Alpha Spec U 234,235,238		Sampler: J. Gollifer			
Sample Identification		Sample Date		Sample Time		Sample Type (C=Comp, G=Grab)		Matrix		# of Cont.	
FSS-053-081721 ms/msd		17-Aug		10:00		C		S		1	
FSS-054-081721 ms/msd		17-Aug		10:00		C		S		1	
FSS-055-081721 ms/msd		17-Aug		10:00		C		S		1	
FSS-056-081721		17-Aug		8:00		C		S		3	
FSS-256-081721		17-Aug		8:00		C		S		3	
FSS-057-081721		17-Aug		8:00		C		S		3	
FSS-257-081721		17-Aug		8:00		C		S		3	
FSS-058-081721		17-Aug		8:00		C		S		3	
FSS-258-081721		17-Aug		8:00		C		S		3	

Preservation Used: 1=Ice, 2=HCl; 3=H2SO4; 4=HNO3; 5=NaOH; 6=Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zr95, Th 232, Eu152, Eu154, Eu155

Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Cooler Temp. (°C): Obs'd: _____	Corr'd: _____	Therm ID No.: _____
Relinquished by: Douglas Beard	Received by: Fed Ex	Company: _____	Date/Time: _____
Relinquished by: [Signature]	Received by: AUG 18 2021 09:01	Company: MICHA KERNING	Date/Time: 8/18/21 9:01
Relinquished by: [Signature]	Received in Laboratory by: [Signature]	Company: _____	Date/Time: _____

Client Information (Sub Contract Lab)

Client Contact: **Shipping/Receiving**
Company: **RJ Lee Group, Inc**
Address: **350 Hootberg Rd,
Monroeville
State, Zip:
PA, 15146**
Phone:
Email:

Sampler: **ADH06 3191-0**

Lab File: **Vanis, Ivan H**
E-Mail: **Ivan.Vanis@Eurofins.com**
Phone:
State of Origin: **New York**

Center Tracking No(s):

GCC No: **180-217817.1**

Page: **Page 1 of 2**

Job #: **180-43113-1**

Date Date Requested: **8/16/2021**

TAT Requested (days):

PO #:

WO #:

Project #:

16009147

SSDNW:

Analysis Requested

Accreditations Required (See note):
DoD - A2LA; DoD - ANAB; NELAP - New York

Preservation Codes:

- A - HCl
- M - Hexane
- B - NaOH
- N - None
- C - Zn Acetate
- O - Nitric Acid
- D - Nitric Acid
- P - NiClO2
- E - NaHSO4
- Q - Na2SO3
- F - MeOH
- R - NiClO2
- G - Amchlor
- S - H2SO4
- H - Ascorbic Acid
- T - TSP Dodecylhydrate
- I - Ice
- U - Acetone
- J - DI Water
- V - MCAA
- K - EDTA
- W - pH 4.5
- L - EDA
- Z - other (specify)

Field Filtered Sample (Yes or No)	Perform HSM/SD (Yes or No)	Sub (Acetone/ Acetone)	Total Number of Containers	Special Instructions/Note:
X	X	X	1	
X	X	X	1	
X	X	X	1	
X	X	X	1	
X	X	X	1	
X	X	X	1	
X	X	X	1	
X	X	X	1	
X	X	X	1	
X	X	X	1	
X	X	X	1	
X	X	X	1	

Sample Identification - Client ID (Lab ID)

Sample ID	Sample Date	Sample Time	Sample Type (C-Comp, Gr-Grat)	Matrix (Inerts, Swabs, Oils, etc)	Preservation Code
FSS-044-081721 (160-43113-1)	8/17/21	08:30 Eastern	Solid	Solid	
FSS-045-081721 (160-43113-2)	8/17/21	08:30 Eastern	Solid	Solid	
FSS-046-081721 (160-43113-3)	8/17/21	08:30 Eastern	Solid	Solid	
FSS-047-081721 (160-43113-4)	8/17/21	08:45 Eastern	Solid	Solid	
FSS-048-081721 (160-43113-5)	8/17/21	08:45 Eastern	Solid	Solid	
FSS-049-081721 (160-43113-6)	8/17/21	08:45 Eastern	Solid	Solid	
FSS-050-081721 (160-43113-7)	8/17/21	10:30 Eastern	Solid	Solid	
FSS-051-081721 (160-43113-8)	8/17/21	10:30 Eastern	Solid	Solid	
FSS-052-081721 (160-43113-9)	8/17/21	10:30 Eastern	Solid	Solid	

Note: Since laboratory accreditation are subject to change, Eurofins TestAmerica places the ownership of method, analysis & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification

Level 1 radioactive

Deliverable Requested: I, II, III, IV, Other (specify)

Primary Deliverable Rank: 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Months

Special Instructions/CC Requirements:

Empty KR Reinquished by:

Reinquished by: **Micha Kenning**

Date: **8/19/21 18:00**

Company: **ETA SR**

Method of Shipment:

Time:

Received by: **Micha Kenning**

Date/Time: **08-19-21 18:00**

Company: **ETA SR**

Received by: **Micha Kenning**

Date/Time: **08-19-21 18:00**

Company: **ETA SR**

Received by: **Micha Kenning**

Date/Time: **08-19-21 18:00**

Company: **ETA SR**

Received by: **Micha Kenning**

Custody Seal Intact: Yes No

Cooler Temperature (°C) and Other Remarks:

Chain of Custody Record

Client Information (Sub Contract Lab)
 Client Contact: **Vanja, Ivan H** Lab PIC: **Vanja, Ivan H** Carrier Tracking No(s): **160-217817.2**
 Shipping/Receiving: **Ivan.Vanja@Eurofins.com** E-Mail: **Ivan.Vanja@Eurofins.com** State of Origin: **New York** Page: **Page 2 of 2**
 Company: **RJ Lee Group, Inc** Address: **350 Hochberg Rd, Monroeville, PA, 15146** City: **Monroeville** State, Zip: **PA, 15146** Phone: PO #: FPO #: WO #: Project #: **16009147** SSOW#:

Analysis Requested
 DoD - A2LA; DoD - ANAB; NELAP - New York
 Accreditation Required (See note):
 Preservation Codes:
 A - HCL
 B - NaOH
 C - Zn Acetate
 D - Nitric Acid
 E - NaHSO4
 F - MeOH
 G - Acetic Acid
 H - Ascorbic Acid
 I - Ice
 J - DI Water
 K - EDTA
 L - EDA
 Other:
 M - Hexane
 N - None
 O - Air/NO2
 P - NaOH/S
 Q - Na2SO3
 R - Na2S2O3
 S - H2SO4
 T - TSP Dodecahydrate
 U - Acetone
 V - HCAA
 W - BH 4.5
 Z - other (specify)

Sample ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, P=powder, O=organic, M=metal, A=air)	Field Filtered Sample (Yes or No)	Performs MS/MSD (Yes or No)	URS (Asbestos/Asbestos)	Total Number of Containers	Special Instructions/Note:
FSS-053-081721 (160-43113-10)	8/17/21	10:00 Eastern	Solid	Solid	X	X		1	
FSS-054-081721 (160-43113-11)	8/17/21	10:00 Eastern	Solid	Solid	X	X		1	
FSS-055-081721 (160-43113-12)	8/17/21	10:00 Eastern	Solid	Solid	X	X		1	
FSS-056-081721 (160-43113-13)	8/17/21	08:00 Eastern	Solid	Solid	X	X		1	
FSS-256-081721 (160-43113-14)	8/17/21	08:00 Eastern	Solid	Solid	X	X		1	
FSS-057-081721 (160-43113-15)	8/17/21	08:00 Eastern	Solid	Solid	X	X		1	
FSS-257-081721 (160-43113-16)	8/17/21	08:00 Eastern	Solid	Solid	X	X		1	
FSS-058-081721 (160-43113-17)	8/17/21	08:00 Eastern	Solid	Solid	X	X		1	
FSS-258-081721 (160-43113-18)	8/17/21	08:00 Eastern	Solid	Solid	X	X		1	

Possible Hazard Identification
 Level 1 radioactive
 Deliverable Requested: I, II, III, IV, Other (specify) **Primary Deliverable Rank: 2**
 Empty KIT Refrignished by: Date: Time:
 Reinstated by: **Michael Kevanings** Date/Time: **8/19/21 18:00** Company: **CS&S**
 Reinstated by: **Michelle Matuszewska** Date/Time: **08-23-21 7:00 AM** Company: **CS&S**
 Reinstated by: Date/Time: Company:
 Custody Seals Intact: Custody Seal No.:
 A Yes A No

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For **Months**
 Special Instructions/OC Requirements:
 Method of Shipment:
 Received by: **M. Carver** Date/Time: **08-20-21 9:00 AM** Company: **CS&S**
 Received by: **Michelle Matuszewska** Date/Time: **08-23-21 7:00 AM** Company: **CS&S**

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43113-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/18/2021 1:02 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.5° C, 26.3° C and 26.8° C.

Receipt Exceptions

The sample was received in a broken 8oz container. The plastic bag included more than sufficient volume for all requested analyses; therefore, a new 8oz container was subsampled from the plastic bag: FSS-057-081721 (160-43113-15).

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis.

METALS (ICP/MS)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721

(160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 09/08/2021 and analyzed on 09/09/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B_ DoD5. The samples were prepared and analyzed on 09/10/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 08/27/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 08/20/2021, prepared on 09/04/2021 and analyzed on 09/20/2021.

Preparation Batch 160-525601:

Method DPS-7: The following samples could not be thoroughly homogenized before sub-sampling was performed due to sample matrix. The samples had large rocks >2mm: FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17), and FSS-258-081721 (160-43113-18).

The sample was counted on a detector that failed the closing daily check slightly low. The detector passed the day the sample counted. The lab does not believe that the 3% low result for the closing daily check significantly affects the sample results. Therefore, the data was reported: FSS-054-081721 (160-43113-11).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 09/03/2021 and analyzed on 09/08/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 08/20/2021, prepared on 08/29/2021 and 08/31/2021 and analyzed on 09/09/2021 and 09/10/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/20/2021, prepared on 08/29/2021 and 08/31/2021 and analyzed on 09/08/2021, 09/09/2021 and 09/10/2021.

Preparation Batch 160-524626:

Detectors AV83, AV86 AV95, and AV96 were calibrated in August, therefore; the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-047-081721 (160-43113-4), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), and FSS-051-081721 (160-43113-8).

Preparation Batch 160-524624:

Detectors AV131-AV142 were calibrated in August, therefore; the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: (LCS 160-524624/2-A), (MB 160-524624/1-A), (160-43079-A-2-G), and (160-43079-A-2-H DU).

Preparation Batch 160-524992:

Detectors AV131-AV146 were calibrated in August, therefore; the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17), and FSS-258-081721 (160-43113-18).

Preparation Batch 160-424999:

Detectors AV95, AV96, AV97 and V161 were calibrated in August, therefore; the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), and FSS-058-081721 (160-43113-17).

Preparation Batch 160-523941:

The detection goal of 0.200 pCi/g was not met for Ra-226 for the following sample. An elevated MDC can occur when higher background counts are applied to a peak ROI. This is due to the relatively small size of the peak or subsequent "force-fit" of the non-existent peak which resulted in higher than normal background counts due to statistical fluctuations in the Compton background. The laboratory does not believe this adversely affects the data, as the Ra-226 result is below the RL and MDC: FSS-257-081721 (160-43113-16).

The sample exhibited a negative result greater in magnitude than the 3 sigma TPU for Am-241. This occurrence was evaluated and determined to be random in nature. Sporadic occurrences such as this are statistically expected: FSS-257-081721 (160-43113-16).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 09/16/2021 and 09/17/2021 and analyzed on 09/17/2021 and 09/18/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/20/2021, prepared on 08/24/2021 and analyzed on 09/16/2021 and 09/17/2021.

Preparation Batch 160-523941:

For samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17), and FSS-258-081721 (160-43113-18).

(160-43113-16), FSS-058-081721 (160-43113-17), FSS-258-081721 (160-43113-18), (LCS 160-523941/2-A), (MB 160-523941/1-A), and (160-43113-D-18-D DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 08/20/2021, prepared on 09/08/2021 and analyzed on 09/17/2021 and 09/18/2021.

Preparation Batch 160-526025:

The nickel carrier recoveries were outside the upper acceptance limit. The carrier recoveries have been truncated to minimize any potential bias a high carrier may have on the results: FSS-044-081721 (160-43113-1) and (MB 160-526025/1-A).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-044-081721 (160-43113-1), FSS-045-081721 (160-43113-2), FSS-046-081721 (160-43113-3), FSS-047-081721 (160-43113-4), FSS-048-081721 (160-43113-5), FSS-049-081721 (160-43113-6), FSS-050-081721 (160-43113-7), FSS-051-081721 (160-43113-8), FSS-052-081721 (160-43113-9), FSS-053-081721 (160-43113-10), FSS-054-081721 (160-43113-11), FSS-055-081721 (160-43113-12), FSS-056-081721 (160-43113-13), FSS-256-081721 (160-43113-14), FSS-057-081721 (160-43113-15), FSS-257-081721 (160-43113-16), FSS-058-081721 (160-43113-17) and FSS-258-081721 (160-43113-18) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared on 08/29/2021 and 08/31/2021 and analyzed on 09/15/2021 and 09/16/2021.

Preparation Batch 160-525000:

The samples were switched during the original analysis then recounted. All samples in the batch have results below the MDC and reporting limit (RL). Therefore the data was not adversely affected: FSS-257-081721 (160-43113-16) and (LCS 160-525000/2-A).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-044-081721

Lab Sample ID: 160-43113-1

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.232	U	0.183	0.184	3.00	0.295	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.8		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	87.9		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0330	U	0.221	0.221	1.00	0.407	pCi/g	09/03/21 13:48	09/08/21 10:20	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00950	U	0.0298	0.0298	1.00	0.0996	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	0.00951	U	0.0256	0.0256	1.00	0.0614	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	54.2		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0246	U	0.0395	0.0396	1.00	0.0680	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.0704		0.0592	0.0595	1.00	0.0697	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	61.0		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.191	U	0.450	0.450	5.00	0.774	pCi/g	09/17/21 06:21	09/17/21 23:26	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.258		0.130	0.132		0.217	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Americium-241	0.0417	U	0.152	0.152		0.262	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Bismuth-212	0.271	U	0.528	0.529		0.922	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Bismuth-214	0.297		0.0836	0.0889		0.0703	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Cesium-137	-0.0347	U	0.0483	0.0484		0.104	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Cobalt-60	0.0293	U	0.0217	0.0219		0.0309	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Europium-152	0.0613	U	0.161	0.161		0.147	pCi/g	08/24/21 16:40	09/16/21 10:20	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-044-081721

Lab Sample ID: 160-43113-1

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0103	U	0.0131	0.0131		0.108	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Europium-155	0.145		0.0923	0.0936		0.112	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Lead-212	0.321		0.0731	0.0837		0.0811	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Lead-214	0.305		0.0766	0.0827		0.0796	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Potassium-40	2.51		0.717	0.760		0.651	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Radium-226	0.297		0.0836	0.0889	0.200	0.0703	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Sodium-22	-0.0284	U	0.0496	0.0497		0.0865	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Thorium-232	0.258		0.130	0.132		0.217	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Zinc-65	-0.00402	U	0.0788	0.0788		0.186	pCi/g	08/24/21 16:40	09/16/21 10:20	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	<i>0.113</i>		<i>0.0392</i>	<i>0.0409</i>		<i>0.0326</i>	<i>pCi/g</i>	<i>08/24/21 16:40</i>	<i>09/16/21 10:20</i>	<i>1</i>

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.11	U	0.884	0.891	5.00	1.49	pCi/g	09/08/21 16:09	09/17/21 06:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	<i>123</i>	<i>Q</i>	<i>40 - 110</i>					<i>09/08/21 16:09</i>	<i>09/17/21 06:24</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-4.47	U	1.95	1.99	5.00	3.82	pCi/g	08/29/21 20:28	09/16/21 06:05	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	<i>54.2</i>		<i>30 - 110</i>					<i>08/29/21 20:28</i>	<i>09/16/21 06:05</i>	<i>1</i>

Client Sample ID: FSS-044-081721

Lab Sample ID: 160-43113-1

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 97.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.9		0.21	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 19:22	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	25		19	6.3	ug/Kg	☼	09/10/21 17:45	09/10/21 20:33	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-045-081721

Lab Sample ID: 160-43113-2

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0262	U	0.189	0.189	3.00	0.341	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.1		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	89.0		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.179	U	0.251	0.251	1.00	0.428	pCi/g	09/03/21 13:48	09/08/21 10:43	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00925	U	0.00907	0.00910	1.00	0.0618	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00232	U	0.00454	0.00454	1.00	0.0448	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.3		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0334	U	0.0416	0.0417	1.00	0.0587	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.107		0.0668	0.0674	1.00	0.0650	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	71.7		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0656	U	0.397	0.397	5.00	0.674	pCi/g	09/17/21 06:21	09/18/21 01:06	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.205		0.164	0.166		0.177	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Americium-241	0.0430	U	0.101	0.101		0.173	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Bismuth-212	0.116	U	0.548	0.548		0.976	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Bismuth-214	0.254		0.0800	0.0840		0.0803	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Cesium-137	0.0865		0.0275	0.0289		0.0168	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Cobalt-60	0.000	U	0.00926	0.00926		0.0246	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Europium-152	0.0626	U	0.114	0.114		0.120	pCi/g	08/24/21 16:40	09/16/21 10:59	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-045-081721

Lab Sample ID: 160-43113-2

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	-0.00190	U	0.0445	0.0445		0.0790	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Europium-155	0.0303	U	0.198	0.198		0.339	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Lead-212	0.315		0.0579	0.0703		0.0511	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Lead-214	0.310		0.0707	0.0774		0.0634	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Potassium-40	2.35		0.619	0.662		0.542	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Radium-226	0.254		0.0800	0.0840	0.200	0.0803	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Sodium-22	-0.0323	U	0.0419	0.0421		0.0707	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Thorium-232	0.205		0.164	0.166		0.177	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Zinc-65	0.000	U	0.0112	0.0112		0.158	pCi/g	08/24/21 16:40	09/16/21 10:59	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	<i>0.0767</i>		<i>0.0341</i>	<i>0.0350</i>		<i>0.0369</i>	<i>pCi/g</i>	<i>08/24/21 16:40</i>	<i>09/16/21 10:59</i>	<i>1</i>

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.949	U	0.899	0.904	5.00	1.51	pCi/g	09/08/21 16:09	09/17/21 07:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	<i>94.9</i>		<i>40 - 110</i>					<i>09/08/21 16:09</i>	<i>09/17/21 07:30</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.293	U	1.51	1.51	5.00	2.65	pCi/g	08/29/21 20:28	09/16/21 07:11	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	<i>75.3</i>		<i>30 - 110</i>					<i>08/29/21 20:28</i>	<i>09/16/21 07:11</i>	<i>1</i>

Client Sample ID: FSS-045-081721

Lab Sample ID: 160-43113-2

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 96.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.3		0.22	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 19:25	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	J	20	6.6	ug/Kg	☼	09/10/21 17:45	09/10/21 20:35	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-046-081721

Lab Sample ID: 160-43113-3

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.291	U	0.220	0.221	3.00	0.353	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.9		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	81.1		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	11.3		0.733	1.22	1.00	0.409	pCi/g	09/03/21 13:48	09/08/21 11:06	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00867	U	0.0272	0.0272	1.00	0.0909	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Plutonium-239/240	-0.00289	U	0.00567	0.00567	1.00	0.0560	pCi/g	08/29/21 18:19	09/09/21 21:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	59.3		30 - 110					08/29/21 18:19	09/09/21 21:38	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0379		0.0429	0.0430	1.00	0.0379	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Uranium-238	0.142		0.0743	0.0752	1.00	0.0304	pCi/g	08/29/21 20:35	09/08/21 14:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.0		30 - 110					08/29/21 20:35	09/08/21 14:03	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.357	U	0.604	0.605	5.00	1.05	pCi/g	09/17/21 06:21	09/18/21 01:40	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.428		0.156	0.162		0.234	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Americium-241	0.0427	U	0.161	0.161		0.278	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Bismuth-212	0.330	U	0.585	0.586		1.02	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Bismuth-214	0.364		0.108	0.115		0.0946	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Cesium-137	-0.0210	U	0.0613	0.0614		0.106	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Cobalt-60	0.0256	U	0.0510	0.0511		0.0608	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Europium-152	0.0547	U	0.0591	0.0594		0.184	pCi/g	08/24/21 16:40	09/17/21 13:13	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-046-081721

Lab Sample ID: 160-43113-3

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0764	U	0.125	0.125		0.129	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Europium-155	-0.0763	U	0.126	0.127		0.340	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Lead-212	0.428		0.0821	0.0985		0.0800	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Lead-214	0.299		0.0863	0.0915		0.0780	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Potassium-40	1.57		0.632	0.651		0.701	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Radium-226	0.364		0.108	0.115	0.200	0.0946	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Sodium-22	-0.0160	U	0.0428	0.0428		0.0783	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Thorium-232	0.428		0.156	0.162		0.234	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Zinc-65	-0.0162	U	0.0427	0.0427		0.217	pCi/g	08/24/21 16:40	09/17/21 13:13	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/24/21 16:40	09/17/21 13:13	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	13.0		1.24	1.81	5.00	1.36	pCi/g	09/08/21 16:09	09/17/21 08:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	105		40 - 110					09/08/21 16:09	09/17/21 08:37	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.92	U	1.76	1.77	5.00	3.19	pCi/g	08/29/21 20:28	09/16/21 08:17	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	59.3		30 - 110					08/29/21 20:28	09/16/21 08:17	1

Client Sample ID: FSS-046-081721

Lab Sample ID: 160-43113-3

Date Collected: 08/17/21 08:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 96.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.86		0.23	0.014	mg/Kg	☼	09/08/21 14:58	09/09/21 19:29	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	7.0	J	18	5.8	ug/Kg	☼	09/10/21 17:45	09/10/21 20:38	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-047-081721

Lab Sample ID: 160-43113-4

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.161	U	0.186	0.187	3.00	0.314	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.3		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	92.3		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0711	U	0.210	0.211	1.00	0.389	pCi/g	09/03/21 13:48	09/08/21 11:28	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0111	U	0.0291	0.0291	1.00	0.0854	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.00222	U	0.0189	0.0189	1.00	0.0549	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	83.8		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00595	U	0.00824	0.00826	1.00	0.0666	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Uranium-238	0.277		0.105	0.107	1.00	0.0783	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	72.3		30 - 110					08/29/21 20:35	09/08/21 14:01	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.180	U	0.562	0.562	5.00	0.960	pCi/g	09/17/21 06:21	09/18/21 02:13	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.333		0.155	0.158		0.243	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Americium-241	-0.00436	U	0.160	0.160		0.279	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Bismuth-212	0.0261	U	0.570	0.570		1.06	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Bismuth-214	0.408		0.123	0.130		0.118	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Cesium-137	0.190		0.0745	0.0770		0.0652	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Cobalt-60	0.0328	U	0.0243	0.0245		0.0345	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Europium-152	0.0324	U	0.110	0.110		0.190	pCi/g	08/24/21 16:40	09/16/21 11:00	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-047-081721

Lab Sample ID: 160-43113-4

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0346	U	0.0787	0.0788		0.135	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Europium-155	0.0434	U	0.135	0.135		0.330	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Lead-212	0.407		0.0852	0.0996		0.0910	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Lead-214	0.382		0.107	0.114		0.0989	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Potassium-40	3.37		0.863	0.927		0.727	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Radium-226	0.408		0.123	0.130	0.200	0.118	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Sodium-22	0.0362		0.0251	0.0253		0.0334	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Thorium-232	0.333		0.155	0.158		0.243	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Zinc-65	-0.00449	U	0.140	0.140		0.261	pCi/g	08/24/21 16:40	09/16/21 11:00	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208	0.234		0.0633	0.0676		0.0485	pCi/g	08/24/21 16:40	09/16/21 11:00	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.540	U	0.858	0.860	5.00	1.48	pCi/g	09/08/21 16:09	09/17/21 09:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	101		40 - 110					09/08/21 16:09	09/17/21 09:43	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-1.59	U	1.35	1.35	5.00	2.51	pCi/g	08/29/21 20:28	09/16/21 09:24	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	83.8		30 - 110					08/29/21 20:28	09/16/21 09:24	1

Client Sample ID: FSS-047-081721

Lab Sample ID: 160-43113-4

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 95.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	7.6		0.29	0.018	mg/Kg	☼	09/08/21 14:58	09/09/21 19:33	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	85		18	5.9	ug/Kg	☼	09/10/21 17:45	09/10/21 20:40	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-048-081721

Lab Sample ID: 160-43113-5

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.159	U	0.203	0.204	3.00	0.345	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	75.9		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	87.5		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0175	U	0.222	0.222	1.00	0.409	pCi/g	09/03/21 13:48	09/08/21 11:51	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0119	U	0.0287	0.0287	1.00	0.0979	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.0209	U	0.0336	0.0337	1.00	0.0578	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.2		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0447		0.0506	0.0507	1.00	0.0447	pCi/g	08/29/21 20:35	09/09/21 12:17	1
Uranium-238	0.191		0.0937	0.0950	1.00	0.0359	pCi/g	08/29/21 20:35	09/09/21 12:17	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	58.0		30 - 110					08/29/21 20:35	09/09/21 12:17	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0735	U	0.442	0.442	5.00	0.750	pCi/g	09/17/21 06:21	09/18/21 02:47	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.336		0.0945	0.100		0.117	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Americium-241	0.0470	U	0.108	0.108		0.184	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Bismuth-212	0.0288	U	0.434	0.434		0.802	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Bismuth-214	0.162		0.0682	0.0701		0.0805	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Cesium-137	0.0256	U	0.0445	0.0445		0.0766	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Cobalt-60	-0.0186	U	0.0563	0.0564		0.0643	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Europium-152	0.0188	U	0.0488	0.0488		0.126	pCi/g	08/24/21 16:40	09/16/21 11:30	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-048-081721

Lab Sample ID: 160-43113-5

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0538	U	0.0863	0.0865		0.0774	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Europium-155	0.0206	U	0.0702	0.0702		0.426	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Lead-212	0.254		0.0640	0.0717		0.0792	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Lead-214	0.208		0.0891	0.0916		0.129	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Potassium-40	2.64		0.665	0.716		0.567	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Radium-226	0.162		0.0682	0.0701	0.200	0.0805	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Sodium-22	0.0270		0.0187	0.0189		0.0249	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Thorium-232	0.336		0.0945	0.100		0.117	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Zinc-65	-0.0176	U	0.103	0.103		0.186	pCi/g	08/24/21 16:40	09/16/21 11:30	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
TI-208	0.103		0.0327	0.0344		0.0278	pCi/g	08/24/21 16:40	09/16/21 11:30	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.890	U	0.953	0.958	5.00	1.63	pCi/g	09/08/21 16:09	09/17/21 10:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	92.0		40 - 110					09/08/21 16:09	09/17/21 10:49	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.788	U	1.81	1.81	5.00	3.30	pCi/g	08/29/21 20:28	09/16/21 10:30	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.2		30 - 110					08/29/21 20:28	09/16/21 10:30	1

Client Sample ID: FSS-048-081721

Lab Sample ID: 160-43113-5

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 97.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.0		0.21	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 19:36	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	39		18	5.8	ug/Kg	☼	09/10/21 17:45	09/10/21 20:43	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-049-081721

Lab Sample ID: 160-43113-6

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0702	U	0.232	0.232	3.00	0.410	pCi/g	09/04/21 14:31	09/20/21 14:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.9		40 - 110					09/04/21 14:31	09/20/21 14:46	1
Y Carrier	79.6		40 - 110					09/04/21 14:31	09/20/21 14:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.143	U	0.213	0.213	1.00	0.411	pCi/g	09/03/21 13:48	09/08/21 12:14	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00446	U	0.00618	0.00619	1.00	0.0499	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.0156	U	0.0251	0.0252	1.00	0.0432	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	80.1		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00271	U	0.00531	0.00532	1.00	0.0525	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Uranium-238	0.215		0.0874	0.0892	1.00	0.0619	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	76.7		30 - 110					08/29/21 20:35	09/08/21 14:01	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.680	U	0.585	0.589	5.00	1.05	pCi/g	09/17/21 06:21	09/18/21 03:20	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.436		0.125	0.132		0.0683	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Americium-241	0.0250	U	0.101	0.102		0.135	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Bismuth-212	0.167	U	0.404	0.404		0.719	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Bismuth-214	0.381		0.0890	0.0970		0.0763	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Cesium-137	0.0266	U	0.0497	0.0498		0.0858	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Cobalt-60	0.00121	U	0.0400	0.0400		0.0501	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Europium-152	0.0609	U	0.162	0.162		0.134	pCi/g	08/24/21 16:40	09/16/21 12:06	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-049-081721

Lab Sample ID: 160-43113-6

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0491	U	0.0788	0.0790		0.0833	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Europium-155	0.0244	U	0.0886	0.0886		0.359	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Lead-212	0.388		0.0707	0.0861		0.0709	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Lead-214	0.410		0.0917	0.101		0.0775	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Potassium-40	2.05		0.616	0.649		0.589	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Radium-226	0.381		0.0890	0.0970	0.200	0.0763	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Sodium-22	-0.00351	U	0.0407	0.0407		0.0769	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Thorium-232	0.436		0.125	0.132		0.0683	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Zinc-65	0.000	U	0.0173	0.0173		0.189	pCi/g	08/24/21 16:40	09/16/21 12:06	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			0.0423	0.0461		0.0289	pCi/g	08/24/21 16:40	09/16/21 12:06	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.337	U	0.900	0.901	5.00	1.58	pCi/g	09/08/21 16:09	09/17/21 11:55	1
Carrier	%Yield	Qualifier	Limits							
Ni	104		40 - 110							
								Prepared	Analyzed	Dil Fac
								09/08/21 16:09	09/17/21 11:55	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-2.09	U	1.27	1.28	5.00	2.36	pCi/g	08/29/21 20:28	09/16/21 11:36	1
Tracer	%Yield	Qualifier	Limits							
Pu-242 (T)	80.1		30 - 110							
								Prepared	Analyzed	Dil Fac
								08/29/21 20:28	09/16/21 11:36	1

Client Sample ID: FSS-049-081721

Lab Sample ID: 160-43113-6

Date Collected: 08/17/21 08:45

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 94.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.3		0.24	0.014	mg/Kg	☼	09/08/21 14:58	09/09/21 19:40	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	12	J	19	6.3	ug/Kg	☼	09/10/21 17:45	09/10/21 20:46	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-050-081721

Lab Sample ID: 160-43113-7

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.179	U	0.180	0.181	3.00	0.363	pCi/g	09/04/21 14:31	09/20/21 14:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	76.1		40 - 110					09/04/21 14:31	09/20/21 14:50	1
Y Carrier	83.4		40 - 110					09/04/21 14:31	09/20/21 14:50	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0318	U	0.218	0.218	1.00	0.385	pCi/g	09/03/21 13:48	09/08/21 12:36	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00563	U	0.00780	0.00781	1.00	0.0631	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.000	U	0.0247	0.0247	1.00	0.0753	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	68.0		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0360		0.0408	0.0409	1.00	0.0360	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Uranium-238	0.0867		0.0604	0.0609	1.00	0.0643	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	72.3		30 - 110					08/29/21 20:35	09/08/21 14:01	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.369	U	0.562	0.563	5.00	0.960	pCi/g	09/16/21 08:54	09/17/21 22:41	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.223		0.0694	0.0729		0.107	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Americium-241	0.0357	U	0.0788	0.0789		0.136	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Bismuth-212	0.211	U	0.345	0.346		0.598	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Bismuth-214	0.0372	U	0.0660	0.0661		0.156	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Cesium-137	0.0138	U	0.0276	0.0276		0.0486	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Cobalt-60	0.00426	U	0.0357	0.0357		0.0441	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Europium-152	0.0920	U	0.146	0.147		0.246	pCi/g	08/24/21 16:40	09/16/21 12:07	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-050-081721

Lab Sample ID: 160-43113-7

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0340	U	0.0639	0.0640		0.0753	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Europium-155	0.0198	U	0.0732	0.0732		0.296	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Lead-212	0.277		0.0587	0.0684		0.0651	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Lead-214	0.179		0.0572	0.0601		0.120	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Potassium-40	2.35		0.756	0.792		0.608	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Radium-226	0.0372	U	0.0660	0.0661	0.200	0.156	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Sodium-22	-0.00412	U	0.0483	0.0483		0.0568	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Thorium-232	0.223		0.0694	0.0729		0.107	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Zinc-65	0.0369	U	0.0736	0.0737		0.129	pCi/g	08/24/21 16:40	09/16/21 12:07	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/24/21 16:40	09/16/21 12:07	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.824	U	0.851	0.855	5.00	1.44	pCi/g	09/08/21 16:09	09/17/21 13:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	103		40 - 110					09/08/21 16:09	09/17/21 13:01	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.88	U	1.67	1.67	5.00	3.11	pCi/g	08/29/21 20:28	09/16/21 12:42	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	68.0		30 - 110					08/29/21 20:28	09/16/21 12:42	1

Client Sample ID: FSS-050-081721

Lab Sample ID: 160-43113-7

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 96.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.68		0.24	0.015	mg/Kg	☼	09/08/21 14:58	09/09/21 19:43	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	20	6.4	ug/Kg	☼	09/10/21 17:45	09/10/21 20:48	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-051-081721

Lab Sample ID: 160-43113-8

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0756	U	0.186	0.187	3.00	0.328	pCi/g	09/04/21 14:31	09/20/21 14:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.8		40 - 110					09/04/21 14:31	09/20/21 14:50	1
Y Carrier	90.5		40 - 110					09/04/21 14:31	09/20/21 14:50	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0804	U	0.235	0.235	1.00	0.415	pCi/g	09/03/21 13:48	09/08/21 12:59	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00306	U	0.0275	0.0275	1.00	0.0870	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Plutonium-239/240	0.000	U	0.00600	0.00600	1.00	0.0367	pCi/g	08/29/21 18:19	09/09/21 13:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	59.7		30 - 110					08/29/21 18:19	09/09/21 13:00	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00652	U	0.00904	0.00905	1.00	0.0730	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Uranium-238	0.0784		0.0584	0.0588	1.00	0.0586	pCi/g	08/29/21 20:35	09/08/21 14:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.4		30 - 110					08/29/21 20:35	09/08/21 14:01	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.259	U	0.784	0.785	5.00	1.37	pCi/g	09/16/21 08:54	09/17/21 23:03	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.140	U	0.219	0.219		0.307	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Americium-241	-0.0723	U	0.193	0.193		0.330	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Bismuth-212	1.04		0.418	0.431		0.321	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Bismuth-214	0.274		0.110	0.113		0.110	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Cesium-137	0.0267	U	0.0502	0.0503		0.0876	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Cobalt-60	-0.00223	U	0.00994	0.00994		0.0935	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Europium-152	0.109	U	0.0854	0.0861		0.164	pCi/g	08/24/21 16:40	09/16/21 11:33	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-051-081721

Lab Sample ID: 160-43113-8

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0128	U	0.0165	0.0166		0.138	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Europium-155	-0.00510	U	0.236	0.236		0.411	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Lead-212	0.0188	U	0.0933	0.0934		0.163	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Lead-214	0.267		0.0845	0.0887		0.0996	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Potassium-40	2.29		0.792	0.824		0.810	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Radium-226	0.274		0.110	0.113	0.200	0.110	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Sodium-22	-0.0302	U	0.0609	0.0610		0.108	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Thorium-232	0.140	U	0.219	0.219		0.307	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Zinc-65	-0.00500	U	0.0932	0.0932		0.137	pCi/g	08/24/21 16:40	09/16/21 11:33	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	0.127		0.0667	0.0680		0.0605	pCi/g	08/24/21 16:40	09/16/21 11:33	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	-0.340	U	0.817	0.818	5.00	1.48	pCi/g	09/08/21 16:09	09/17/21 14:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	98.3		40 - 110					09/08/21 16:09	09/17/21 14:08	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-1.87	U	2.08	2.09	5.00	3.92	pCi/g	08/29/21 20:28	09/16/21 13:48	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	59.7		30 - 110					08/29/21 20:28	09/16/21 13:48	1

Client Sample ID: FSS-051-081721

Lab Sample ID: 160-43113-8

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 97.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.58		0.21	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 19:47	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/10/21 17:45	09/10/21 20:56	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-052-081721

Lab Sample ID: 160-43113-9

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0992	U	0.203	0.203	3.00	0.354	pCi/g	09/04/21 14:31	09/20/21 14:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	75.3		40 - 110					09/04/21 14:31	09/20/21 14:50	1
Y Carrier	85.6		40 - 110					09/04/21 14:31	09/20/21 14:50	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.147	U	0.246	0.246	1.00	0.423	pCi/g	09/03/21 13:48	09/08/21 13:21	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00211	U	0.00414	0.00414	1.00	0.0409	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.000	U	0.00414	0.00414	1.00	0.0254	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	83.4		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0216	U	0.0299	0.0300	1.00	0.0324	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.433		0.120	0.125	1.00	0.0260	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	80.4		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.128	U	0.759	0.759	5.00	1.34	pCi/g	09/16/21 08:54	09/17/21 23:26	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.655		0.170	0.182		0.0847	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Americium-241	-0.0628	U	0.154	0.154		0.263	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Bismuth-212	0.326	U	0.609	0.609		1.06	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Bismuth-214	0.335		0.106	0.111		0.0955	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Cesium-137	-0.000269	U	0.0610	0.0610		0.106	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Cobalt-60	0.0289	U	0.0510	0.0511		0.0601	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Europium-152	0.0418	U	0.0910	0.0911		0.170	pCi/g	08/24/21 16:40	09/16/21 12:13	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-052-081721

Lab Sample ID: 160-43113-9

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0264	U	0.0471	0.0471		0.125	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Europium-155	-0.0572	U	0.137	0.137		0.328	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Lead-212	0.535		0.0894	0.112		0.0820	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Lead-214	0.252		0.0776	0.0817		0.0664	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Potassium-40	2.23		0.711	0.746		0.693	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Radium-226	0.335		0.106	0.111	0.200	0.0955	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Sodium-22	-0.0187	U	0.0580	0.0580		0.105	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Thorium-232	0.655		0.170	0.182		0.0847	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Zinc-65	-0.00428	U	0.0473	0.0473		0.212	pCi/g	08/24/21 16:40	09/16/21 12:13	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	0.138		0.0427	0.0449		0.0348	pCi/g	08/24/21 16:40	09/16/21 12:13	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.321	U	0.846	0.846	5.00	1.51	pCi/g	09/08/21 16:09	09/17/21 15:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	105		40 - 110					09/08/21 16:09	09/17/21 15:14	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.616	U	1.17	1.17	5.00	2.11	pCi/g	08/31/21 14:29	09/15/21 19:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	83.4		30 - 110					08/31/21 14:29	09/15/21 19:32	1

Client Sample ID: FSS-052-081721

Lab Sample ID: 160-43113-9

Date Collected: 08/17/21 10:30

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 91.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.86		0.28	0.017	mg/Kg	☼	09/08/21 14:58	09/09/21 19:57	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	21	6.8	ug/Kg	☼	09/10/21 17:45	09/10/21 20:58	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-053-081721

Lab Sample ID: 160-43113-10

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.116	U	0.218	0.218	3.00	0.378	pCi/g	09/04/21 14:31	09/20/21 14:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.5		40 - 110					09/04/21 14:31	09/20/21 14:51	1
Y Carrier	89.7		40 - 110					09/04/21 14:31	09/20/21 14:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.00906	U	0.216	0.216	1.00	0.387	pCi/g	09/03/21 13:48	09/08/21 13:44	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.176	U	0.0464	0.0486	1.00	0.188	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.263	U	0.0546	0.0588	1.00	0.221	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.9		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0186	U	0.0299	0.0299	1.00	0.0513	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.187		0.0782	0.0797	1.00	0.0255	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	87.0		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.455	U	0.724	0.725	5.00	1.24	pCi/g	09/16/21 08:54	09/17/21 23:49	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.353		0.139	0.143		0.184	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Americium-241	0.0518	U	0.124	0.124		0.212	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Bismuth-212	-0.393	U	0.839	0.840		1.46	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Bismuth-214	0.268		0.105	0.108		0.0989	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Cesium-137	-0.0198	U	0.0449	0.0449		0.113	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Cobalt-60	-0.00869	U	0.102	0.102		0.0793	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Europium-152	0.00954	U	0.0196	0.0196		0.151	pCi/g	08/24/21 16:40	09/16/21 11:42	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-053-081721

Lab Sample ID: 160-43113-10

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0133	U	0.115	0.115		0.0929	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Europium-155	-0.0760	U	0.230	0.230		0.370	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Lead-212	0.315		0.0702	0.0772		0.0703	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Lead-214	0.262		0.0784	0.0826		0.104	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Potassium-40	7.60		1.35	1.54		0.628	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Radium-226	0.268		0.105	0.108	0.200	0.0989	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Sodium-22	-0.0112	U	0.0380	0.0380		0.0734	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Thorium-232	0.353		0.139	0.143		0.184	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Zinc-65	-0.0384	U	0.161	0.161		0.290	pCi/g	08/24/21 16:40	09/16/21 11:42	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			0.0422	0.0444		0.0248	pCi/g	08/24/21 16:40	09/16/21 11:42	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.705	U	0.900	0.902	5.00	1.53	pCi/g	09/08/21 16:09	09/17/21 16:20	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	107		40 - 110					09/08/21 16:09	09/17/21 16:20	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	0.553	U	1.47	1.47	5.00	2.55	pCi/g	08/31/21 14:29	09/15/21 20:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.9		30 - 110					08/31/21 14:29	09/15/21 20:38	1

Client Sample ID: FSS-053-081721

Lab Sample ID: 160-43113-10

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 98.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.96		0.29	0.018	mg/Kg	☼	09/08/21 14:58	09/09/21 20:01	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.7	ug/Kg	☼	09/10/21 17:45	09/10/21 21:01	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-054-081721

Lab Sample ID: 160-43113-11

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.127	U	0.222	0.222	3.00	0.384	pCi/g	09/04/21 14:31	09/20/21 14:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	75.2		40 - 110					09/04/21 14:31	09/20/21 14:51	1
Y Carrier	90.1		40 - 110					09/04/21 14:31	09/20/21 14:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.161	U	0.253	0.253	1.00	0.435	pCi/g	09/03/21 13:48	09/08/21 14:07	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00419	U	0.00580	0.00581	1.00	0.0469	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00419	U	0.00581	0.00582	1.00	0.0469	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	81.1		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00622	U	0.00862	0.00864	1.00	0.0697	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.190		0.0853	0.0867	1.00	0.0299	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.2		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.454	U	0.706	0.708	5.00	1.21	pCi/g	09/16/21 08:54	09/18/21 00:11	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.367		0.164	0.168		0.149	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Americium-241	-0.0414	U	0.0885	0.0886		0.230	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Bismuth-212	0.293	U	0.509	0.510		0.880	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Bismuth-214	0.367		0.0986	0.105		0.0978	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Cesium-137	0.0161	U	0.0398	0.0398		0.0704	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Cobalt-60	-0.00246	U	0.0407	0.0407		0.0508	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Europium-152	0.0260	U	0.0421	0.0422		0.152	pCi/g	08/24/21 16:40	09/16/21 13:10	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-054-081721

Lab Sample ID: 160-43113-11

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0441	U	0.0743	0.0745		0.0996	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Europium-155	-0.0697	U	0.131	0.131		0.393	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Lead-212	0.313		0.0659	0.0769		0.0706	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Lead-214	0.414		0.0827	0.0928		0.0998	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Potassium-40	4.94		0.894	1.02		0.597	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Radium-226	0.367		0.0986	0.105	0.200	0.0978	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Sodium-22	-0.0142	U	0.0430	0.0430		0.0780	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Thorium-232	0.367		0.164	0.168		0.149	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Zinc-65	-0.0834	U	0.155	0.155		0.266	pCi/g	08/24/21 16:40	09/16/21 13:10	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	0.106		0.0412	0.0426		0.0417	pCi/g	08/24/21 16:40	09/16/21 13:10	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.16	U	0.875	0.883	5.00	1.45	pCi/g	09/08/21 16:09	09/17/21 17:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	102		40 - 110					09/08/21 16:09	09/17/21 17:26	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.367	U	1.23	1.23	5.00	2.23	pCi/g	08/31/21 14:29	09/15/21 21:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	81.1		30 - 110					08/31/21 14:29	09/15/21 21:44	1

Client Sample ID: FSS-054-081721

Lab Sample ID: 160-43113-11

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 90.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.9		0.22	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 20:18	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	17	U	22	7.0	ug/Kg	☼	09/10/21 17:45	09/10/21 21:13	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-055-081721

Lab Sample ID: 160-43113-12

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.565	U	0.369	0.371	3.00	0.579	pCi/g	09/04/21 14:31	09/20/21 14:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	40.5		40 - 110					09/04/21 14:31	09/20/21 14:51	1
Y Carrier	90.1		40 - 110					09/04/21 14:31	09/20/21 14:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.178	U	0.242	0.243	1.00	0.412	pCi/g	09/03/21 13:48	09/08/21 14:29	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.000	U	0.00454	0.00454	1.00	0.0278	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.000	U	0.00455	0.00455	1.00	0.0278	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	72.3		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0232	U	0.0322	0.0323	1.00	0.0348	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.219		0.0897	0.0915	1.00	0.0522	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	85.5		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.0322	U	0.688	0.688	5.00	1.23	pCi/g	09/16/21 08:54	09/18/21 00:34	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.386		0.148	0.153		0.109	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Americium-241	-0.0534	U	0.141	0.142		0.243	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Bismuth-212	-0.0392	U	0.587	0.587		1.10	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Bismuth-214	0.289		0.0947	0.0990		0.0816	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Cesium-137	-0.0509	U	0.0475	0.0478		0.151	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Cobalt-60	-0.00895	U	0.0598	0.0598		0.0817	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Europium-152	0.105	U	0.137	0.137		0.115	pCi/g	08/24/21 16:40	09/17/21 13:14	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-055-081721

Lab Sample ID: 160-43113-12

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.00644	U	0.0434	0.0434		0.0887	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Europium-155	0.0422	U	0.0860	0.0862		0.223	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Lead-212	0.250		0.0677	0.0724		0.0769	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Lead-214	0.166		0.0789	0.0806		0.0903	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Potassium-40	3.86		0.996	1.07		0.648	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Radium-226	0.289		0.0947	0.0990	0.200	0.0816	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Sodium-22	0.000	U	0.0160	0.0160		0.0757	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Thorium-232	0.386		0.148	0.153		0.109	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Zinc-65	0.000	U	0.0281	0.0281		0.286	pCi/g	08/24/21 16:40	09/17/21 13:14	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			(1.96σ+/-)	(1.96σ+/-)						
	0.109		0.0473	0.0485		0.0404	pCi/g	08/24/21 16:40	09/17/21 13:14	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.434	U	0.837	0.838	5.00	1.44	pCi/g	09/08/21 16:09	09/17/21 18:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	106		40 - 110					09/08/21 16:09	09/17/21 18:32	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-0.650	U	1.34	1.34	5.00	2.41	pCi/g	08/31/21 14:29	09/15/21 22:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	72.3		30 - 110					08/31/21 14:29	09/15/21 22:50	1

Client Sample ID: FSS-055-081721

Lab Sample ID: 160-43113-12

Date Collected: 08/17/21 10:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 97.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.0		0.22	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 20:36	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.1	ug/Kg	☼	09/10/21 17:45	09/10/21 21:26	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-056-081721

Lab Sample ID: 160-43113-13

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0382	U	0.166	0.166	3.00	0.299	pCi/g	09/04/21 14:31	09/20/21 14:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.6		40 - 110					09/04/21 14:31	09/20/21 14:51	1
Y Carrier	89.0		40 - 110					09/04/21 14:31	09/20/21 14:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0393	U	0.232	0.232	1.00	0.413	pCi/g	09/03/21 13:48	09/08/21 14:52	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00275	U	0.00540	0.00540	1.00	0.0533	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.000	U	0.00540	0.00540	1.00	0.0331	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	61.8		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00329	U	0.00645	0.00646	1.00	0.0637	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Uranium-238	0.290		0.110	0.112	1.00	0.0591	pCi/g	08/31/21 14:27	09/10/21 13:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	72.3		30 - 110					08/31/21 14:27	09/10/21 13:45	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.622	U	0.790	0.792	5.00	1.35	pCi/g	09/16/21 08:54	09/18/21 00:56	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.320		0.135	0.139		0.117	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Americium-241	0.0438	U	0.0925	0.0926		0.122	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Bismuth-212	0.160	U	0.419	0.419		0.746	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Bismuth-214	0.259		0.0876	0.0915		0.0879	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Cesium-137	0.128		0.0342	0.0366		0.0175	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Cobalt-60	-0.00581	U	0.0392	0.0392		0.0481	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Europium-152	0.0445	U	0.147	0.147		0.255	pCi/g	08/24/21 16:40	09/16/21 13:55	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-056-081721

Lab Sample ID: 160-43113-13

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0138	U	0.0536	0.0536		0.0819	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Europium-155	-0.0722	U	0.174	0.174		0.393	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Lead-212	0.344		0.0603	0.0744		0.0486	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Lead-214	0.259		0.0778	0.0821		0.0744	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Potassium-40	4.08		0.797	0.896		0.565	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Radium-226	0.259		0.0876	0.0915	0.200	0.0879	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Sodium-22	0.00785	U	0.0382	0.0382		0.0465	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Thorium-232	0.320		0.135	0.139		0.117	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Zinc-65	0.000	U	0.0166	0.0166		0.141	pCi/g	08/24/21 16:40	09/16/21 13:55	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			(1.96σ+/-)	(1.96σ+/-)						
	0.120		0.0406	0.0423		0.0385	pCi/g	08/24/21 16:40	09/16/21 13:55	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	1.15	U	0.881	0.888	5.00	1.47	pCi/g	09/08/21 16:09	09/17/21 19:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	99.5		40 - 110					09/08/21 16:09	09/17/21 19:38	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	0.285	U	1.62	1.62	5.00	2.81	pCi/g	08/31/21 14:29	09/15/21 23:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	61.8		30 - 110					08/31/21 14:29	09/15/21 23:56	1

Client Sample ID: FSS-056-081721

Lab Sample ID: 160-43113-13

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 93.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	4.9		0.25	0.015	mg/Kg	☼	09/08/21 14:58	09/09/21 20:46	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	58		21	6.8	ug/Kg	☼	09/10/21 17:45	09/10/21 21:34	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-256-081721

Lab Sample ID: 160-43113-14

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.189	U	0.206	0.206	3.00	0.345	pCi/g	09/04/21 14:31	09/20/21 14:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	85.6		40 - 110					09/04/21 14:31	09/20/21 14:51	1
Y Carrier	89.7		40 - 110					09/04/21 14:31	09/20/21 14:51	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.170	U	0.250	0.250	1.00	0.424	pCi/g	09/03/21 13:48	09/08/21 15:15	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00272	U	0.0233	0.0233	1.00	0.0673	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.0272	U	0.0378	0.0378	1.00	0.0610	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	62.4		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0251	U	0.0404	0.0405	1.00	0.0695	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-238	0.199		0.0962	0.0976	1.00	0.0712	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	63.8		30 - 110					08/31/21 14:27	09/10/21 13:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.541	U	0.539	0.542	5.00	0.957	pCi/g	09/17/21 06:21	09/18/21 03:54	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.195	U	0.0971	0.0990		0.237	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Americium-241	0.0483	U	0.103	0.103		0.176	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Bismuth-212	0.211	U	0.436	0.436		0.765	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Bismuth-214	0.274		0.0847	0.0892		0.0854	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Cesium-137	0.102		0.0309	0.0326		0.0179	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Cobalt-60	-0.0119	U	0.0567	0.0567		0.0657	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Europium-152	0.0360	U	0.0572	0.0574		0.137	pCi/g	08/24/21 16:40	09/16/21 14:06	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-256-081721

Lab Sample ID: 160-43113-14

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0407	U	0.0517	0.0519		0.0955	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Europium-155	-0.0782	U	0.232	0.232		0.395	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Lead-212	0.336		0.0635	0.0765		0.0611	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Lead-214	0.267		0.0675	0.0728		0.0866	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Potassium-40	4.07		0.750	0.854		0.265	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Radium-226	0.274		0.0847	0.0892	0.200	0.0854	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Sodium-22	-0.0345	U	0.0448	0.0449		0.0756	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Thorium-232	0.195	U	0.0971	0.0990		0.237	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Zinc-65	0.00306	U	0.0986	0.0986		0.182	pCi/g	08/24/21 16:40	09/16/21 14:06	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
<i>TI-208</i>	<i>0.141</i>		<i>0.0444</i>	<i>0.0466</i>		<i>0.0312</i>	<i>pCi/g</i>	<i>08/24/21 16:40</i>	<i>09/16/21 14:06</i>	<i>1</i>

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.328	U	0.893	0.894	5.00	1.57	pCi/g	09/08/21 16:09	09/17/21 21:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Ni</i>	<i>105</i>		<i>40 - 110</i>					<i>09/08/21 16:09</i>	<i>09/17/21 21:51</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	1.82	U	1.68	1.68	5.00	2.81	pCi/g	08/31/21 14:29	09/16/21 01:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	<i>62.4</i>		<i>30 - 110</i>					<i>08/31/21 14:29</i>	<i>09/16/21 01:03</i>	<i>1</i>

Client Sample ID: FSS-256-081721

Lab Sample ID: 160-43113-14

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 91.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.1		0.22	0.013	mg/Kg	☼	09/08/21 14:58	09/09/21 20:50	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	54		19	6.3	ug/Kg	☼	09/10/21 17:45	09/10/21 21:36	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-057-081721

Lab Sample ID: 160-43113-15

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.360		0.214	0.216	3.00	0.333	pCi/g	09/04/21 14:31	09/20/21 14:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.8		40 - 110					09/04/21 14:31	09/20/21 14:53	1
Y Carrier	90.1		40 - 110					09/04/21 14:31	09/20/21 14:53	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0449	U	0.226	0.226	1.00	0.398	pCi/g	09/03/21 13:48	09/08/21 15:37	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00778	U	0.0209	0.0210	1.00	0.0502	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.00778	U	0.0210	0.0210	1.00	0.0502	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.1		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0549		0.0538	0.0540	1.00	0.0412	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Uranium-238	0.176		0.0896	0.0908	1.00	0.0735	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	64.0		30 - 110					08/31/21 14:27	09/10/21 13:43	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.680	U	0.571	0.575	5.00	1.03	pCi/g	09/17/21 06:21	09/18/21 04:27	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.355		0.145	0.149		0.114	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Americium-241	0.0598	U	0.143	0.143		0.245	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Bismuth-212	0.0489	U	0.658	0.658		1.23	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Bismuth-214	0.295		0.107	0.111		0.108	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Cesium-137	0.256		0.0770	0.0812		0.0858	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Cobalt-60	-0.0488	U	0.0339	0.0342		0.113	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Europium-152	0.0898	U	0.186	0.187		0.162	pCi/g	08/24/21 16:40	09/16/21 14:56	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-057-081721

Lab Sample ID: 160-43113-15

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Europium-154	0.0291	U	0.0649	0.0649		0.112	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Europium-155	0.0301	U	0.0847	0.0847		0.297	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Lead-212	0.325		0.0739	0.0810		0.0743	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Lead-214	0.383		0.0872	0.0951		0.151	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Potassium-40	3.32		0.950	1.01		0.674	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Radium-226	0.295		0.107	0.111	0.200	0.108	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Sodium-22	0.0120	U	0.0407	0.0407		0.0787	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Thorium-232	0.355		0.145	0.149		0.114	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Zinc-65	0.000	U	0.0292	0.0292		0.284	pCi/g	08/24/21 16:40	09/16/21 14:56	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
<i>Other Detected Radionuclide</i>			<i>None</i>				<i>pCi/g</i>	<i>08/24/21 16:40</i>	<i>09/16/21 14:56</i>	<i>1</i>

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.863	U	0.880	0.884	5.00	1.48	pCi/g	09/08/21 16:09	09/17/21 22:57	1
Carrier	%Yield	Qualifier	Limits							
<i>Ni</i>	<i>96.5</i>		<i>40 - 110</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
								<i>09/08/21 16:09</i>	<i>09/17/21 22:57</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	1.79	U	1.67	1.67	5.00	2.81	pCi/g	08/31/21 14:29	09/16/21 02:09	1
Tracer	%Yield	Qualifier	Limits							
<i>Pu-242 (T)</i>	<i>67.1</i>		<i>30 - 110</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
								<i>08/31/21 14:29</i>	<i>09/16/21 02:09</i>	<i>1</i>

Client Sample ID: FSS-057-081721

Lab Sample ID: 160-43113-15

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 94.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.1		0.29	0.018	mg/Kg	☼	09/08/21 14:58	09/09/21 20:53	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	34		19	6.0	ug/Kg	☼	09/10/21 17:45	09/10/21 21:39	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-257-081721

Lab Sample ID: 160-43113-16

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.100	U	0.198	0.198	3.00	0.343	pCi/g	09/04/21 14:31	09/20/21 14:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.0		40 - 110					09/04/21 14:31	09/20/21 14:53	1
Y Carrier	91.2		40 - 110					09/04/21 14:31	09/20/21 14:53	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0564	U	0.219	0.220	1.00	0.383	pCi/g	09/03/21 13:48	09/08/21 16:00	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0217	U	0.0383	0.0384	1.00	0.0724	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00271	U	0.00532	0.00532	1.00	0.0525	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	62.0		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00694	U	0.00962	0.00964	1.00	0.0778	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Uranium-238	0.239		0.103	0.105	1.00	0.0624	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	58.9		30 - 110					08/31/21 14:27	09/10/21 13:43	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.118	U	0.531	0.532	5.00	0.907	pCi/g	09/17/21 06:21	09/18/21 05:01	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.128	U	0.167	0.168		0.270	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Americium-241	-0.0587	U	0.0173	0.0183		0.213	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Bismuth-212	-0.0154	U	0.540	0.540		0.988	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Bismuth-214	0.0191	U	0.0913	0.0913		0.213	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Cesium-137	0.156		0.0446	0.0473		0.0302	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Cobalt-60	0.00125	U	0.0412	0.0412		0.0517	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Europium-152	0.0589	U	0.105	0.105		0.125	pCi/g	08/24/21 16:40	09/16/21 14:52	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-257-081721

Lab Sample ID: 160-43113-16

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0215	U	0.0359	0.0360		0.0747	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Europium-155	0.0473	U	0.116	0.116		0.323	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Lead-212	0.321		0.0697	0.0807		0.0791	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Lead-214	0.294		0.0716	0.0776		0.0630	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Potassium-40	3.62		0.789	0.868		0.607	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Radium-226	0.0191	U	0.0913	0.0913	0.200	0.213	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Sodium-22	0.00482	U	0.0252	0.0252		0.0499	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Thorium-232	0.128	U	0.167	0.168		0.270	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Zinc-65	0.000	U	0.0178	0.0178		0.204	pCi/g	08/24/21 16:40	09/16/21 14:52	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide			None				pCi/g	08/24/21 16:40	09/16/21 14:52	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.611	U	0.853	0.855	5.00	1.44	pCi/g	09/08/21 16:09	09/18/21 00:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	95.1		40 - 110					09/08/21 16:09	09/18/21 00:03	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.000	U	1.56	1.56	5.00	2.74	pCi/g	08/31/21 14:29	09/15/21 14:00	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	62.0		30 - 110					08/31/21 14:29	09/15/21 14:00	1

Client Sample ID: FSS-257-081721

Lab Sample ID: 160-43113-16

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 95.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7		0.25	0.015	mg/Kg	☼	09/08/21 14:58	09/09/21 20:57	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	25		18	6.0	ug/Kg	☼	09/10/21 17:45	09/10/21 21:41	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-058-081721

Lab Sample ID: 160-43113-17

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.206	U	0.198	0.198	3.00	0.327	pCi/g	09/04/21 14:31	09/20/21 14:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.8		40 - 110					09/04/21 14:31	09/20/21 14:53	1
Y Carrier	84.5		40 - 110					09/04/21 14:31	09/20/21 14:53	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.124	U	0.234	0.234	1.00	0.401	pCi/g	09/03/21 13:48	09/08/21 16:23	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00615	U	0.00852	0.00854	1.00	0.0689	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00308	U	0.0277	0.0277	1.00	0.0876	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	51.0		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00350	U	0.00687	0.00688	1.00	0.0678	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Uranium-238	0.259		0.109	0.111	1.00	0.0751	pCi/g	08/31/21 14:27	09/10/21 13:43	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	55.0		30 - 110					08/31/21 14:27	09/10/21 13:43	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.446	U	0.535	0.537	5.00	0.945	pCi/g	09/17/21 06:21	09/18/21 05:35	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.127		0.0642	0.0654		0.0663	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Americium-241	-0.0227	U	0.114	0.114		0.198	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Bismuth-212	0.232	U	0.359	0.360		0.619	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Bismuth-214	0.197		0.0784	0.0809		0.0858	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Cesium-137	0.117		0.0443	0.0459		0.0381	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Cobalt-60	0.0117	U	0.0405	0.0405		0.0486	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Europium-152	0.0127	U	0.0182	0.0182		0.129	pCi/g	08/24/21 16:40	09/16/21 14:53	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-058-081721

Lab Sample ID: 160-43113-17

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.103		0.0429	0.0442		0.0932	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Europium-155	0.00632	U	0.0162	0.0162		0.378	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Lead-212	0.418		0.0948	0.109		0.129	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Lead-214	0.249		0.0673	0.0719		0.123	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Potassium-40	2.06		0.671	0.702		0.501	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Radium-226	0.197		0.0784	0.0809	0.200	0.0858	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Sodium-22	0.00453	U	0.0237	0.0237		0.0469	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Thorium-232	0.127		0.0642	0.0654		0.0663	pCi/g	08/24/21 16:40	09/16/21 14:53	1
Zinc-65	0.0000000 0576	U	0.0946	0.0946		0.175	pCi/g	08/24/21 16:40	09/16/21 14:53	1

Other Detected Radionuclides	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tl-208	0.145		0.0444	0.0468		0.0307	pCi/g	08/24/21 16:40	09/16/21 14:53	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.740	U	0.802	0.806	5.00	1.35	pCi/g	09/08/21 16:09	09/18/21 01:09	1
Carrier Ni	%Yield 104	Qualifier	Limits 40 - 110					Prepared 09/08/21 16:09	Analyzed 09/18/21 01:09	Dil Fac 1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.30	U	1.94	1.94	5.00	3.30	pCi/g	08/31/21 14:29	09/16/21 04:21	1
Tracer Pu-242 (T)	%Yield 51.0	Qualifier	Limits 30 - 110					Prepared 08/31/21 14:29	Analyzed 09/16/21 04:21	Dil Fac 1

Client Sample ID: FSS-058-081721

Lab Sample ID: 160-43113-17

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 96.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.4		0.24	0.015	mg/Kg	☼	09/08/21 14:58	09/09/21 21:00	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	6.0	J	18	5.9	ug/Kg	☼	09/10/21 17:45	09/10/21 21:44	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-258-081721

Lab Sample ID: 160-43113-18

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.555		0.245	0.249	3.00	0.361	pCi/g	09/04/21 14:31	09/20/21 14:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.7		40 - 110					09/04/21 14:31	09/20/21 14:53	1
Y Carrier	84.5		40 - 110					09/04/21 14:31	09/20/21 14:53	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.186	U	0.259	0.259	1.00	0.434	pCi/g	09/03/21 13:48	09/08/21 16:45	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0180	U	0.0507	0.0507	1.00	0.106	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.0391	U	0.0483	0.0484	1.00	0.0745	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	55.8		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0323	U	0.0448	0.0448	1.00	0.0724	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-238	0.0466	U	0.0513	0.0514	1.00	0.0778	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.1		30 - 110					08/31/21 14:27	09/10/21 13:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.170	U	0.383	0.383	5.00	0.629	pCi/g	09/17/21 06:21	09/18/21 06:08	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.533		0.112	0.124		0.0903	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Americium-241	0.0606	U	0.150	0.150		0.257	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Bismuth-212	-0.0464	U	0.851	0.851		1.53	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Bismuth-214	0.354		0.105	0.111		0.0954	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Cesium-137	0.232		0.0619	0.0663		0.0404	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Cobalt-60	-0.0270	U	0.0727	0.0728		0.0853	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Europium-152	0.0167	U	0.0220	0.0221		0.207	pCi/g	08/24/21 16:40	09/16/21 14:54	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43113-1

Client Sample ID: FSS-258-081721

Lab Sample ID: 160-43113-18

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	-0.0293	U	0.0752	0.0752		0.130	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Europium-155	-0.0963	U	0.129	0.129		0.469	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Lead-212	0.394		0.0790	0.0935		0.0728	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Lead-214	0.344		0.0943	0.101		0.0708	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Potassium-40	2.71		0.798	0.843		0.739	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Radium-226	0.354		0.105	0.111	0.200	0.0954	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Sodium-22	0.000	U	0.00901	0.00901		0.0339	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Thorium-232	0.533		0.112	0.124		0.0903	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Zinc-65	0.0446	U	0.104	0.104		0.185	pCi/g	08/24/21 16:40	09/16/21 14:54	1
Other Detected			Count	Total						
Radionuclides			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
TI-208			(1.96σ+/-)	(1.96σ+/-)						
	0.169		0.0574	0.0600		0.0545	pCi/g	08/24/21 16:40	09/16/21 14:54	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.290	U	0.866	0.867	5.00	1.50	pCi/g	09/08/21 16:09	09/18/21 02:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	103		40 - 110					09/08/21 16:09	09/18/21 02:16	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	1.79	U	1.91	1.91	5.00	3.21	pCi/g	08/31/21 14:29	09/16/21 05:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	55.8		30 - 110					08/31/21 14:29	09/16/21 05:28	1

Client Sample ID: FSS-258-081721

Lab Sample ID: 160-43113-18

Date Collected: 08/17/21 08:00

Matrix: Solid

Date Received: 08/18/21 13:02

Percent Solids: 81.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.6		0.27	0.016	mg/Kg	☼	09/08/21 14:58	09/09/21 21:04	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	17	U	22	7.1	ug/Kg	☼	09/10/21 17:45	09/10/21 21:46	1

Laboratory Report

Eurofins TestAmerica, St. Louis
13715 Rider Trail North
Earth City, MO 63045
United States
Attention: Ivan H Vania
Telephone: 314-298-8566

Report Date 09/21/2021
Sample Receipt Date 08/23/2021
RJ Lee Group Job No. AOH1063198-0
Authorization/P.O. No.
Client Job No./Name 160-43113-1

Analysis: Asbestos in Bulk Samples by Point Count

Method: NYELAP Method 198.1

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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546258.HPL	FSS-044-081721 (160-43113-1)	Yes	1	ND		100.00	CA, AM, F, OP, MI, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546259.HPL	FSS-045-081721 (160-43113-2)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP 198.1.						
Weight Loss:		0.0%						
10546260.HPL	FSS-046-081721 (160-43113-3)	Yes	1	ND		100.00	Q, CA, F, M, OP	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43113-1

RJ Lee Group Job No: AOH1063198-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546261.HPL	FSS-047-081721 (160-43113-4)	Yes	1	ND		100.00	Q, CA, F, OP, OR	EAF-09/16/2021
Description:		Beige Sediment 400 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546262.HPL	FSS-048-081721 (160-43113-5)	Yes	1	ND		100.00	Q, CA, AM, F, OP, OR	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP 198.1.						
Weight Loss:		0.0%						
10546263.HPL	FSS-049-081721 (160-43113-6)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP 198.1.						
Weight Loss:		0.0%						
10546264.HPL	FSS-050-081721 (160-43113-7)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546265.HPL	FSS-051-081721 (160-43113-8)	Yes	1	ND		100.00	Q, CA, F, AM, OP, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43113-1

RJ Lee Group Job No: AOH1063198-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546266.HPL	FSS-052-081721 (160-43113-9)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546267.HPL	FSS-053-081721 (160-43113-10)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss:		0.0%						
10546268.HPL	FSS-054-081721 (160-43113-11)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-09/16/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546269.HPL	FSS-055-081721 (160-43113-12)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-09/17/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss:		0.0%						

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Client Job No./Name: 160-43113-1

RJ Lee Group Job No: AOH1063198-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546270.HPL	FSS-056-081721 (160-43113-13)	Yes	1	ND		100.00	Q, CA, CL, AM, OR, OP, MI, M	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							
10546271.HPL	FSS-256-081721 (160-43113-14)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							
10546272.HPL	FSS-057-081721 (160-43113-15)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							
10546273.HPL	FSS-257-081721 (160-43113-16)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OR, OP, MI, M	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							

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Client Job No./Name: 160-43113-1

RJ Lee Group Job No: AOH1063198-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546274.HPL	FSS-058-081721 (160-43113-17)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M, OR	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							
10546275.HPL	FSS-258-081721 (160-43113-18)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OR, OP, MI, M	AC-09/21/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1 Weight Loss: 0.0%							

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Client Job No./Name: 160-43113-1

RJ Lee Group Job No: AOH1063198-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
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Authorized Signature: _____

Alexandra Cheek, Microscopist

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ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- AM = Amphibole
- B = Binder
- CA = Carbonates
- CL = Clay
- F = Feldspar
- G = Gypsum
- HY = Hydromagnesite
- M = Miscellaneous
- MI = Mica
- OP = Opaque
- OR = Organic
- P = Perlite
- Q = Quartz
- T = Tar
- V = Vermiculite

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43124-1	FSS-059-081821	Solid	08/18/21 08:00	08/19/21 09:00
160-43124-2	FSS-259-081821	Solid	08/18/21 08:00	08/19/21 09:00
160-43124-3	FSS-060-081821	Solid	08/18/21 08:00	08/19/21 09:00
160-43124-4	FSS-260-081821	Solid	08/18/21 08:00	08/19/21 09:00
160-43124-5	FSS-061-081821	Solid	08/18/21 08:00	08/19/21 09:00
160-43124-6	FSS-261-081821	Solid	08/18/21 08:00	08/19/21 09:00
160-43124-7	FSS-062-081821	Solid	08/18/21 08:00	08/19/21 09:00
160-43124-8	FSS-063-081821	Solid	08/18/21 08:00	08/19/21 09:00
160-43124-9	FSS-064-081821	Solid	08/18/21 08:00	08/19/21 09:00
160-43124-10	HFBR-021-061821	Solid	06/18/21 10:00	08/19/21 09:00
160-43124-11	FSS-065-081821	Solid	08/18/21 09:30	08/19/21 09:00
160-43124-12	FSS-066-081821	Solid	08/18/21 09:30	08/19/21 09:00
160-43124-13	FSS-181-081821	Solid	08/18/21 09:30	08/19/21 09:00
160-43124-14	FSS-067-081821	Solid	08/18/21 09:00	08/19/21 09:00
160-43124-15	FSS-068-081821	Solid	08/18/21 09:00	08/19/21 09:00
160-43124-16	FSS-069-081821	Solid	08/18/21 09:00	08/19/21 09:00
160-43124-17	FSS-070-081821	Solid	08/18/21 09:45	08/19/21 09:00
160-43124-18	FSS-071-081821	Solid	08/18/21 09:45	08/19/21 09:00
160-43124-19	FSS-072-081821	Solid	08/18/21 09:45	08/19/21 09:00
160-43124-20	FSS-073-081821	Solid	08/18/21 10:30	08/19/21 09:00
160-43124-21	FSS-074-081821	Solid	08/18/21 10:30	08/19/21 09:00
160-43124-22	FSS-075-081821	Solid	08/18/21 10:30	08/19/21 09:00
160-43124-23	FSS-076-081821	Solid	08/18/21 10:45	08/19/21 09:00
160-43124-24	FSS-077-081821	Solid	08/18/21 10:45	08/19/21 09:00
160-43124-25	FSS-078-081821	Solid	08/18/21 10:45	08/19/21 09:00
160-43124-26	FSS-079-081821	Solid	08/18/21 11:00	08/19/21 09:00
160-43124-27	FSS-279-081821	Solid	08/18/21 11:00	08/19/21 09:00
160-43124-28	FSS-080-081821	Solid	08/18/21 11:00	08/19/21 09:00
160-43124-29	FSS-280-081821	Solid	08/18/21 11:00	08/19/21 09:00
160-43124-30	FSS-081-081821	Solid	08/18/21 11:00	08/19/21 09:00
160-43124-31	FSS-281-081821	Solid	08/18/21 11:00	08/19/21 09:00

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43124-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/19/2021 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 4.0° C, 21.5° C, 22.4° C and 23.5° C.

Receipt Exceptions

The client updated the sample ID for 160-43124-10 from FSS-064-061821 to HFBR-021-061821.

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis.

METALS (ICP/MS)

Samples FSS-059-081821 (160-43124-1), FSS-259-081821 (160-43124-2), FSS-060-081821 (160-43124-3), FSS-260-081821 (160-43124-4), FSS-061-081821 (160-43124-5), FSS-261-081821 (160-43124-6), FSS-062-081821 (160-43124-7), FSS-063-081821 (160-43124-8), FSS-064-081821 (160-43124-9), FSS-065-081821 (160-43124-11), FSS-066-081821 (160-43124-12), FSS-181-081821 (160-43124-13), FSS-067-081821 (160-43124-14), FSS-068-081821 (160-43124-15), FSS-069-081821 (160-43124-16), FSS-070-081821 (160-43124-17), FSS-071-081821 (160-43124-18), FSS-072-081821 (160-43124-19), FSS-073-081821 (160-43124-20), FSS-074-081821 (160-43124-21), FSS-075-081821 (160-43124-22), FSS-076-081821 (160-43124-23),

FSS-077-081821 (160-43124-24), FSS-078-081821 (160-43124-25), FSS-079-081821 (160-43124-26), FSS-279-081821 (160-43124-27), FSS-080-081821 (160-43124-28), FSS-280-081821 (160-43124-29), FSS-081-081821 (160-43124-30) and FSS-281-081821 (160-43124-31) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 09/12/2021 and analyzed on 09/13/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-059-081821 (160-43124-1), FSS-259-081821 (160-43124-2), FSS-060-081821 (160-43124-3), FSS-260-081821 (160-43124-4), FSS-061-081821 (160-43124-5), FSS-261-081821 (160-43124-6), FSS-062-081821 (160-43124-7), FSS-063-081821 (160-43124-8), FSS-064-081821 (160-43124-9), FSS-065-081821 (160-43124-11), FSS-066-081821 (160-43124-12), FSS-181-081821 (160-43124-13), FSS-067-081821 (160-43124-14), FSS-068-081821 (160-43124-15), FSS-069-081821 (160-43124-16), FSS-070-081821 (160-43124-17), FSS-071-081821 (160-43124-18), FSS-072-081821 (160-43124-19), FSS-073-081821 (160-43124-20), FSS-074-081821 (160-43124-21), FSS-075-081821 (160-43124-22), FSS-076-081821 (160-43124-23), FSS-077-081821 (160-43124-24), FSS-078-081821 (160-43124-25), FSS-079-081821 (160-43124-26), FSS-279-081821 (160-43124-27), FSS-080-081821 (160-43124-28), FSS-280-081821 (160-43124-29), FSS-081-081821 (160-43124-30) and FSS-281-081821 (160-43124-31) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B_ DoD5. The samples were prepared and analyzed on 09/14/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples FSS-059-081821 (160-43124-1), FSS-259-081821 (160-43124-2), FSS-060-081821 (160-43124-3), FSS-260-081821 (160-43124-4), FSS-061-081821 (160-43124-5), FSS-261-081821 (160-43124-6), FSS-062-081821 (160-43124-7), FSS-063-081821 (160-43124-8), FSS-064-081821 (160-43124-9), FSS-065-081821 (160-43124-11), FSS-066-081821 (160-43124-12), FSS-181-081821 (160-43124-13), FSS-067-081821 (160-43124-14), FSS-068-081821 (160-43124-15), FSS-069-081821 (160-43124-16), FSS-070-081821 (160-43124-17), FSS-071-081821 (160-43124-18), FSS-072-081821 (160-43124-19), FSS-073-081821 (160-43124-20), FSS-074-081821 (160-43124-21), FSS-075-081821 (160-43124-22), FSS-076-081821 (160-43124-23), FSS-077-081821 (160-43124-24), FSS-078-081821 (160-43124-25), FSS-079-081821 (160-43124-26), FSS-279-081821 (160-43124-27), FSS-080-081821 (160-43124-28), FSS-280-081821 (160-43124-29), FSS-081-081821 (160-43124-30) and FSS-281-081821 (160-43124-31) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 09/01/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-059-081821 (160-43124-1), FSS-259-081821 (160-43124-2), FSS-060-081821 (160-43124-3), FSS-260-081821 (160-43124-4), FSS-061-081821 (160-43124-5), FSS-261-081821 (160-43124-6), FSS-062-081821 (160-43124-7), FSS-063-081821 (160-43124-8), FSS-064-081821 (160-43124-9), HFBR-021-061821 (160-43124-10), FSS-065-081821 (160-43124-11), FSS-066-081821 (160-43124-12), FSS-181-081821 (160-43124-13), FSS-067-081821 (160-43124-14), FSS-068-081821 (160-43124-15), FSS-069-081821 (160-43124-16), FSS-070-081821 (160-43124-17), FSS-071-081821 (160-43124-18), FSS-072-081821 (160-43124-19), FSS-073-081821 (160-43124-20), FSS-074-081821 (160-43124-21), FSS-075-081821 (160-43124-22), FSS-076-081821 (160-43124-23), FSS-077-081821 (160-43124-24), FSS-078-081821 (160-43124-25), FSS-079-081821 (160-43124-26), FSS-279-081821 (160-43124-27), FSS-080-081821 (160-43124-28), FSS-280-081821 (160-43124-29), FSS-081-081821 (160-43124-30) and FSS-281-081821 (160-43124-31) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 08/26/2021, prepared on 09/18/2021 and analyzed on 09/30/2021.

Preparation Batch 160-527608:

The LCS recovered at 73.83% which is below the QC limit of 75%. The laboratory does not believe the 1.2% low bias would affect the sample results to a significant degree. All results were at least one order of magnitude below the project action level of 15 pCi/g; therefore, the results were reported: (LCS 160-527608/2-A).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-059-081821 (160-43124-1), FSS-259-081821 (160-43124-2), FSS-060-081821 (160-43124-3), FSS-260-081821 (160-43124-4), FSS-061-081821 (160-43124-5), FSS-261-081821 (160-43124-6), FSS-062-081821 (160-43124-7), FSS-063-081821 (160-43124-8), FSS-064-081821 (160-43124-9), HFBR-021-061821 (160-43124-10), FSS-065-081821 (160-43124-11), FSS-066-081821 (160-43124-12), FSS-181-081821 (160-43124-13), FSS-067-081821 (160-43124-14), FSS-068-081821 (160-43124-15), FSS-069-081821 (160-43124-16), FSS-070-081821 (160-43124-17), FSS-071-081821 (160-43124-18), FSS-072-081821 (160-43124-19), FSS-073-081821 (160-43124-20), FSS-074-081821 (160-43124-21), FSS-075-081821 (160-43124-22), FSS-076-081821 (160-43124-23), FSS-077-081821 (160-43124-24), FSS-078-081821 (160-43124-25), FSS-079-081821 (160-43124-26), FSS-279-081821 (160-43124-27), FSS-080-081821 (160-43124-28), FSS-280-081821 (160-43124-29), FSS-081-081821 (160-43124-30) and FSS-281-081821 (160-43124-31) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 09/09/2021 and analyzed on 09/10/2021 and 09/11/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-059-081821 (160-43124-1), FSS-259-081821 (160-43124-2), FSS-060-081821 (160-43124-3), FSS-260-081821 (160-43124-4), FSS-061-081821 (160-43124-5), FSS-261-081821 (160-43124-6), FSS-062-081821 (160-43124-7), FSS-063-081821 (160-43124-8), FSS-064-081821 (160-43124-9), HFBR-021-061821 (160-43124-10), FSS-065-081821 (160-43124-11), FSS-066-081821 (160-43124-12), FSS-181-081821 (160-43124-13), FSS-067-081821 (160-43124-14), FSS-068-081821 (160-43124-15), FSS-069-081821 (160-43124-16), FSS-070-081821 (160-43124-17), FSS-071-081821 (160-43124-18), FSS-072-081821 (160-43124-19), FSS-073-081821 (160-43124-20), FSS-074-081821 (160-43124-21), FSS-075-081821 (160-43124-22), FSS-076-081821 (160-43124-23), FSS-077-081821 (160-43124-24), FSS-078-081821 (160-43124-25), FSS-079-081821 (160-43124-26), FSS-279-081821 (160-43124-27), FSS-080-081821 (160-43124-28), FSS-280-081821 (160-43124-29), FSS-081-081821 (160-43124-30) and FSS-281-081821 (160-43124-31) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 08/26/2021, prepared on 08/31/2021 and 09/05/2021 and analyzed on 09/10/2021, 09/14/2021, 09/18/2021 and 09/20/2021.

Preparation Batch 160-525614:

The samples exhibited a negative result greater in magnitude than the 3 sigma TPU. This occurrence was evaluated and determined to be random in nature. Sporadic occurrences such as this are statistically expected: FSS-063-081821 (160-43124-8) and FSS-072-081821 (160-43124-19).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-059-081821 (160-43124-1), FSS-259-081821 (160-43124-2), FSS-060-081821 (160-43124-3), FSS-260-081821 (160-43124-4), FSS-061-081821 (160-43124-5), FSS-261-081821 (160-43124-6), FSS-062-081821 (160-43124-7), FSS-063-081821 (160-43124-8), FSS-064-081821 (160-43124-9), HFBR-021-061821 (160-43124-10), FSS-065-081821 (160-43124-11), FSS-066-081821 (160-43124-12), FSS-181-081821 (160-43124-13), FSS-067-081821 (160-43124-14), FSS-068-081821 (160-43124-15), FSS-069-081821 (160-43124-16), FSS-070-081821 (160-43124-17), FSS-071-081821 (160-43124-18), FSS-072-081821 (160-43124-19), FSS-073-081821 (160-43124-20), FSS-074-081821 (160-43124-21), FSS-075-081821 (160-43124-22), FSS-076-081821 (160-43124-23), FSS-077-081821 (160-43124-24), FSS-078-081821 (160-43124-25), FSS-079-081821 (160-43124-26), FSS-279-081821 (160-43124-27), FSS-080-081821 (160-43124-28), FSS-280-081821 (160-43124-29), FSS-081-081821 (160-43124-30) and FSS-281-081821 (160-43124-31) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/23/2021, prepared on 08/31/2021 and 09/05/2021 and analyzed on 09/10/2021, 09/14/2021, 09/15/2021, 09/16/2021, 09/18/2021 and 09/20/2021.

Preparation Batch 160-524992:

Detectors 131-146 were calibrated in August; therefore, the monthly calibration check (CCV) was not required and will not be included in the deliverable. Note: because a CCV was not analyzed, it is possible that an older CCV will pull into the deliverable. This CCV is not applicable: FSS-059-081821 (160-43124-1), FSS-259-081821 (160-43124-2) and FSS-060-081821 (160-43124-3).

Preparation Batch 160-525622:

Sample 160-43124-28 was counted on a detector for which the daily pulser was inadvertently left on during the count. The sample exhibited the tracer peak within the expected energy/centroid tolerance (50 keV) and recoveries are within acceptance limits. The spectrum clearly shows the pulser peak causing a high spectrum range not allowing the LCS peaks to be visible. The laboratory does not believe this excursion adversely affects the results: FSS-080-081821 (160-43124-28).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-059-081821 (160-43124-1), FSS-259-081821 (160-43124-2), FSS-060-081821 (160-43124-3), FSS-260-081821 (160-43124-4), FSS-061-081821 (160-43124-5), FSS-261-081821 (160-43124-6), FSS-062-081821 (160-43124-7), FSS-063-081821 (160-43124-8), FSS-064-081821 (160-43124-9), HFBR-021-061821 (160-43124-10), FSS-065-081821 (160-43124-11), FSS-066-081821 (160-43124-12), FSS-181-081821 (160-43124-13), FSS-067-081821 (160-43124-14), FSS-068-081821 (160-43124-15), FSS-069-081821 (160-43124-16), FSS-070-081821 (160-43124-17), FSS-071-081821 (160-43124-18), FSS-072-081821 (160-43124-19), FSS-073-081821 (160-43124-20), FSS-074-081821 (160-43124-21), FSS-075-081821 (160-43124-22), FSS-076-081821 (160-43124-23), FSS-077-081821 (160-43124-24), FSS-078-081821 (160-43124-25), FSS-079-081821 (160-43124-26), FSS-279-081821 (160-43124-27), FSS-080-081821 (160-43124-28), FSS-280-081821 (160-43124-29), FSS-081-081821 (160-43124-30) and FSS-281-081821 (160-43124-31) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 09/16/2021, 09/17/2021, 09/20/2021 and 09/21/2021 and analyzed on 09/17/2021, 09/18/2021, 09/21/2021 and 09/22/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-059-081821 (160-43124-1), FSS-259-081821 (160-43124-2), FSS-060-081821 (160-43124-3), FSS-260-081821 (160-43124-4), FSS-061-081821 (160-43124-5), FSS-261-081821 (160-43124-6), FSS-062-081821 (160-43124-7), FSS-063-081821 (160-43124-8), FSS-064-081821 (160-43124-9), HFBR-021-061821 (160-43124-10), FSS-065-081821 (160-43124-11), FSS-066-081821 (160-43124-12), FSS-181-081821 (160-43124-13), FSS-067-081821 (160-43124-14), FSS-068-081821 (160-43124-15), FSS-069-081821 (160-43124-16), FSS-070-081821 (160-43124-17), FSS-071-081821 (160-43124-18), FSS-072-081821 (160-43124-19), FSS-073-081821 (160-43124-20), FSS-074-081821 (160-43124-21), FSS-075-081821 (160-43124-22),

FSS-076-081821 (160-43124-23), FSS-077-081821 (160-43124-24), FSS-078-081821 (160-43124-25), FSS-079-081821 (160-43124-26), FSS-279-081821 (160-43124-27), FSS-080-081821 (160-43124-28), FSS-280-081821 (160-43124-29), FSS-081-081821 (160-43124-30) and FSS-281-081821 (160-43124-31) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/23/2021, prepared on 08/26/2021 and analyzed on 09/18/2021, 09/19/2021 and 09/20/2021.

Preparation Batch 160-524254:

The replicate precision for Pb-212 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (160-43154-D-9-F DU).

For samples FSS-074-081821 (160-43124-21), FSS-075-081821 (160-43124-22), FSS-076-081821 (160-43124-23), FSS-077-081821 (160-43124-24), FSS-078-081821 (160-43124-25), FSS-079-081821 (160-43124-26), FSS-279-081821 (160-43124-27), FSS-080-081821 (160-43124-28), FSS-280-081821 (160-43124-29), FSS-081-081821 (160-43124-30), FSS-281-081821 (160-43124-31), (LCS 160-524254/2-A), (MB 160-524254/1-A), (160-43154-D-9-E) and (160-43154-D-9-F DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

Preparation Batch 160-524240:

The replicate precision for Ac-228/Th-232 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (160-43124-D-20-E DU).

For samples FSS-059-081821 (160-43124-1), FSS-259-081821 (160-43124-2), FSS-060-081821 (160-43124-3), FSS-260-081821 (160-43124-4), FSS-061-081821 (160-43124-5), FSS-261-081821 (160-43124-6), FSS-062-081821 (160-43124-7), FSS-063-081821 (160-43124-8), FSS-064-081821 (160-43124-9), HFBR-021-061821 (160-43124-10), FSS-065-081821 (160-43124-11), FSS-066-081821 (160-43124-12), FSS-181-081821 (160-43124-13), FSS-067-081821 (160-43124-14), FSS-068-081821 (160-43124-15), FSS-069-081821 (160-43124-16), FSS-070-081821 (160-43124-17), FSS-071-081821 (160-43124-18), FSS-072-081821 (160-43124-19), FSS-073-081821 (160-43124-20), (LCS 160-524240/2-A), (MB 160-524240/1-A), and (160-43124-D-20-E DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238

Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-059-081821 (160-43124-1), FSS-259-081821 (160-43124-2), FSS-060-081821 (160-43124-3), FSS-260-081821 (160-43124-4), FSS-061-081821 (160-43124-5), FSS-261-081821 (160-43124-6), FSS-062-081821 (160-43124-7), FSS-063-081821 (160-43124-8), FSS-064-081821 (160-43124-9), HFBR-021-061821 (160-43124-10), FSS-065-081821 (160-43124-11), FSS-066-081821 (160-43124-12), FSS-181-081821 (160-43124-13), FSS-067-081821 (160-43124-14), FSS-068-081821 (160-43124-15), FSS-069-081821 (160-43124-16), FSS-070-081821 (160-43124-17), FSS-071-081821 (160-43124-18), FSS-072-081821 (160-43124-19), FSS-073-081821 (160-43124-20), FSS-074-081821 (160-43124-21), FSS-075-081821 (160-43124-22), FSS-076-081821 (160-43124-23), FSS-077-081821 (160-43124-24), FSS-078-081821 (160-43124-25), FSS-079-081821 (160-43124-26), FSS-279-081821 (160-43124-27), FSS-080-081821 (160-43124-28), FSS-280-081821 (160-43124-29), FSS-081-081821 (160-43124-30) and FSS-281-081821 (160-43124-31) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 08/26/2021, prepared on 09/09/2021 and 09/13/2021 and analyzed on 09/19/2021, 09/20/2021, 09/21/2021, 09/22/2021, 09/23/2021 and 09/24/2021.

Preparation Batch 160-526201:

The Method Blank (MB) recovered above the MDC, but below the reporting limit (RL). The value should be considered an estimate. Ni-63 was not detected above the MDC in the samples; therefore, the results were reported: FSS-059-081821 (160-43124-1), FSS-259-081821 (160-43124-2), FSS-060-081821 (160-43124-3), FSS-260-081821 (160-43124-4), FSS-061-081821 (160-43124-5), FSS-261-081821 (160-43124-6), FSS-062-081821 (160-43124-7), FSS-063-081821 (160-43124-8), FSS-064-081821 (160-43124-9), HFBR-021-061821 (160-43124-10), FSS-065-081821 (160-43124-11), FSS-066-081821 (160-43124-12), FSS-181-081821 (160-43124-13), FSS-067-081821 (160-43124-14), FSS-068-081821 (160-43124-15), FSS-069-081821 (160-43124-16), FSS-070-081821 (160-43124-17), FSS-071-081821 (160-43124-18), FSS-072-081821 (160-43124-19), FSS-073-081821 (160-43124-20), (LCS 160-526201/2-A), (MB 160-526201/1-A), and (160-43124-D-2-J DU).

Preparation Batch 160-526820:

The Method Blank (MB) for the samples had a result slightly above the MDC. The value should be considered an estimate Ni-63 was not detected above the MDC in the blank and samples; therefore, the results were reported: FSS-074-081821 (160-43124-21), FSS-075-081821 (160-43124-22), FSS-076-081821 (160-43124-23), FSS-077-081821 (160-43124-24), FSS-078-081821 (160-43124-25), FSS-079-081821 (160-43124-26), FSS-279-081821 (160-43124-27), FSS-080-081821 (160-43124-28), FSS-280-081821 (160-43124-29), FSS-081-081821 (160-43124-30), FSS-281-081821 (160-43124-31), (MB 160-526820/1-A), (LCS 160-526820/A), and FSS-279-081821 (160-43124-27-H-DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-059-081821 (160-43124-1), FSS-259-081821 (160-43124-2), FSS-060-081821 (160-43124-3), FSS-260-081821 (160-43124-4), FSS-061-081821 (160-43124-5), FSS-261-081821 (160-43124-6), FSS-062-081821 (160-43124-7), FSS-063-081821 (160-43124-8), FSS-064-081821 (160-43124-9), HFBR-021-061821 (160-43124-10), FSS-065-081821 (160-43124-11), FSS-066-081821 (160-43124-12), FSS-181-081821 (160-43124-13), FSS-067-081821 (160-43124-14), FSS-068-081821 (160-43124-15), FSS-069-081821 (160-43124-16), FSS-070-081821 (160-43124-17), FSS-071-081821 (160-43124-18), FSS-072-081821 (160-43124-19), FSS-073-081821 (160-43124-20), FSS-074-081821 (160-43124-21), FSS-075-081821 (160-43124-22), FSS-076-081821 (160-43124-23), FSS-077-081821 (160-43124-24), FSS-078-081821 (160-43124-25), FSS-079-081821 (160-43124-26), FSS-279-081821 (160-43124-27), FSS-080-081821 (160-43124-28), FSS-280-081821 (160-43124-29), FSS-081-081821 (160-43124-30) and FSS-281-081821 (160-43124-31) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared on 08/31/2021 and 09/05/2021 and analyzed on 09/16/2021, 09/24/2021, 09/28/2021

and 09/29/2021.

Preparation Batch 160-525621:

The Laboratory Control Sample (LCS) recovered at 129% which was above the upper control limit of 125%. The sample activities were below the RL; therefore, the results were reported: FSS-279-081821 (160-43124-27), FSS-080-081821 (160-43124-28), FSS-280-081821 (160-43124-29), FSS-081-081821 (160-43124-30), FSS-281-081821 (160-43124-31), (MB 160-525621/1-A), (LCS 160-525621/2-A), and (160-43124-27-H DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Eurofins TestAmerica, St. Louis
 13715 Rider Trail North
 Earth City, MO 63045-1205
 phone 314.298.8566 fax 314.298.8757

Chain of Custody Record



160-43124 Chain of Custody

Client Contact
 FPM
 Address: 181 Kenwood Avenue
 Oneida, NY 13421
 (315) 336-7721 ext. 218 Phone
 Fax (315) 336-7722 FAX
 Project Name: BNL 705 Stack Demo
 Site: BNL
 P O # 1085-20-01-01

Project Manager: Dan Ours
 Email: d.ours@fpm-remediations.com
 Tel/Fax: (315) 336-7721 ext. 218

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
 TAT if different from Below 30 Days
 2 weeks
 1 week
 2 days
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Gamma Spec: Ra-226+detects	Strontium-90 (GFPC)	Asbestos - EPA600 R-93	Lead (ICP/MS) - 6020B	Mercury - EPA 7470A	NI-63	Tritium	C-14	Alpha Spec Pu 238,239,240	Alpha Spec U 234,235,238	Pu 241 by LSC	Carrier: Fed Ex	Date: 08-18-21	Site Contact: Doug Beard	Lab Contact: Ivan Vania
FSS-059-081821	18-Aug	8:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	08-18-21		
FSS-259-081721	18-Aug	8:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	08-18-21		
FSS-060-081721	18-Aug	8:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	08-18-21		
FSS-260-081721	18-Aug	8:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	08-18-21		
FSS-061-081721	18-Aug	8:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	08-18-21		
FSS-261-081721	18-Aug	8:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	08-18-21		
FSS-062-081721	18-Aug	8:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	08-18-21		
FSS-063-081721	18-Aug	8:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	08-18-21		
FSS-064-081721	18-Aug	8:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	08-18-21		
FSS-064-061821	18-Jun	10:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	08-18-21		
FSS-065-081721	18-Aug	9:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	08-18-21		
FSS-066-081721	18-Aug	9:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	08-18-21		

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other
Possible Hazard Identification:
 Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown
Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu154, Eu155

Return to Client Disposal by Lab Archive for Months
 Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Custody Seal No.:
 Relinquished by: Douglas Beard
 Relinquished by: **FED EX**
 Relinquished by:

Company: Cabrera Services, Inc.
 Company: **FED EX**
 Company:

Date/Time: 8-18-21/17:00
 Date/Time:
 Date/Time:

Received by: *Douglas Beard*
 Received in Laboratory by: *Douglas Beard*

Company: *Cabrera Services, Inc.*
 Company: *FED EX*
 Company:

Therm ID No.:
 Date/Time:
 Date/Time: **AUG 19 2021 09:00**
 Date/Time:

Chain of Custody Record



Regulatory Program: DW NPDES RCRA Other:

Project Manager: Dan Ours
Email: d.ours@fpm-remediations.com
Tel/Fax: (315) 336-7721 ext. 218

Client Contact
Address 181 Kenwood Avenue
Oneida, NY 13421
(315) 336-7721 ext. 218 Phone
Fax (315) 336-7722 FAX
Project Name: BNL 705 Stack Demo
Site: BNL
P O # 1085-20-01-01

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below 30 Days
 2 weeks
 1 week
 2 days
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Gamma Spec: Ra-226+detects	Strontium-90 (GFPC)	Asbestos - EPA600 R-93	Lead (ICP/MS) - 60208	Mercury - EPA 7470A	Ni-63	Tritium	C-14	Alpha Spec Pu 238,239,240	Alpha Spec U 234,235,238	Pu 241 by LSC	Sample Specific Notes:
FSS-066-081721	18-Aug	9:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS016 18"-24"
FSS-067-081721	18-Aug	9:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS015 0"-6"
FSS-068-081721	18-Aug	9:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS015 6"-12"
FSS-069-081721	18-Aug	9:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS015 18"-24"
FSS-070-081721	18-Aug	9:45	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS014 0"-6"
FSS-071-081721	18-Aug	9:45	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS014 6"-12"
FSS-072-081721	18-Aug	9:45	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS014 18"-24"
FSS-073-081721	18-Aug	10:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS013 0"-6"
FSS-074-081721	18-Aug	10:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS013 6"-12"
FSS-075-081721	18-Aug	10:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS013 18"-24"
FSS-076-081721	18-Aug	10:45	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS012 0"-6"
FSS-077-081721	18-Aug	10:45	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS012 6"-12"

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Unknown
 Return to Client Disposal by Lab Archive for _____ Months

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-210, Pb-210, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu154, Eu155

Project Manager: Dan Ours
Date: 08-18-21
Carrier: Fed Ex

Site Contact: Doug Beard
Lab Contact: Ivan Vania

Sampler: J. Gollifer
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

COC No: 2 of 3 COCs
TALS Project #:
Sample Specific Notes:

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Received by: Douglas Beard
Received in Laboratory by: Michaela Keninberg
Received by: Fed Ex
Received in Laboratory by: Fed Ex

Date/Time: 21/17:00
Date/Time: AUG 19 2021 09:00
Date/Time:

Custody Seal No.:
Company: Cabrera Services, Inc.
Company:
Company:

Cooler Temp. (°C): Obs'd: _____
Corrd: _____
Therm ID No.: _____

Chain of Custody Record

Regulatory Program: DW NPDES RCRA Other:

Project Manager: Dan Ours
Email: d.ours@fpm-remediations.com
Tel/Fax: (315) 336-7721 ext. 218

Client Contact
Address 181 Kenwood Avenue
Oneida, NY 13421
(315) 336-7721 ext. 218 Phone
Fax (315) 336-7722 FAX
Project Name: BNL 705 Stack Demo
Site: BNL
P O # 1085-20-01-01

Site Contact: Doug Beard
Lab Contact: Ivan Vania

Date: 08-18-21
Carrier: Fed Ex

COC No: 3 of 3 COCs
TALS Project #: J. Gollher

Sampler: For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

Sample Specific Notes:
SU 7C - SS012 18"-24"
SU 7C - SS011 0"-6"
SU 7C - SS011 0"-6" Dup
SU 7C - SS011 6"-12"
SU 7C - SS011 6"-12" Dup
SU 7C - SS011 18"-24"
SU 7C - SS011 18"-24" Dup

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below 30 Days:
 2 weeks
 1 week
 2 days
 1 day

Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix # of Cont

Filtered Sample (Y / N) Gamma Spec: Ra-226+detects

Perform MS / MSD (Y / N) Strontium-90 (GFPC) Asbestos - EPA600 R-93 Lead (ICP/MS) - EPA 7470A Mercury - EPA 7470A Tritium C-14 Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC

Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix # of Cont

Filtered Sample (Y / N) Gamma Spec: Ra-226+detects

Perform MS / MSD (Y / N) Strontium-90 (GFPC) Asbestos - EPA600 R-93 Lead (ICP/MS) - EPA 7470A Mercury - EPA 7470A Tritium C-14 Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC

Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix # of Cont

Filtered Sample (Y / N) Gamma Spec: Ra-226+detects

Perform MS / MSD (Y / N) Strontium-90 (GFPC) Asbestos - EPA600 R-93 Lead (ICP/MS) - EPA 7470A Mercury - EPA 7470A Tritium C-14 Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC

Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix # of Cont

Filtered Sample (Y / N) Gamma Spec: Ra-226+detects

Perform MS / MSD (Y / N) Strontium-90 (GFPC) Asbestos - EPA600 R-93 Lead (ICP/MS) - EPA 7470A Mercury - EPA 7470A Tritium C-14 Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC

Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix # of Cont

Filtered Sample (Y / N) Gamma Spec: Ra-226+detects

Perform MS / MSD (Y / N) Strontium-90 (GFPC) Asbestos - EPA600 R-93 Lead (ICP/MS) - EPA 7470A Mercury - EPA 7470A Tritium C-14 Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC

Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix # of Cont

Filtered Sample (Y / N) Gamma Spec: Ra-226+detects

Perform MS / MSD (Y / N) Strontium-90 (GFPC) Asbestos - EPA600 R-93 Lead (ICP/MS) - EPA 7470A Mercury - EPA 7470A Tritium C-14 Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC

Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix # of Cont

Filtered Sample (Y / N) Gamma Spec: Ra-226+detects

Perform MS / MSD (Y / N) Strontium-90 (GFPC) Asbestos - EPA600 R-93 Lead (ICP/MS) - EPA 7470A Mercury - EPA 7470A Tritium C-14 Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC

Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix # of Cont

Filtered Sample (Y / N) Gamma Spec: Ra-226+detects

Perform MS / MSD (Y / N) Strontium-90 (GFPC) Asbestos - EPA600 R-93 Lead (ICP/MS) - EPA 7470A Mercury - EPA 7470A Tritium C-14 Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC

Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix # of Cont

Filtered Sample (Y / N) Gamma Spec: Ra-226+detects

Perform MS / MSD (Y / N) Strontium-90 (GFPC) Asbestos - EPA600 R-93 Lead (ICP/MS) - EPA 7470A Mercury - EPA 7470A Tritium C-14 Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC

Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix # of Cont

Filtered Sample (Y / N) Gamma Spec: Ra-226+detects

Perform MS / MSD (Y / N) Strontium-90 (GFPC) Asbestos - EPA600 R-93 Lead (ICP/MS) - EPA 7470A Mercury - EPA 7470A Tritium C-14 Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC

Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix # of Cont

Filtered Sample (Y / N) Gamma Spec: Ra-226+detects

Perform MS / MSD (Y / N) Strontium-90 (GFPC) Asbestos - EPA600 R-93 Lead (ICP/MS) - EPA 7470A Mercury - EPA 7470A Tritium C-14 Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC

Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix # of Cont

Filtered Sample (Y / N) Gamma Spec: Ra-226+detects

Perform MS / MSD (Y / N) Strontium-90 (GFPC) Asbestos - EPA600 R-93 Lead (ICP/MS) - EPA 7470A Mercury - EPA 7470A Tritium C-14 Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zm65, Th 232, Eu152, Eu154, Eu155

Return to Client Disposal by Lab Archive for Months

Cooler Temp. (°C): Obs'd: Corrd: Therm ID No.:

Received by: Fed Ex Company: Received in Laboratory by: Company: Received by: Company: Received in Laboratory by: Company:

Date/Time: 21/17:00 Date/Time: Date/Time: Date/Time:

Company: Cabrer Services, Inc. Company: Company: Company:

Company: Company: Company: Company:

Company: Company: Company: Company:

Company: Company: Company: Company:

Company: Company: Company: Company:

Company: Company: Company: Company:

Vania, Ivan

From: Grifasi, Michael <m.grifasi@fpm-remediations.com>
Sent: Friday, August 20, 2021 8:46 AM
To: Ridenhower, Rhonda
Cc: Vania, Ivan
Subject: RE: ETA samples received- J43124

EXTERNAL EMAIL*

Thank you Rhonda. Yes, the ID should be -081821.

Michael G. Grifasi, CPG, PG (WA, NY)
Project Manager/Senior Geologist

FPM Remediations, Inc.
*An **Olgoonik** Company*

From: Ridenhower, Rhonda <Rhonda.Ridenhower@Eurofinset.com>
Sent: Thursday, August 19, 2021 8:21 PM
To: Grifasi, Michael <m.grifasi@fpm-remediations.com>
Cc: Vania, Ivan <lvan.Vania@Eurofinset.com>
Subject: ETA samples received- J43124

Good evening,

Can you confirm if the sample ID's are correct? Typically the sample ID contains the sample date and only the first sample follows the normal ID pattern.

Sample ID FSS-259-081721, sample date is 18-Aug (should this ID be -081821). I am sorry to even ask, but wanted to double check prior to complete the review.

Thanks,
Rhonda

Rhonda Ridenhower
Client Service Manager
Interim Laboratory Director

How are we doing? Let us know!

Phone: 314-298-8566
Direct: 314-787-8227

E-mail: Rhonda.Ridenhower@eurofinset.com

* WARNING - EXTERNAL: This email originated from outside of Eurofins Environment Testing America. Do not click any links or open any attachments unless you trust the sender and know that the content is safe!

Vania, Ivan

From: Grifasi, Michael <m.grifasi@fpm-remediations.com>
Sent: Tuesday, August 24, 2021 8:37 AM
To: Vania, Ivan
Cc: Ours, Daniel; Hay, Scott
Subject: RE: Eurofins TestAmerica sample confirmation files from 160-43124-1 BNL Decommissioning Project

EXTERNAL EMAIL*

Ivan,
Apologies, I was looking for some direction from our field crew. To answer your question from yesterday, we do not need it analyzed for lead, mercury, and asbestos. This should be a concrete sample.

Additionally, that particular sample is not an FSS sample so the ID will need to be revised. Please revise FSS-064-061821 to HFBR-021-061821.

Thank you,
Michael G. Grifasi, CPG, PG (WA, NY)
Project Manager/Senior Geologist

FPM Remediations, Inc.
An **Olgoonik** Company

From: Vania, Ivan <Ivan.Vania@Eurofinset.com>
Sent: Monday, August 23, 2021 6:09 PM
To: Grifasi, Michael <m.grifasi@fpm-remediations.com>
Subject: FW: Eurofins TestAmerica sample confirmation files from 160-43124-1 BNL Decommissioning Project

Good Afternoon Michael,

Any idea on this issue yet?

Thanks,

Ivan Vania
Project Manager II

How are we doing? Let us know!

Eurofins Environment Testing America
13715 Rider Trail North
Earth City, MO 63045
Phone: 314-787-8270

Mobile: 314-749-8448

E-mail: Ivan.Vania@Eurofinset.com

From: Vania, Ivan

Sent: Monday, August 23, 2021 12:42 PM

To: Grifasi, Michael <m.grifasi@fpm-remediations.com>

Subject: RE: Eurofins TestAmerica sample confirmation files from 160-43124-1 BNL Decommissioning Project

Good Afternoon Michael,

Sample 160-43124-10 FSS-064-061821 is not marked for asbestos, lead, or mercury analysis. Can you please confirm this is correct?

Regards,

Ivan Vania

Project Manager II

How are we doing? Let us know!

Eurofins Environment Testing America

13715 Rider Trail North

Earth City, MO 63045

Phone: 314-787-8270

Mobile: 314-749-8448

E-mail: Ivan.Vania@Eurofinset.com

From: Grifasi, Michael <m.grifasi@fpm-remediations.com>

Sent: Sunday, August 22, 2021 8:57 AM

To: Ridenhower, Rhonda <Rhonda.Ridenhower@Eurofinset.com>

Cc: Vania, Ivan <Ivan.Vania@Eurofinset.com>

Subject: RE: Eurofins TestAmerica sample confirmation files from 160-43124-1 BNL Decommissioning Project

EXTERNAL EMAIL*

Thank you Rhonda. Can I ask you to look into the log-in status of the samples collected on 8/17/21? CoCs are attached.

Thanks again,

Michael G. Grifasi, CPG, PG (WA, NY)

Project Manager/Senior Geologist

FPM Remediations, Inc.

An **Olgoonik** Company

From: Rhonda Ridenhower <Rhonda.Ridenhower@Eurofinset.com>

Sent: Friday, August 20, 2021 6:30 PM

To: Cancemi, Ben <b.cancemi@fpm-group.com>; Forse, Dave <d.forse@fpm-remediations.com>; Grifasi, Michael <m.grifasi@fpm-remediations.com>; Mike Plonski <mplonski@cabreraservices.com>

Subject: Eurofins TestAmerica sample confirmation files from 160-43124-1 BNL Decommissioning Project

Hello,

Attached please find the sample confirmation files for job 160-43124-1; BNL Decommissioning Project

Please feel free to contact me or your PM Ivan Vania if you have any questions.

Thank you.

Rhonda E Ridenhower

Client Services Manager

Eurofins TestAmerica, St. Louis

E-mail: Rhonda.Ridenhower@Eurofinset.com

www.eurofinsus.com/env



Reference: [160-213012]

Attachments: 1

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* WARNING - EXTERNAL: This email originated from outside of Eurofins Environment Testing America. Do not click any links or open any attachments unless you trust the sender and know that the content is safe!

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler	Lab PM	Carrier Tracking No(s)	COC No:							
Client Contact: Shipping/Receiving		Phone:	Vania, Ivan H		160-217895.1							
Company: TestAmerica Laboratories, Inc.		E-Mail:	Ivan.Vania@Eurofins.com	State of Origin: New York	Page: Page 1 of 4							
Address: 4955 Yarrow Street, City: Arvada State, Zip: CO, 80002 Phone: 303-736-0100(Tel) 303-431-7171(Fax) Email:		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Job #: 160-43124-1	Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:							
Due Date Requested: 9/30/2021		Analysis Requested		Total Number of Containers								
TAT Requested (days):		Field Filtered Sample (Yes or No)		7471B_D0D5/7471B_Prep Mercury								
PO #:		Perform MS/MSD (Yes or No)		6020B_D0D5/3050B (MOD) ICPMS Metals Pb Only								
WO #:		Moisture										
Project #: 16009147		Matrix (W=water, S=solid, O=organic, B=biological, R=tissue, A=air)		Special Instructions/Note:								
Site: BNL Decommissioning Project		Sample Type (C=Comp, G=grab)										
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Time	Sample Time	Matrix	Preservation Code	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Moisture	7471B_D0D5/7471B_Prep Mercury	Total Number of Containers	Special Instructions/Note:
FSS-059-081821 (160-43124-1)	8/18/21	08:00 Eastern	08:00 Eastern	08:00 Eastern	Solid		X	X	X	X	1	
FSS-259-081821 (160-43124-2)	8/18/21	08:00 Eastern	08:00 Eastern	08:00 Eastern	Solid		X	X	X	X	1	
FSS-060-081821 (160-43124-3)	8/18/21	08:00 Eastern	08:00 Eastern	08:00 Eastern	Solid		X	X	X	X	1	
FSS-260-081821 (160-43124-4)	8/18/21	08:00 Eastern	08:00 Eastern	08:00 Eastern	Solid		X	X	X	X	1	
FSS-061-081821 (160-43124-5)	8/18/21	08:00 Eastern	08:00 Eastern	08:00 Eastern	Solid		X	X	X	X	1	
FSS-261-081821 (160-43124-6)	8/18/21	08:00 Eastern	08:00 Eastern	08:00 Eastern	Solid		X	X	X	X	1	
FSS-062-081821 (160-43124-7)	8/18/21	08:00 Eastern	08:00 Eastern	08:00 Eastern	Solid		X	X	X	X	1	
FSS-063-081821 (160-43124-8)	8/18/21	08:00 Eastern	08:00 Eastern	08:00 Eastern	Solid		X	X	X	X	1	
FSS-064-081821 (160-43124-9)	8/18/21	08:00 Eastern	08:00 Eastern	08:00 Eastern	Solid		X	X	X	X	1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
Level 1 radioactive

Deliverable Requested: I, II, III, IV, Other (specify) _____ Primary Deliverable Rank: 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/QC Requirements:

Empty Kit Relinquished by: _____ Date: _____ Time: _____ Method of Shipment: _____

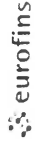
Relinquished by: *MARINA KENNEDY* Date: **AUG 20 2021** 17:00 Company: **ETA SN**

Relinquished by: _____ Date/Time: _____ Company: **ETA SN**

Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: **15, 3.0 IR 11 + 1.0**
 Yes No Custody Seal No.:

Chain of Custody Record



Client Information (Sub Contract Lab)		Lab PM: Vania, Ivan H		Carrier Tracking No(s): 160-217895.2	
Client Contact: Vania, Ivan H		E-Mail: Ivan.Vania@Eurofins.com		State of Origin: New York	
Shipping/Receiving Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Page: Page 2 of 4	
Address: 4955 Yarrow Street, Anvada, CO 80002		Due Date Requested: 9/30/2021		Job #: 160-43124-1	
Phone: 303-736-0100(Tel) 303-431-7171(Fax)		TAT Requested (days):		Preservation Codes:	
Email:		FO #:		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Project Name: BNL Decommissioning Project		WO #:		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecylhydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA Y - EDA Z - other (specify)	
Site:		Project #: 16009147		Total Number of Containers:	
SSOW#:		SSOW#:		Special Instructions/Note:	

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=soil, BT=tissue, A=air)	Field Filtered Sample (Yes or No)	Perform MSMD (Yes or No)	Moisture	6020B_DODS/3050B (MOD) ICMS Metals Pb Only	7471B_DODS/471B Prep Mercury	Analysis Requested	Total Number of Containers	Special Instructions/Note
FSS-065-081821 (160-43124-11)	8/18/21	09:30 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-066-081821 (160-43124-12)	8/18/21	09:30 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-066-081821 (160-43124-13)	8/18/21	09:30 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-067-081821 (160-43124-14)	8/18/21	09:00 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-068-081821 (160-43124-15)	8/18/21	09:00 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-069-081821 (160-43124-16)	8/18/21	09:00 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-070-081821 (160-43124-17)	8/18/21	09:45 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-071-081821 (160-43124-18)	8/18/21	09:45 Eastern	Solid	Solid	X	X	X	X	X		1	
FSS-072-081821 (160-43124-19)	8/18/21	09:45 Eastern	Solid	Solid	X	X	X	X	X		1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification

Level 1 radioactive Level 2 radioactive Level 3 radioactive Level 4 radioactive Other (specify) _____

Primary Deliverable Rank: 2

Empty Kit Relinquished by: _____ Date: _____

Relinquished by: *Melissa Kervinings* Date: **AUG 20 2021 17:00** Company: **ETA SLS**

Relinquished by: _____ Date: _____ Company: _____

Relinquished by: _____ Date: _____ Company: _____

Custody Seal Intact: Yes No

Custody Seal No.: _____

Cooler Temperature(s) °C and Other Remarks: _____

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/QC Requirements: _____

Method of Shipment: _____

Received by: *glt* Date/Time: **08/21/2021 10:00** Company: **ETA/ELI**

Received by: _____ Date/Time: _____ Company: _____

Received by: _____ Date/Time: _____ Company: _____

Chain of Custody Record

Client Information (Sub Contract Lab)		Lab PM: Vania, Ivan H	Carrier Tracking No(s):	COC No: 160-217895.3								
Client Contact: Shipping/Receiving		E-Mail: Ivan.Vania@Eurofins.com	State of Origin: New York	Page: Page 3 of 4								
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York										
Address: 4955 Yarrow Street, Arvada, CO, 80002		Job #: 160-43124-1										
Phone: 303-736-0100(Tel) 303-431-7171(Fax)		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:										
Email:		M - Hexane N - None O - AsNaO2 P - Na2OAS Q - Na2SO3 R - H2SO4 S - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)										
Project Name: BNL Decommissioning Project		Analysis Requested										
Site: S50W#		Total Number of Containers										
Due Date Requested: 9/30/2021		Field Filtered Sample (Yes or No)										
TAT Requested (days):		Perform MS/MSD (Yes or No)										
PO #:		Moisture										
WO #:		620B_DODS/3050B (MOD) ICPMS Metals Pb Only										
Project #:		7471B_DODS/7471B_Prep Mercury										
SSOW#:		Special Instructions/Note:										
Sample Identification - Client ID (Lab ID)												
Sample ID	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=organic, B=biomass, A=air)	Preservation Code	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Moisture	620B_DODS/3050B (MOD) ICPMS Metals Pb Only	7471B_DODS/7471B_Prep Mercury	Total Number of Containers	Special Instructions/Note:
FSS-073-081821 (160-43124-20)	8/18/21	10:30 Eastern	Solid	Solid		X	X	X	X		1	
FSS-074-081821 (160-43124-21)	8/18/21	10:30 Eastern	Solid	Solid		X	X	X	X		1	
FSS-075-081821 (160-43124-22)	8/18/21	10:30 Eastern	Solid	Solid		X	X	X	X		1	
FSS-076-081821 (160-43124-23)	8/18/21	10:45 Eastern	Solid	Solid		X	X	X	X		1	
FSS-077-081821 (160-43124-24)	8/18/21	10:45 Eastern	Solid	Solid		X	X	X	X		1	
FSS-078-081821 (160-43124-25)	8/18/21	10:45 Eastern	Solid	Solid		X	X	X	X		1	
FSS-079-081821 (160-43124-26)	8/18/21	11:00 Eastern	Solid	Solid		X	X	X	X		1	
FSS-279-081821 (160-43124-27)	8/18/21	11:00 Eastern	Solid	Solid		X	X	X	X		1	
FSS-080-081821 (160-43124-28)	8/18/21	11:00 Eastern	Solid	Solid		X	X	X	X		2	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontractor laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
 Level 1 radioactive

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/QC Requirements:

Empty Kit Relinquished by: _____ Date: _____ Time: _____ Method of Shipment: _____

Relinquished by: *MAIWA KERVINTINGA* Date/Time: **AUG 20 2021 17:00** Company: **ETA STR** Company: _____ Date/Time: _____ Date/Time: _____

Relinquished by: _____ Date/Time: _____ Company: _____ Date/Time: _____ Date/Time: _____

Custody Seals Intact: Yes No Cooler Temperature(s) °C and Other Remarks: _____

Chain of Custody Record

Client Information (Sub Contract Lab)

Client Contact: **Vania, Ivan H**
 Shipping/Receiving
 Company: **Ivan.Vania@Eurofinset.com**
 Address: **TestAmerica Laboratories, Inc.**
 4955 Yarrow Street,
 City: **Arvada**
 State, Zip: **CO. 80002**
 Phone: **303-736-0100(Tel) 303-431-7171(Fax)**
 Email:

Project Name: **BNL Decommissioning Project**
 Site:

Sampler: **Vania, Ivan H**
 Phone:
 Lab PM:
 E-Mail:
Ivan.Vania@Eurofinset.com

Carrier Tracking No(s):
 State of Origin:
New York

Accreditations Required (See note):
DoD - A2LA, DoD - ANAB; NELAP - New York

Due Date Requested:
9/30/2021

TAT Requested (days):
9/30/2021

PO #:
 WO #:
 Project #:
16009147
 SOW#:

Sample Identification - Client ID (Lab ID)

Sample ID	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Wet, Solid, Other)	Preservation Code	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Moture	7471B_DODS/7471B_Prep Mercury	6020B_DODS/3050B (MOD) ICPMS Metals Pb Only	Total Number of Containers	Special Instructions/Note:
FSS-280-081821 (160-43124-29)	8/18/21	11:00 Eastern	Solid	Solid		X	X	X	X	X	2	
FSS-081-081821 (160-43124-30)	8/18/21	11:00 Eastern	Solid	Solid		X	X	X	X	X	2	
FSS-281-081821 (160-43124-31)	8/18/21	11:00 Eastern	Solid	Solid		X	X	X	X	X	2	

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecylhydrate
I - Ice	U - Acetone
J - Di Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/QC Requirements:

Primary Deliverable Rank: 2

Relinquished by: **Micha Kerwinings**
 Date: **AUG 20 2021 17:00**
 Company: **ETA SU**

Relinquished by: **gof**
 Date/Time: **08/31/2021 1000**
 Company: **ETA DEFU**

Custody Seal Intact: Yes No
 Cooler Temperature(s) °C and Other Remarks:

Chain of Custody Record



ADH1063223-0

Client Information (Sub Contract Lab)
 Client Contact: **Vania, Ivan H**
 Address: **350 Hochberg Rd, Monroeville, PA, 15146**
 Phone: **724 322 3200**
 E-Mail: **Ivan.Varia@Eurofins.com**
 State of Origin: **New York**
 Job #: **180-43124-1**

Shipping/Receiving
 Company: **RJ Lee Group, Inc**
 Address: **350 Hochberg Rd, Monroeville, PA, 15146**
 City: **Monroeville**
 State, Zip: **PA, 15146**
 Phone:
 Email:
 Project Name: **BNL Decommissioning Project**
 Project #: **16009147**
 SSOW#:
 Due Date Requested: **10/1/2021**
 TAT Requested (days):
 PO #:
 WO #:

Sample ID (Lab ID)	Sample Date	Sample Time	Sample Type (C-comp, G-grab)	Matrix (Inerts, Semis, Organics, Metals)	Field Filtered Sample (Yes or No)	Perform RSMSC (Yes or No)	SUB (Asbestos - PLM-EPA800-R-93/LAP-080.03)	Preservation Code:	Special Instructions/Note:
FSS-069-081821 (160-43124-1)	8/18/21	08:00 Eastern	Solid	Solid		X	X	Asbestos - PLM-EPA800-R-93/LAP-080.03	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-259-081821 (160-43124-2)	8/18/21	08:00 Eastern	Solid	Solid		X	X	Asbestos - PLM-EPA800-R-93/LAP-080.03	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-080-081821 (160-43124-3)	8/18/21	08:00 Eastern	Solid	Solid		X	X	Asbestos - PLM-EPA800-R-93/LAP-080.03	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-260-081821 (160-43124-4)	8/18/21	08:00 Eastern	Solid	Solid		X	X	Asbestos - PLM-EPA800-R-93/LAP-080.03	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-081-081821 (160-43124-5)	8/18/21	08:00 Eastern	Solid	Solid		X	X	Asbestos - PLM-EPA800-R-93/LAP-080.03	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-281-081821 (160-43124-6)	8/18/21	08:00 Eastern	Solid	Solid		X	X	Asbestos - PLM-EPA800-R-93/LAP-080.03	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-082-081821 (160-43124-7)	8/18/21	08:00 Eastern	Solid	Solid		X	X	Asbestos - PLM-EPA800-R-93/LAP-080.03	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-083-081821 (160-43124-8)	8/18/21	08:00 Eastern	Solid	Solid		X	X	Asbestos - PLM-EPA800-R-93/LAP-080.03	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-084-081821 (160-43124-9)	8/18/21	08:00 Eastern	Solid	Solid		X	X	Asbestos - PLM-EPA800-R-93/LAP-080.03	Asbestos - PLM-EPA800-R-93/LAP-080.03

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements:

Possible Hazard Identification
 Level 1 radioactive
 Deliverable Requested: I, II, III, IV, Other (specify)
Primary Deliverable Rancit: 2

Empty Kit Returned by:
 Date: **08/20/2021** Time:
 Received by: **ETA SA/Anna Prigoris** Company: **ETA**
 Date/Time: **17:00** Company:
 Received by: Company:
 Date/Time: Company:
 Custody Seal No.:
 A Yes Δ No

Chain of Custody Record

Client Information (Sub Contract Lab) Company: RJ Lee Group, Inc Address: 360 Hochberg Rd. City: Monroeville State, Zip: PA, 15146 Phone: Email:		Lab POC: Name: Ivan H. Vanita E-Mail: Ivan.Vanita@Eurofins.com		Carrier Tracking Info: State of Origin: New York Job #: 180-43124-1		EOC No: 180-217894.2 Page: Page 2 of 4		
Company: Address: City: State, Zip: Phone: Email:		Due Date Requested: 10/1/2021 TAT Requested (days):		Accreditations Requested (See tab): DoD - A2LA; DoD - ANAB; NELAP - New York		Preservation Codes: A - HCl B - NaOH C - Zn Acetate D - Nitric Acid E - NH ₄ SCN F - MeOH G - Ammonia H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDTA Other:		
Project Name: BML Decommissioning Project Site:		Project #: 16008147 SSOWF:		Analysis Requested:		Special Instructions/Notes:		
Sample ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Canister, G=Grab) or (Name, Job#)	Matrix (Venous, Urine, Saliva, Capillary, Other)	Field Filtered Sample (Yes or No)	Perform MS/MS (Yes or No)	Abestos - PLM-EP-600-R-93LAP-080.03	Total Number of Containers
FSS-065-081821 (160-43124-11)	8/18/21	09:30 Eastern	Solid	Solid	X	X	X	1
FSS-066-081821 (160-43124-12)	8/18/21	09:30 Eastern	Solid	Solid	X	X	X	1
FSS-068-081821 (160-43124-13)	8/18/21	09:30 Eastern	Solid	Solid	X	X	X	1
FSS-067-081821 (160-43124-14)	8/18/21	09:00 Eastern	Solid	Solid	X	X	X	1
FSS-068-081821 (160-43124-15)	8/18/21	09:00 Eastern	Solid	Solid	X	X	X	1
FSS-066-081821 (160-43124-16)	8/18/21	09:45 Eastern	Solid	Solid	X	X	X	1
FSS-070-081821 (160-43124-17)	8/18/21	09:45 Eastern	Solid	Solid	X	X	X	1
FSS-071-081821 (160-43124-18)	8/18/21	09:45 Eastern	Solid	Solid	X	X	X	1
FSS-072-081821 (160-43124-19)	8/18/21	09:45 Eastern	Solid	Solid	X	X	X	1

Note: Since laboratory accreditation is subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our submittal laboratories. This sample statement is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for method/analyte being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
 Level: **1 radioactive**
 Deliverable Requested: **I, II, III, IV, Other (specify)** Primary Deliverable Remark: **2**

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For **Months**

Empty Kit Returned by: _____ Method of Shipment: _____

Relinquished by: _____ Company: _____ Date/Time: _____

Relinquished by: **Michaela Kenning** Company: **ETA** Date/Time: **AUG 20 2021 14:00**

Relinquished by: _____ Company: _____ Date/Time: _____

Relinquished by: _____ Company: _____ Date/Time: _____

Custody Seals Intact: _____ (Custody Seal No.: _____)
 Δ Yes Δ No

Company: _____ Date/Time: _____
 Company: _____ Date/Time: _____
 Company: _____ Date/Time: _____

Cooler Temperature(s) °C and Other Remarks: _____

Chain of Custody Record

Client Information (Sub Contract Lab)		Lab Pk: Vania, Ivan H		Carnet Tracking Note:		Doc No: 180-217894.3	
Client Contact: Ivan Vania		E-Mail: Ivan.Vania@Eurofins.com		State of Origin: New York		Page: Page 3 of 4	
Shipping/Receiving		Company: RJ Lee Group, Inc		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Job #: 180-43124-1	
Address: 360 Hoochberg Rd.		City: Monroeville		State, Zip: PA, 15146		Preservation Codes: A - HCl B - NaOH C - Zn Acetate D - Nitric Acid E - NH4SO4 F - MeOH G - Acetone H - Acetic Acid I - Ice J - DI Water K - EDTA L - EDX Driver: M - Heurms N - None O - AuNO3 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TBP Dodecylsulfate U - Acetone V - HCAA W - pH 4.5 X - other (specify)	
PO #: _____		WO #: _____		Project #: 16008147		Special Instructions/Notes:	
Site: BNL Decommissioning Project		Sample Date		Sample Time		Sample Type (C-Comp, G-grab)	
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Type (C-Comp, G-grab)	
FSS-073-081821 (160-43124-20)		8/18/21		10:30 Eastern		Solid	
FSS-074-081821 (160-43124-21)		8/18/21		10:30 Eastern		Solid	
FSS-075-081821 (160-43124-22)		8/18/21		10:30 Eastern		Solid	
FSS-076-081821 (160-43124-23)		8/18/21		10:45 Eastern		Solid	
FSS-077-081821 (160-43124-24)		8/18/21		10:45 Eastern		Solid	
FSS-078-081821 (160-43124-25)		8/18/21		10:45 Eastern		Solid	
FSS-078-081821 (160-43124-26)		8/18/21		11:00 Eastern		Solid	
FSS-279-081821 (160-43124-27)		8/18/21		11:00 Eastern		Solid	
FSS-080-081821 (160-43124-28)		8/18/21		11:00 Eastern		Solid	
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analyte/methods being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to valid compliance to Eurofins TestAmerica.</p>							
<p>Possible Hazard Identification</p> <p>Level 1 radioactive</p> <p>Deliverable Requested: I, II, III, IV, Other (specify) _____</p> <p>Primary Deliverable Rank: 2</p> <p>Empty Kit Returned by: _____</p> <p>Returned by: <i>Melina Keminings</i></p> <p>Received by: _____</p> <p>Received by: _____</p> <p>Received by: _____</p> <p>Custody Seals Intact: (Custody Seal No.: _____)</p> <p>Δ Yes Δ No</p>							
<p>Special Instructions/CC Requirements:</p> <p>Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months</p> <p>Method of Shipment: _____</p> <p>Date: AUG 20 2021 12:00</p> <p>Requested by: <i>Eda SN</i></p> <p>Company: <i>Eda SN</i></p> <p>Received by: <i>Eda SN</i></p> <p>Company: <i>Eda SN</i></p> <p>Received by: _____</p> <p>Company: _____</p> <p>Received by: _____</p> <p>Company: _____</p> <p>Cooler Temperature(s) °C and Other Remarks: _____</p>							

Chain of Custody Record

ADH 106 32230

Client Information (Sub Contract Lab)		Lab Pk: Vanh, Ivan H	Carrier Tracking No(s):	Lab No: 160-217894.4
Shipping/Receiving		Phone: E-Mail: Ivan.Vanh@Eurofins.com	State of Origin: New York	Page: Page 4 of 4
Company: RJ Lee Group, Inc		Job #: 160-43124-1		
Address: 350 Hochberg Rd, City: Morroville State, Zip: PA, 15146 Phone: Email:		Preservation Codes: A - HCL B - NaOH C - 2n Acetic D - Nitric Acid E - NaOH F - MeOH G - Acetic Acid H - Acetic Acid I - Ice J - DI Water K - EDTA L - EDTA Other:		
Site Data Requested: 10/1/2021 [AT Requested (days):		Analysis Requested		
PO #: WO #: Project #: 16009147 SSOWH:		Accreditations Requiring (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		
Project Name: BNL Decommissioning Project		Matrix (Matrix, Grab, Composite, Other):		
Sample ID (Lab ID)		Sample Date	Sample Time	Sample Type (G-grab)
FSS-280-081821 (160-43124-29)		8/18/21	11:00 Eastern	Solid
FSS-081-081821 (160-43124-30)		8/18/21	11:00 Eastern	Solid
FSS-281-081821 (160-43124-31)		8/18/21	11:00 Eastern	Solid
Special Instructions/Note:		Total Number of Containers		
Asbestos - PLM-EPA800-R-931AP-080.03		X		Asbestos - PLM-EPA800-R-931AP-080.03
Asbestos - PLM-EPA800-R-931AP-080.03		X		Asbestos - PLM-EPA800-R-931AP-080.03
Asbestos - PLM-EPA800-R-931AP-080.03		X		Asbestos - PLM-EPA800-R-931AP-080.03

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, matrix & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analyte/element being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to valid compliance to Eurofins TestAmerica.

Possible Hazard Identification
 Level 1 radioactive
 Deliverable Requested: I, II, III, IV, Other (specify)

Primary Deliverable Rank: 2

Empty Kit Returned by:

Returned by: *Michael Kevin King*
 Date/Time: **AUG 20 2021 17:00**
 Company: *EPA 914*

Received by: *Michael Kevin King*
 Date/Time: *08/20/21*
 Company: *Eurofins*

Returned by: *Michael Kevin King*
 Date/Time: *08/20/21*
 Company: *Eurofins*

Custody Seals Intact: Yes No
 A Yes A No

Custody Seal No.:

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For Months

Special Instructions/QC Requirements:

Method of Shipment:

Ver: 06/08/2021

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-059-081821

Lab Sample ID: 160-43124-1

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.377	J	0.205	0.208	3.00	0.317	pCi/g	09/18/21 17:16	09/30/21 21:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	81.4		40 - 110					09/18/21 17:16	09/30/21 21:41	1
Y Carrier	98.3		40 - 110					09/18/21 17:16	09/30/21 21:41	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0674	U	0.240	0.240	1.00	0.425	pCi/g	09/09/21 10:38	09/10/21 21:20	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0161	U	0.0119	0.0120	1.00	0.0724	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00230	U	0.00451	0.00452	1.00	0.0446	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	72.2		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0890	U	0.0924	0.0927	1.00	0.150	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-235/236	-0.00615	U	0.0391	0.0391	1.00	0.108	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-238	0.187		0.0897	0.0910	1.00	0.0809	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	71.3		30 - 110					08/31/21 14:27	09/10/21 13:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0223	U	0.633	0.633	5.00	1.13	pCi/g	09/16/21 08:54	09/17/21 19:40	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.314		0.0949	0.0999		0.0724	pCi/g	08/26/21 11:31	09/18/21 20:22	1
Bismuth-212	0.270	U	0.691	0.692		1.21	pCi/g	08/26/21 11:31	09/18/21 20:22	1
Bismuth-214	0.199		0.104	0.106		0.104	pCi/g	08/26/21 11:31	09/18/21 20:22	1
Lead-212	0.263		0.0625	0.0708		0.0693	pCi/g	08/26/21 11:31	09/18/21 20:22	1
Lead-214	0.227		0.0792	0.0826		0.0835	pCi/g	08/26/21 11:31	09/18/21 20:22	1
Potassium-40	3.95		0.832	0.921		0.624	pCi/g	08/26/21 11:31	09/18/21 20:22	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-059-081821

Lab Sample ID: 160-43124-1

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.199		0.104	0.106	1.00	0.104	pCi/g	08/26/21 11:31	09/18/21 20:22	1
Thorium-232	0.314		0.0949	0.0999		0.0724	pCi/g	08/26/21 11:31	09/18/21 20:22	1
Americium-241	0.0255	U	0.122	0.122		0.211	pCi/g	08/26/21 11:31	09/18/21 20:22	1
Cesium-137	0.0141	U	0.0288	0.0288		0.0511	pCi/g	08/26/21 11:31	09/18/21 20:22	1
Cobalt-60	-0.0548	U	0.0889	0.0890		0.0958	pCi/g	08/26/21 11:31	09/18/21 20:22	1
Europium-152	0.000872	U	0.00156	0.00156		0.142	pCi/g	08/26/21 11:31	09/18/21 20:22	1
Europium-154	0.0633	U	0.102	0.102		0.0970	pCi/g	08/26/21 11:31	09/18/21 20:22	1
Europium-155	0.0227	U	0.0793	0.0794		0.427	pCi/g	08/26/21 11:31	09/18/21 20:22	1
Sodium-22	-0.00619	U	0.0262	0.0262		0.0512	pCi/g	08/26/21 11:31	09/18/21 20:22	1
Zinc-65	-0.0236	U	0.115	0.115		0.206	pCi/g	08/26/21 11:31	09/18/21 20:22	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	2.08		0.792	0.820	5.00	1.22	pCi/g	09/09/21 16:32	09/19/21 12:42	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ni	103		40 - 110					09/09/21 16:32	09/19/21 12:42	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	2.04	U	1.51	1.52	5.00	2.49	pCi/g	08/31/21 14:29	09/16/21 06:34	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Pu-242 (T)	72.2		30 - 110					08/31/21 14:29	09/16/21 06:34	1

Client Sample ID: FSS-059-081821

Lab Sample ID: 160-43124-1

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 97.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.7		0.30	0.018	mg/Kg	☼	09/12/21 07:16	09/13/21 19:29	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.1	ug/Kg	☼	09/14/21 16:15	09/14/21 20:11	1

Client Sample ID: FSS-259-081821

Lab Sample ID: 160-43124-2

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.377	J	0.175	0.177	3.00	0.257	pCi/g	09/18/21 17:16	09/30/21 21:41	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-259-081821

Lab Sample ID: 160-43124-2

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	81.6		40 - 110	09/18/21 17:16	09/30/21 21:41	1
Y Carrier	103		40 - 110	09/18/21 17:16	09/30/21 21:41	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.118	U	0.230	0.230	1.00	0.441	pCi/g	09/09/21 10:38	09/10/21 21:43	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.000	U	0.0186	0.0186	1.00	0.0568	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	0.00639	U	0.0172	0.0172	1.00	0.0412	pCi/g	08/31/21 13:44	09/10/21 13:25	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	80.7		30 - 110	08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.144		0.0759	0.0768	1.00	0.0641	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-235/236	0.0179	U	0.0341	0.0342	1.00	0.0669	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-238	0.0863		0.0564	0.0568	1.00	0.0288	pCi/g	08/31/21 14:27	09/10/21 13:46	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	69.1		30 - 110	08/31/21 14:27	09/10/21 13:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.153	U	0.653	0.654	5.00	1.18	pCi/g	09/16/21 08:54	09/17/21 20:47	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.280		0.207	0.209		0.188	pCi/g	08/26/21 11:31	09/18/21 20:21	1
Bismuth-212	0.000	U	0.260	0.260		0.914	pCi/g	08/26/21 11:31	09/18/21 20:21	1
Bismuth-214	0.217		0.101	0.103		0.131	pCi/g	08/26/21 11:31	09/18/21 20:21	1
Lead-212	0.388		0.0919	0.100		0.102	pCi/g	08/26/21 11:31	09/18/21 20:21	1
Lead-214	0.287		0.0914	0.0958		0.122	pCi/g	08/26/21 11:31	09/18/21 20:21	1
Potassium-40	4.84		1.02	1.12		0.410	pCi/g	08/26/21 11:31	09/18/21 20:21	1
Radium-226	0.217		0.101	0.103	1.00	0.131	pCi/g	08/26/21 11:31	09/18/21 20:21	1
Thorium-232	0.280		0.207	0.209		0.188	pCi/g	08/26/21 11:31	09/18/21 20:21	1
Americium-241	0.0585	U	0.155	0.155		0.267	pCi/g	08/26/21 11:31	09/18/21 20:21	1
Cesium-137	0.0284	U	0.0551	0.0552		0.0965	pCi/g	08/26/21 11:31	09/18/21 20:21	1
Cobalt-60	-0.0777	U	0.128	0.128		0.138	pCi/g	08/26/21 11:31	09/18/21 20:21	1
Europium-152	0.0577	U	0.295	0.295		0.514	pCi/g	08/26/21 11:31	09/18/21 20:21	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-259-081821

Lab Sample ID: 160-43124-2

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0690	U	0.0751	0.0754		0.0858	pCi/g	08/26/21 11:31	09/18/21 20:21	1
Europium-155	0.0520	U	0.126	0.126		0.319	pCi/g	08/26/21 11:31	09/18/21 20:21	1
Sodium-22	0.00178	U	0.0358	0.0358		0.0737	pCi/g	08/26/21 11:31	09/18/21 20:21	1
Zinc-65	0.000	U	0.0187	0.0187		0.289	pCi/g	08/26/21 11:31	09/18/21 20:21	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.84		0.782	0.804	5.00	1.22	pCi/g	09/09/21 16:32	09/19/21 13:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	101		40 - 110					09/09/21 16:32	09/19/21 13:48	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.602	U	1.22	1.22	5.00	2.21	pCi/g	08/31/21 14:29	09/16/21 07:40	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	80.7		30 - 110					08/31/21 14:29	09/16/21 07:40	1

Client Sample ID: FSS-259-081821

Lab Sample ID: 160-43124-2

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 94.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.8		0.28	0.017	mg/Kg	☼	09/12/21 07:16	09/13/21 19:47	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	6.0	ug/Kg	☼	09/14/21 16:15	09/14/21 20:13	1

Client Sample ID: FSS-060-081821

Lab Sample ID: 160-43124-3

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0823	U J	0.164	0.164	3.00	0.286	pCi/g	09/18/21 17:16	09/30/21 21:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.6		40 - 110					09/18/21 17:16	09/30/21 21:41	1
Y Carrier	101		40 - 110					09/18/21 17:16	09/30/21 21:41	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-060-081821

Lab Sample ID: 160-43124-3

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.224	U	0.215	0.216	1.00	0.430	pCi/g	09/09/21 10:38	09/10/21 22:05	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0238	U	0.0436	0.0437	1.00	0.0831	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00264	U	0.00518	0.00519	1.00	0.0512	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	65.7		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.140		0.0782	0.0791	1.00	0.0655	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-235/236	0.000	U	0.00646	0.00646	1.00	0.0396	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-238	0.193		0.0908	0.0922	1.00	0.0654	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	62.5		30 - 110					08/31/21 14:27	09/10/21 13:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.159	U	0.650	0.650	5.00	1.18	pCi/g	09/16/21 08:54	09/17/21 21:10	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.270		0.116	0.119		0.170	pCi/g	08/26/21 11:31	09/20/21 14:04	1
Bismuth-212	-0.205	U	0.544	0.544		0.960	pCi/g	08/26/21 11:31	09/20/21 14:04	1
Bismuth-214	0.249		0.0857	0.0894		0.0908	pCi/g	08/26/21 11:31	09/20/21 14:04	1
Lead-212	0.306		0.0617	0.0729		0.0567	pCi/g	08/26/21 11:31	09/20/21 14:04	1
Lead-214	0.171		0.0723	0.0744		0.145	pCi/g	08/26/21 11:31	09/20/21 14:04	1
Potassium-40	3.77		0.812	0.896		0.619	pCi/g	08/26/21 11:31	09/20/21 14:04	1
Radium-226	0.249		0.0857	0.0894	1.00	0.0908	pCi/g	08/26/21 11:31	09/20/21 14:04	1
Thorium-232	0.270		0.116	0.119		0.170	pCi/g	08/26/21 11:31	09/20/21 14:04	1
Americium-241	0.00392	U	0.120	0.120		0.209	pCi/g	08/26/21 11:31	09/20/21 14:04	1
Cesium-137	0.00365	U	0.0397	0.0397		0.0730	pCi/g	08/26/21 11:31	09/20/21 14:04	1
Cobalt-60	-0.0165	U	0.0611	0.0611		0.0703	pCi/g	08/26/21 11:31	09/20/21 14:04	1
Europium-152	0.0524	U	0.114	0.114		0.128	pCi/g	08/26/21 11:31	09/20/21 14:04	1
Europium-154	0.0593	U	0.0368	0.0373		0.0809	pCi/g	08/26/21 11:31	09/20/21 14:04	1
Europium-155	-0.000885	U	0.140	0.140		0.383	pCi/g	08/26/21 11:31	09/20/21 14:04	1
Sodium-22	-0.0515	U	0.0556	0.0559		0.0918	pCi/g	08/26/21 11:31	09/20/21 14:04	1
Zinc-65	-0.000963	U	0.0947	0.0947		0.177	pCi/g	08/26/21 11:31	09/20/21 14:04	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-060-081821

Lab Sample ID: 160-43124-3

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	2.52		0.832	0.871	5.00	1.26	pCi/g	09/09/21 16:32	09/19/21 16:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	114	Q	40 - 110					09/09/21 16:32	09/19/21 16:01	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.269	U	1.54	1.54	5.00	2.75	pCi/g	08/31/21 14:29	09/16/21 08:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	65.7		30 - 110					08/31/21 14:29	09/16/21 08:47	1

Client Sample ID: FSS-060-081821

Lab Sample ID: 160-43124-3

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 98.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.98		0.28	0.017	mg/Kg	☼	09/12/21 07:16	09/13/21 19:51	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/14/21 16:15	09/14/21 20:16	1

Client Sample ID: FSS-260-081821

Lab Sample ID: 160-43124-4

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.105	U J	0.163	0.163	3.00	0.281	pCi/g	09/18/21 17:16	09/30/21 21:42	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.3		40 - 110					09/18/21 17:16	09/30/21 21:42	1
Y Carrier	102		40 - 110					09/18/21 17:16	09/30/21 21:42	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.279	U	0.213	0.215	1.00	0.433	pCi/g	09/09/21 10:38	09/10/21 22:28	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-260-081821

Lab Sample ID: 160-43124-4

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	0.0186	U	0.0387	0.0387	1.00	0.0753	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00414	U	0.00574	0.00575	1.00	0.0464	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.0		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.138		0.0690	0.0699	1.00	0.0425	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-235/236	0.00820	U	0.0221	0.0221	1.00	0.0529	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-238	0.121		0.0644	0.0652	1.00	0.0424	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	74.7		30 - 110					08/31/21 14:27	09/10/21 13:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.0684	U	0.681	0.681	5.00	1.22	pCi/g	09/16/21 08:54	09/17/21 21:33	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.341		0.119	0.124		0.0903	pCi/g	08/26/21 11:31	09/18/21 20:25	1
Bismuth-212	-0.271	U	0.732	0.733		1.29	pCi/g	08/26/21 11:31	09/18/21 20:25	1
Bismuth-214	0.235		0.0946	0.0975		0.103	pCi/g	08/26/21 11:31	09/18/21 20:25	1
Lead-212	0.272		0.0669	0.0753		0.0658	pCi/g	08/26/21 11:31	09/18/21 20:25	1
Lead-214	0.292		0.0967	0.101		0.0887	pCi/g	08/26/21 11:31	09/18/21 20:25	1
Potassium-40	3.38		0.872	0.935		0.739	pCi/g	08/26/21 11:31	09/18/21 20:25	1
Radium-226	0.235		0.0946	0.0975	1.00	0.103	pCi/g	08/26/21 11:31	09/18/21 20:25	1
Thorium-232	0.341		0.119	0.124		0.0903	pCi/g	08/26/21 11:31	09/18/21 20:25	1
Americium-241	-0.0583	U	0.150	0.151		0.258	pCi/g	08/26/21 11:31	09/18/21 20:25	1
Cesium-137	0.0223	U	0.0378	0.0378		0.0656	pCi/g	08/26/21 11:31	09/18/21 20:25	1
Cobalt-60	0.0205	U	0.0180	0.0181		0.0351	pCi/g	08/26/21 11:31	09/18/21 20:25	1
Europium-152	0.0734	U	0.142	0.142		0.159	pCi/g	08/26/21 11:31	09/18/21 20:25	1
Europium-154	0.0361	U	0.0498	0.0500		0.122	pCi/g	08/26/21 11:31	09/18/21 20:25	1
Europium-155	-0.00465	U	0.120	0.120		0.335	pCi/g	08/26/21 11:31	09/18/21 20:25	1
Sodium-22	0.0276	U	0.0221	0.0222		0.0339	pCi/g	08/26/21 11:31	09/18/21 20:25	1
Zinc-65	0.00371	U	0.124	0.124		0.230	pCi/g	08/26/21 11:31	09/18/21 20:25	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.81		0.833	0.853	5.00	1.32	pCi/g	09/09/21 16:32	09/19/21 17:07	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-260-081821

Lab Sample ID: 160-43124-4

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	99.7		40 - 110	09/09/21 16:32	09/19/21 17:07	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.105	U	1.22	1.22	5.00	2.17	pCi/g	08/31/21 14:29	09/16/21 09:53	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.0		30 - 110	08/31/21 14:29	09/16/21 09:53	1

Client Sample ID: FSS-260-081821

Lab Sample ID: 160-43124-4

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 98.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.4		0.29	0.018	mg/Kg	☼	09/12/21 07:16	09/13/21 19:54	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/14/21 16:15	09/14/21 20:18	1

Client Sample ID: FSS-061-081821

Lab Sample ID: 160-43124-5

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.302	J	0.187	0.189	3.00	0.294	pCi/g	09/18/21 17:16	09/30/21 21:42	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	82.3		40 - 110	09/18/21 17:16	09/30/21 21:42	1
Y Carrier	101		40 - 110	09/18/21 17:16	09/30/21 21:42	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.150	U	0.232	0.232	1.00	0.452	pCi/g	09/09/21 10:38	09/10/21 22:51	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00612	U	0.0351	0.0351	1.00	0.0786	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00613	U	0.00693	0.00695	1.00	0.0505	pCi/g	08/31/21 13:44	09/10/21 13:25	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	90.9		30 - 110	08/31/21 13:44	09/10/21 13:25	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-061-081821

Lab Sample ID: 160-43124-5

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.119		0.0707	0.0714	1.00	0.0662	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-235/236	0.000	U	0.00604	0.00604	1.00	0.0370	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-238	0.178		0.0822	0.0835	1.00	0.0297	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	71.5		30 - 110					08/31/21 14:27	09/10/21 13:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.333	U	0.711	0.712	5.00	1.23	pCi/g	09/16/21 08:54	09/17/21 21:55	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.322	U	0.119	0.123		0.364	pCi/g	08/26/21 11:31	09/20/21 14:03	1
Bismuth-212	0.000	U	0.567	0.567		1.25	pCi/g	08/26/21 11:31	09/20/21 14:03	1
Bismuth-214	0.399		0.132	0.138		0.130	pCi/g	08/26/21 11:31	09/20/21 14:03	1
Lead-212	0.425		0.0954	0.105		0.106	pCi/g	08/26/21 11:31	09/20/21 14:03	1
Lead-214	0.381		0.124	0.130		0.139	pCi/g	08/26/21 11:31	09/20/21 14:03	1
Potassium-40	4.78		0.999	1.11		0.400	pCi/g	08/26/21 11:31	09/20/21 14:03	1
Radium-226	0.399		0.132	0.138	1.00	0.130	pCi/g	08/26/21 11:31	09/20/21 14:03	1
Thorium-232	0.322	U	0.119	0.123		0.364	pCi/g	08/26/21 11:31	09/20/21 14:03	1
Americium-241	0.0217	U	0.171	0.171		0.297	pCi/g	08/26/21 11:31	09/20/21 14:03	1
Cesium-137	-0.0392	U	0.0651	0.0652		0.112	pCi/g	08/26/21 11:31	09/20/21 14:03	1
Cobalt-60	-0.0288	U	0.0869	0.0870		0.0992	pCi/g	08/26/21 11:31	09/20/21 14:03	1
Europium-152	0.0943	U	0.205	0.206		0.172	pCi/g	08/26/21 11:31	09/20/21 14:03	1
Europium-154	0.0296	U	0.0559	0.0560		0.0966	pCi/g	08/26/21 11:31	09/20/21 14:03	1
Europium-155	-0.0983	U	0.333	0.333		0.569	pCi/g	08/26/21 11:31	09/20/21 14:03	1
Sodium-22	0.0122	U	0.0378	0.0378		0.0719	pCi/g	08/26/21 11:31	09/20/21 14:03	1
Zinc-65	-0.0217	U	0.135	0.135		0.248	pCi/g	08/26/21 11:31	09/20/21 14:03	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.66		0.808	0.825	5.00	1.29	pCi/g	09/09/21 16:32	09/19/21 18:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	98.3		40 - 110					09/09/21 16:32	09/19/21 18:13	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	0.587	U	1.17	1.17	5.00	2.01	pCi/g	08/31/21 14:29	09/16/21 10:59	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-061-081821

Lab Sample ID: 160-43124-5

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	90.9		30 - 110	08/31/21 14:29	09/16/21 10:59	1

Client Sample ID: FSS-061-081821

Lab Sample ID: 160-43124-5

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 98.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.6		0.28	0.017	mg/Kg	☼	09/12/21 07:16	09/13/21 20:05	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.7	ug/Kg	☼	09/14/21 16:15	09/14/21 20:21	1

Client Sample ID: FSS-261-081821

Lab Sample ID: 160-43124-6

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0776	U J	0.162	0.162	3.00	0.283	pCi/g	09/18/21 17:16	09/30/21 21:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	81.0		40 - 110					09/18/21 17:16	09/30/21 21:45	1
Y Carrier	102		40 - 110					09/18/21 17:16	09/30/21 21:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0241	U	0.244	0.244	1.00	0.444	pCi/g	09/09/21 10:38	09/10/21 23:13	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0175	U	0.0364	0.0364	1.00	0.0718	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Plutonium-239/240	-0.00219	U	0.00430	0.00430	1.00	0.0424	pCi/g	08/31/21 13:44	09/10/21 13:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	92.4		30 - 110					08/31/21 13:44	09/10/21 13:25	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.372		0.121	0.124	1.00	0.0783	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-235/236	-0.00297	U	0.00582	0.00583	1.00	0.0575	pCi/g	08/31/21 14:27	09/10/21 13:46	1
Uranium-238	0.248		0.0952	0.0974	1.00	0.0286	pCi/g	08/31/21 14:27	09/10/21 13:46	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-261-081821

Lab Sample ID: 160-43124-6

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	72.3		30 - 110	08/31/21 14:27	09/10/21 13:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0957	U	0.671	0.672	5.00	1.21	pCi/g	09/16/21 08:54	09/17/21 22:18	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.440		0.208	0.212		0.203	pCi/g	08/26/21 11:31	09/18/21 21:07	1
Bismuth-212	0.884		0.328	0.340		0.233	pCi/g	08/26/21 11:31	09/18/21 21:07	1
Bismuth-214	0.210		0.0948	0.0972		0.106	pCi/g	08/26/21 11:31	09/18/21 21:07	1
Lead-212	0.427		0.0710	0.0893		0.0589	pCi/g	08/26/21 11:31	09/18/21 21:07	1
Lead-214	0.269		0.0776	0.0823		0.0884	pCi/g	08/26/21 11:31	09/18/21 21:07	1
Potassium-40	5.21		0.935	1.07		0.621	pCi/g	08/26/21 11:31	09/18/21 21:07	1
Radium-226	0.210		0.0948	0.0972	1.00	0.106	pCi/g	08/26/21 11:31	09/18/21 21:07	1
Thorium-232	0.440		0.208	0.212		0.203	pCi/g	08/26/21 11:31	09/18/21 21:07	1
Americium-241	-0.0691	U	0.0724	0.0728		0.259	pCi/g	08/26/21 11:31	09/18/21 21:07	1
Cesium-137	-0.0421	U	0.0679	0.0680		0.116	pCi/g	08/26/21 11:31	09/18/21 21:07	1
Cobalt-60	-0.0128	U	0.0608	0.0608		0.0704	pCi/g	08/26/21 11:31	09/18/21 21:07	1
Europium-152	0.188		0.111	0.113		0.0853	pCi/g	08/26/21 11:31	09/18/21 21:07	1
Europium-154	0.00761	U	0.00884	0.00888		0.105	pCi/g	08/26/21 11:31	09/18/21 21:07	1
Europium-155	0.0351	U	0.191	0.191		0.329	pCi/g	08/26/21 11:31	09/18/21 21:07	1
Sodium-22	-0.0357	U	0.0537	0.0538		0.0920	pCi/g	08/26/21 11:31	09/18/21 21:07	1
Zinc-65	-0.0566	U	0.137	0.137		0.240	pCi/g	08/26/21 11:31	09/18/21 21:07	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.57		0.793	0.809	5.00	1.27	pCi/g	09/09/21 16:32	09/19/21 19:19	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	101		40 - 110	09/09/21 16:32	09/19/21 19:19	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.385	U	1.10	1.10	5.00	1.97	pCi/g	08/31/21 14:29	09/16/21 12:05	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	92.4		30 - 110	08/31/21 14:29	09/16/21 12:05	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-261-081821

Lab Sample ID: 160-43124-6

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 96.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.4		0.28	0.017	mg/Kg	☼	09/12/21 07:16	09/13/21 20:08	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/14/21 16:15	09/14/21 20:28	1

Client Sample ID: FSS-062-081821

Lab Sample ID: 160-43124-7

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0148	U J	0.190	0.190	3.00	0.345	pCi/g	09/18/21 17:16	09/30/21 21:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.0		40 - 110					09/18/21 17:16	09/30/21 21:45	1
Y Carrier	89.7		40 - 110					09/18/21 17:16	09/30/21 21:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.108	U	0.234	0.235	1.00	0.450	pCi/g	09/09/21 10:38	09/10/21 23:36	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.000	U	0.0231	0.0231	1.00	0.0612	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	-0.00187	U	0.00366	0.00366	1.00	0.0361	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	109		30 - 110					09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.111		0.0596	0.0603	1.00	0.0392	pCi/g	09/05/21 20:37	09/18/21 21:14	1
Uranium-235/236	0.0101	U	0.0198	0.0198	1.00	0.0303	pCi/g	09/05/21 20:37	09/18/21 21:14	1
Uranium-238	0.115		0.0618	0.0625	1.00	0.0501	pCi/g	09/05/21 20:37	09/18/21 21:14	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	81.3		30 - 110					09/05/21 20:37	09/18/21 21:14	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0797	U	0.554	0.554	5.00	0.939	pCi/g	09/17/21 06:21	09/18/21 06:42	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-062-081821

Lab Sample ID: 160-43124-7

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.538		0.161	0.169		0.188	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Bismuth-212	-0.342	U	0.817	0.818		1.44	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Bismuth-214	0.254		0.121	0.124		0.147	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Lead-212	0.440		0.0928	0.103		0.0932	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Lead-214	0.298		0.0878	0.0927		0.117	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Potassium-40	1.49		0.564	0.583		0.408	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Radium-226	0.254		0.121	0.124	1.00	0.147	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Thorium-232	0.538		0.161	0.169		0.188	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Americium-241	-0.0747	U	0.172	0.173		0.295	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Cesium-137	0.0346	U	0.0659	0.0660		0.115	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Cobalt-60	0.0264	U	0.0183	0.0185		0.0759	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Europium-152	0.0894	U	0.169	0.169		0.195	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Europium-154	0.0307	U	0.135	0.135		0.146	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Europium-155	-0.00302	U	0.00672	0.00673		0.598	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Sodium-22	-0.00709	U	0.0510	0.0510		0.0978	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Zinc-65	0.000	U	0.0263	0.0263		0.295	pCi/g	08/26/21 11:31	09/18/21 21:06	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.62		0.748	0.766	5.00	1.18	pCi/g	09/09/21 16:32	09/19/21 20:25	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	<i>105</i>		<i>40 - 110</i>					<i>09/09/21 16:32</i>	<i>09/19/21 20:25</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.88	U	1.31	1.32	5.00	2.09	pCi/g	09/05/21 20:15	09/28/21 16:17	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	<i>109</i>		<i>30 - 110</i>					<i>09/05/21 20:15</i>	<i>09/28/21 16:17</i>	<i>1</i>

Client Sample ID: FSS-062-081821

Lab Sample ID: 160-43124-7

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 98.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.68		0.28	0.017	mg/Kg	☼	09/12/21 07:16	09/13/21 20:12	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.2	ug/Kg	☼	09/14/21 16:15	09/14/21 20:39	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-063-081821

Lab Sample ID: 160-43124-8

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.180	U J	0.186	0.186	3.00	0.310	pCi/g	09/18/21 17:16	09/30/21 21:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.9		40 - 110					09/18/21 17:16	09/30/21 21:45	1
Y Carrier	102		40 - 110					09/18/21 17:16	09/30/21 21:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.109	U	0.258	0.258	1.00	0.462	pCi/g	09/09/21 10:38	09/10/21 23:59	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0315	U	0.0154	0.0157	1.00	0.0816	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	0.000	U	0.0299	0.0299	1.00	0.0739	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	99.6		30 - 110					09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.323		0.0999	0.103	1.00	0.0551	pCi/g	09/05/21 20:37	09/18/21 21:15	1
Uranium-235/236	0.0120	U	0.0279	0.0279	1.00	0.0596	pCi/g	09/05/21 20:37	09/18/21 21:15	1
Uranium-238	0.234		0.0846	0.0867	1.00	0.0478	pCi/g	09/05/21 20:37	09/18/21 21:15	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	86.5		30 - 110					09/05/21 20:37	09/18/21 21:15	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.214	U	0.527	0.527	5.00	0.908	pCi/g	09/17/21 06:21	09/18/21 07:15	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.475		0.151	0.158		0.0924	pCi/g	08/26/21 11:31	09/20/21 14:05	1
Bismuth-212	0.503	U	1.04	1.04		1.79	pCi/g	08/26/21 11:31	09/20/21 14:05	1
Bismuth-214	0.289		0.109	0.113		0.112	pCi/g	08/26/21 11:31	09/20/21 14:05	1
Lead-212	0.469		0.0945	0.112		0.103	pCi/g	08/26/21 11:31	09/20/21 14:05	1
Lead-214	0.343		0.0927	0.0991		0.0710	pCi/g	08/26/21 11:31	09/20/21 14:05	1
Potassium-40	1.48		0.823	0.837		0.949	pCi/g	08/26/21 11:31	09/20/21 14:05	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-063-081821

Lab Sample ID: 160-43124-8

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.289		0.109	0.113	1.00	0.112	pCi/g	08/26/21 11:31	09/20/21 14:05	1
Thorium-232	0.475		0.151	0.158		0.0924	pCi/g	08/26/21 11:31	09/20/21 14:05	1
Americium-241	-0.0653	U	0.173	0.173		0.297	pCi/g	08/26/21 11:31	09/20/21 14:05	1
Cesium-137	0.0803		0.0324	0.0334		0.0247	pCi/g	08/26/21 11:31	09/20/21 14:05	1
Cobalt-60	0.0131	U	0.0347	0.0347		0.0656	pCi/g	08/26/21 11:31	09/20/21 14:05	1
Europium-152	0.0910	U	0.176	0.176		0.299	pCi/g	08/26/21 11:31	09/20/21 14:05	1
Europium-154	0.0677	U	0.0892	0.0894		0.109	pCi/g	08/26/21 11:31	09/20/21 14:05	1
Europium-155	0.0552	U	0.133	0.133		0.366	pCi/g	08/26/21 11:31	09/20/21 14:05	1
Sodium-22	0.00784	U	0.0324	0.0324		0.0634	pCi/g	08/26/21 11:31	09/20/21 14:05	1
Zinc-65	-0.00467	U	0.102	0.102		0.224	pCi/g	08/26/21 11:31	09/20/21 14:05	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.39		0.712	0.726	5.00	1.14	pCi/g	09/09/21 16:32	09/19/21 21:32	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ni	107		40 - 110					09/09/21 16:32	09/19/21 21:32	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.118	U	1.24	1.24	5.00	2.17	pCi/g	09/05/21 20:15	09/28/21 17:24	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Pu-242 (T)	99.6		30 - 110					09/05/21 20:15	09/28/21 17:24	1

Client Sample ID: FSS-063-081821

Lab Sample ID: 160-43124-8

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 97.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.80		0.29	0.018	mg/Kg	☼	09/12/21 07:16	09/13/21 20:15	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.2	ug/Kg	☼	09/14/21 16:15	09/14/21 20:51	1

Client Sample ID: FSS-064-081821

Lab Sample ID: 160-43124-9

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0370	U J	0.172	0.172	3.00	0.307	pCi/g	09/18/21 17:16	09/30/21 21:45	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-064-081821

Lab Sample ID: 160-43124-9

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	80.8		40 - 110	09/18/21 17:16	09/30/21 21:45	1
Y Carrier	101		40 - 110	09/18/21 17:16	09/30/21 21:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.000	U	0.271	0.271	1.00	0.494	pCi/g	09/09/21 10:38	09/11/21 00:21	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0113	U	0.0215	0.0215	1.00	0.0421	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	0.0132	U	0.0212	0.0212	1.00	0.0364	pCi/g	09/05/21 16:27	09/18/21 21:18	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	98.5		30 - 110	09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.399		0.113	0.118	1.00	0.0543	pCi/g	09/05/21 20:37	09/18/21 21:15	1
Uranium-235/236	0.0278	U	0.0347	0.0348	1.00	0.0490	pCi/g	09/05/21 20:37	09/18/21 21:15	1
Uranium-238	0.258		0.0918	0.0942	1.00	0.0577	pCi/g	09/05/21 20:37	09/18/21 21:15	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	101		30 - 110	09/05/21 20:37	09/18/21 21:15	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.330	U	0.467	0.469	5.00	0.821	pCi/g	09/17/21 06:21	09/18/21 07:49	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.320		0.209	0.212		0.294	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Bismuth-212	0.000	U	0.116	0.116		1.03	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Bismuth-214	0.409		0.106	0.114		0.0840	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Lead-212	0.357		0.0831	0.0946		0.0905	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Lead-214	0.349		0.0950	0.101		0.106	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Potassium-40	0.103	U	0.843	0.843		1.14	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Radium-226	0.409		0.106	0.114	1.00	0.0840	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Thorium-232	0.320		0.209	0.212		0.294	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Americium-241	0.0151	U	0.173	0.173		0.301	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Cesium-137	0.0333	U	0.0639	0.0640		0.111	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Cobalt-60	0.0250	U	0.0219	0.0221		0.0369	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Europium-152	0.0876		0.0696	0.0702		0.0858	pCi/g	08/26/21 11:31	09/18/21 21:06	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-064-081821

Lab Sample ID: 160-43124-9

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0612	U	0.131	0.131		0.120	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Europium-155	0.0645	U	0.201	0.201		0.346	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Sodium-22	-0.0387	U	0.0599	0.0601		0.103	pCi/g	08/26/21 11:31	09/18/21 21:06	1
Zinc-65	-0.0420	U	0.0894	0.0895		0.277	pCi/g	08/26/21 11:31	09/18/21 21:06	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.24	U	0.763	0.774	5.00	1.25	pCi/g	09/09/21 16:32	09/19/21 22:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	105		40 - 110					09/09/21 16:32	09/19/21 22:38	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.90	U	1.46	1.47	5.00	2.35	pCi/g	09/05/21 20:15	09/28/21 17:58	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	98.5		30 - 110					09/05/21 20:15	09/28/21 17:58	1

Client Sample ID: FSS-064-081821

Lab Sample ID: 160-43124-9

Date Collected: 08/18/21 08:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 95.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.99		0.28	0.017	mg/Kg	☼	09/12/21 07:16	09/13/21 20:19	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/14/21 16:15	09/14/21 20:59	1

Client Sample ID: HFBR-021-061821

Lab Sample ID: 160-43124-10

Date Collected: 06/18/21 10:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0245	U J	0.147	0.148	3.00	0.276	pCi/g	09/18/21 17:16	09/30/21 21:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.3		40 - 110					09/18/21 17:16	09/30/21 21:45	1
Y Carrier	100		40 - 110					09/18/21 17:16	09/30/21 21:45	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: HFBR-021-061821

Lab Sample ID: 160-43124-10

Date Collected: 06/18/21 10:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0843	U	0.243	0.243	1.00	0.429	pCi/g	09/09/21 10:38	09/11/21 00:44	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00390	U	0.00541	0.00542	1.00	0.0437	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	0.00781	U	0.0230	0.0230	1.00	0.0522	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110					09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.243		0.0905	0.0927	1.00	0.0619	pCi/g	09/05/21 20:37	09/18/21 21:15	1
Uranium-235/236	0.0179	U	0.0289	0.0289	1.00	0.0496	pCi/g	09/05/21 20:37	09/18/21 21:15	1
Uranium-238	0.278		0.0958	0.0985	1.00	0.0585	pCi/g	09/05/21 20:37	09/18/21 21:15	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	96.7		30 - 110					09/05/21 20:37	09/18/21 21:15	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.494	U	0.525	0.528	5.00	0.934	pCi/g	09/17/21 06:21	09/18/21 08:22	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.347		0.153	0.157		0.134	pCi/g	08/26/21 11:31	09/19/21 20:59	1
Bismuth-212	0.318	U	0.497	0.498		0.853	pCi/g	08/26/21 11:31	09/19/21 20:59	1
Bismuth-214	0.430		0.113	0.121		0.130	pCi/g	08/26/21 11:31	09/19/21 20:59	1
Lead-212	0.381		0.0723	0.0869		0.0707	pCi/g	08/26/21 11:31	09/19/21 20:59	1
Lead-214	0.404		0.0933	0.102		0.0776	pCi/g	08/26/21 11:31	09/19/21 20:59	1
Potassium-40	6.05		1.02	1.19		0.649	pCi/g	08/26/21 11:31	09/19/21 20:59	1
Radium-226	0.430		0.113	0.121	1.00	0.130	pCi/g	08/26/21 11:31	09/19/21 20:59	1
Thorium-232	0.347		0.153	0.157		0.134	pCi/g	08/26/21 11:31	09/19/21 20:59	1
Americium-241	-0.0647	U	0.0767	0.0770		0.232	pCi/g	08/26/21 11:31	09/19/21 20:59	1
Cesium-137	0.0328	U	0.0569	0.0570		0.0979	pCi/g	08/26/21 11:31	09/19/21 20:59	1
Cobalt-60	0.00416	U	0.0152	0.0152		0.0552	pCi/g	08/26/21 11:31	09/19/21 20:59	1
Europium-152	0.132	U	0.0628	0.0642		0.165	pCi/g	08/26/21 11:31	09/19/21 20:59	1
Europium-154	0.0219	U	0.0446	0.0446		0.0980	pCi/g	08/26/21 11:31	09/19/21 20:59	1
Europium-155	-0.000927	U	0.0903	0.0903		0.421	pCi/g	08/26/21 11:31	09/19/21 20:59	1
Sodium-22	0.0270	U	0.0324	0.0325		0.0533	pCi/g	08/26/21 11:31	09/19/21 20:59	1
Zinc-65	0.0453	U	0.0942	0.0943		0.166	pCi/g	08/26/21 11:31	09/19/21 20:59	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: HFBR-021-061821

Lab Sample ID: 160-43124-10

Date Collected: 06/18/21 10:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.85		0.763	0.786	5.00	1.19	pCi/g	09/09/21 16:32	09/19/21 23:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	110		40 - 110					09/09/21 16:32	09/19/21 23:44	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.752	U	1.31	1.31	5.00	2.20	pCi/g	09/05/21 20:15	09/28/21 18:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110					09/05/21 20:15	09/28/21 18:32	1

Client Sample ID: FSS-065-081821

Lab Sample ID: 160-43124-11

Date Collected: 08/18/21 09:30

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.150	U J	0.171	0.171	3.00	0.287	pCi/g	09/18/21 17:16	09/30/21 21:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.0		40 - 110					09/18/21 17:16	09/30/21 21:45	1
Y Carrier	97.9		40 - 110					09/18/21 17:16	09/30/21 21:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0304	U	0.246	0.246	1.00	0.446	pCi/g	09/09/21 10:38	09/11/21 01:07	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0137	U	0.0279	0.0280	1.00	0.0557	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	0.00784	U	0.0154	0.0154	1.00	0.0235	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	92.3		30 - 110					09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.123		0.0694	0.0701	1.00	0.0784	pCi/g	09/05/21 20:37	09/18/21 21:14	1
Uranium-235/236	-0.00247	U	0.0222	0.0222	1.00	0.0702	pCi/g	09/05/21 20:37	09/18/21 21:14	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-065-081821

Lab Sample ID: 160-43124-11

Date Collected: 08/18/21 09:30

Matrix: Solid

Date Received: 08/19/21 09:00

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-238	0.156		0.0695	0.0707	1.00	0.0383	pCi/g	09/05/21 20:37	09/18/21 21:14	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	83.9		30 - 110					09/05/21 20:37	09/18/21 21:14	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.184	U	0.499	0.499	5.00	0.858	pCi/g	09/17/21 06:21	09/18/21 08:56	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.391		0.137	0.142		0.169	pCi/g	08/26/21 11:31	09/19/21 21:01	1
Bismuth-212	0.294	U	0.845	0.845		1.49	pCi/g	08/26/21 11:31	09/19/21 21:01	1
Bismuth-214	0.254		0.125	0.127		0.139	pCi/g	08/26/21 11:31	09/19/21 21:01	1
Lead-212	0.221		0.0754	0.0787		0.0985	pCi/g	08/26/21 11:31	09/19/21 21:01	1
Lead-214	0.284		0.0842	0.0889		0.106	pCi/g	08/26/21 11:31	09/19/21 21:01	1
Potassium-40	4.43		0.921	1.02		0.367	pCi/g	08/26/21 11:31	09/19/21 21:01	1
Radium-226	0.254		0.125	0.127	1.00	0.139	pCi/g	08/26/21 11:31	09/19/21 21:01	1
Thorium-232	0.391		0.137	0.142		0.169	pCi/g	08/26/21 11:31	09/19/21 21:01	1
Americium-241	-0.0661	U	0.169	0.169		0.289	pCi/g	08/26/21 11:31	09/19/21 21:01	1
Cesium-137	0.135		0.0425	0.0446		0.0256	pCi/g	08/26/21 11:31	09/19/21 21:01	1
Cobalt-60	0.00513	U	0.00318	0.00322		0.108	pCi/g	08/26/21 11:31	09/19/21 21:01	1
Europium-152	0.0238	U	0.0446	0.0447		0.154	pCi/g	08/26/21 11:31	09/19/21 21:01	1
Europium-154	0.0584	U	0.0832	0.0835		0.0942	pCi/g	08/26/21 11:31	09/19/21 21:01	1
Europium-155	-0.0826	U	0.286	0.286		0.489	pCi/g	08/26/21 11:31	09/19/21 21:01	1
Sodium-22	0.0303	U	0.0394	0.0395		0.0660	pCi/g	08/26/21 11:31	09/19/21 21:01	1
Zinc-65	0.000	U	0.0473	0.0473		0.222	pCi/g	08/26/21 11:31	09/19/21 21:01	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.42		0.784	0.797	5.00	1.26	pCi/g	09/09/21 16:32	09/20/21 00:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	103		40 - 110					09/09/21 16:32	09/20/21 00:50	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.19	U	1.45	1.45	5.00	2.40	pCi/g	09/05/21 20:15	09/28/21 19:05	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	92.3		30 - 110					09/05/21 20:15	09/28/21 19:05	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-065-081821

Lab Sample ID: 160-43124-11

Date Collected: 08/18/21 09:30

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 96.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	12		0.30	0.018	mg/Kg	☼	09/12/21 07:16	09/13/21 20:22	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/14/21 16:15	09/14/21 21:01	1

Client Sample ID: FSS-066-081821

Lab Sample ID: 160-43124-12

Date Collected: 08/18/21 09:30

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.139	U J	0.193	0.193	3.00	0.328	pCi/g	09/18/21 17:16	09/30/21 21:45	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Sr Carrier</i>	80.7		40 - 110					09/18/21 17:16	09/30/21 21:45	1
<i>Y Carrier</i>	99.4		40 - 110					09/18/21 17:16	09/30/21 21:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.000	U	0.234	0.234	1.00	0.426	pCi/g	09/09/21 10:38	09/11/21 01:29	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00396	U	0.0296	0.0296	1.00	0.0698	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	-0.00396	U	0.0182	0.0182	1.00	0.0595	pCi/g	09/05/21 16:27	09/18/21 21:18	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	95.8		30 - 110					09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.176		0.0741	0.0755	1.00	0.0563	pCi/g	09/05/21 20:37	09/18/21 21:14	1
Uranium-235/236	-0.00234	U	0.00458	0.00458	1.00	0.0452	pCi/g	09/05/21 20:37	09/18/21 21:14	1
Uranium-238	0.249		0.0859	0.0883	1.00	0.0463	pCi/g	09/05/21 20:37	09/18/21 21:14	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Uranium-232</i>	88.2		30 - 110					09/05/21 20:37	09/18/21 21:14	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.359	U	0.591	0.592	5.00	1.03	pCi/g	09/17/21 06:21	09/18/21 09:29	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-066-081821

Lab Sample ID: 160-43124-12

Date Collected: 08/18/21 09:30

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.327		0.101	0.106		0.0723	pCi/g	08/26/21 11:31	09/19/21 21:33	1
Bismuth-212	-0.169	U	0.623	0.623		1.11	pCi/g	08/26/21 11:31	09/19/21 21:33	1
Bismuth-214	0.278		0.0975	0.102		0.0968	pCi/g	08/26/21 11:31	09/19/21 21:33	1
Lead-212	0.220		0.0599	0.0661		0.0713	pCi/g	08/26/21 11:31	09/19/21 21:33	1
Lead-214	0.250		0.0866	0.0903		0.113	pCi/g	08/26/21 11:31	09/19/21 21:33	1
Potassium-40	4.61		0.888	1.00		0.623	pCi/g	08/26/21 11:31	09/19/21 21:33	1
Radium-226	0.278		0.0975	0.102	1.00	0.0968	pCi/g	08/26/21 11:31	09/19/21 21:33	1
Thorium-232	0.327		0.101	0.106		0.0723	pCi/g	08/26/21 11:31	09/19/21 21:33	1
Americium-241	0.00650	U	0.117	0.117		0.204	pCi/g	08/26/21 11:31	09/19/21 21:33	1
Cesium-137	0.0199	U	0.0347	0.0348		0.0604	pCi/g	08/26/21 11:31	09/19/21 21:33	1
Cobalt-60	-0.0128	U	0.0610	0.0610		0.0707	pCi/g	08/26/21 11:31	09/19/21 21:33	1
Europium-152	0.0349	U	0.0397	0.0399		0.141	pCi/g	08/26/21 11:31	09/19/21 21:33	1
Europium-154	0.0495	U	0.0891	0.0892		0.104	pCi/g	08/26/21 11:31	09/19/21 21:33	1
Europium-155	0.0198	U	0.0709	0.0709		0.355	pCi/g	08/26/21 11:31	09/19/21 21:33	1
Sodium-22	0.00865	U	0.0269	0.0269		0.0512	pCi/g	08/26/21 11:31	09/19/21 21:33	1
Zinc-65	0.0000000	U	0.111	0.111		0.205	pCi/g	08/26/21 11:31	09/19/21 21:33	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.59		0.750	0.767	5.00	1.19	pCi/g	09/09/21 16:32	09/20/21 01:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	107		40 - 110					09/09/21 16:32	09/20/21 01:56	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.43	U	1.38	1.38	5.00	2.25	pCi/g	09/05/21 20:15	09/28/21 19:39	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	95.8		30 - 110					09/05/21 20:15	09/28/21 19:39	1

Client Sample ID: FSS-066-081821

Lab Sample ID: 160-43124-12

Date Collected: 08/18/21 09:30

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 96.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	9.2		0.29	0.018	mg/Kg	☼	09/12/21 07:16	09/13/21 20:26	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/14/21 16:15	09/14/21 21:04	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-181-081821

Lab Sample ID: 160-43124-13

Date Collected: 08/18/21 09:30

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.182	U J	0.167	0.168	3.00	0.275	pCi/g	09/18/21 17:16	09/30/21 21:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.4		40 - 110					09/18/21 17:16	09/30/21 21:45	1
Y Carrier	99.1		40 - 110					09/18/21 17:16	09/30/21 21:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.128	U	0.228	0.229	1.00	0.438	pCi/g	09/09/21 10:38	09/11/21 01:52	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0336	U	0.0235	0.0237	1.00	0.0902	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	-0.00988	U	0.0194	0.0194	1.00	0.0673	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110					09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.234		0.0828	0.0850	1.00	0.0541	pCi/g	09/05/21 20:37	09/18/21 21:14	1
Uranium-235/236	0.00672	U	0.0181	0.0181	1.00	0.0434	pCi/g	09/05/21 20:37	09/18/21 21:14	1
Uranium-238	0.180		0.0722	0.0737	1.00	0.0480	pCi/g	09/05/21 20:37	09/18/21 21:14	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	94.3		30 - 110					09/05/21 20:37	09/18/21 21:14	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.595	U	0.545	0.548	5.00	0.975	pCi/g	09/17/21 06:21	09/18/21 10:03	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.177	U	0.234	0.235		0.352	pCi/g	08/26/21 11:31	09/19/21 21:32	1
Bismuth-212	0.237	U	0.479	0.480		0.851	pCi/g	08/26/21 11:31	09/19/21 21:32	1
Bismuth-214	0.310		0.114	0.118		0.128	pCi/g	08/26/21 11:31	09/19/21 21:32	1
Lead-212	0.445		0.117	0.126		0.159	pCi/g	08/26/21 11:31	09/19/21 21:32	1
Lead-214	0.322		0.0882	0.0938		0.105	pCi/g	08/26/21 11:31	09/19/21 21:32	1
Potassium-40	4.72		0.975	1.08		0.386	pCi/g	08/26/21 11:31	09/19/21 21:32	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-181-081821

Lab Sample ID: 160-43124-13

Date Collected: 08/18/21 09:30

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.310		0.114	0.118	1.00	0.128	pCi/g	08/26/21 11:31	09/19/21 21:32	1
Thorium-232	0.177	U	0.234	0.235		0.352	pCi/g	08/26/21 11:31	09/19/21 21:32	1
Americium-241	0.0459	U	0.171	0.171		0.294	pCi/g	08/26/21 11:31	09/19/21 21:32	1
Cesium-137	0.0262	U	0.0627	0.0628		0.110	pCi/g	08/26/21 11:31	09/19/21 21:32	1
Cobalt-60	0.0313	U	0.0164	0.0167		0.0718	pCi/g	08/26/21 11:31	09/19/21 21:32	1
Europium-152	0.0770	U	0.0801	0.0805		0.193	pCi/g	08/26/21 11:31	09/19/21 21:32	1
Europium-154	0.0710	U	0.0881	0.0884		0.130	pCi/g	08/26/21 11:31	09/19/21 21:32	1
Europium-155	0.0781	U	0.288	0.288		0.493	pCi/g	08/26/21 11:31	09/19/21 21:32	1
Sodium-22	0.00671	U	0.0351	0.0351		0.0694	pCi/g	08/26/21 11:31	09/19/21 21:32	1
Zinc-65	-0.164	U	0.256	0.256		0.435	pCi/g	08/26/21 11:31	09/19/21 21:32	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.82		0.784	0.806	5.00	1.24	pCi/g	09/09/21 16:32	09/20/21 03:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	102		40 - 110					09/09/21 16:32	09/20/21 03:03	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.136	U	1.25	1.25	5.00	2.22	pCi/g	09/05/21 20:15	09/28/21 20:12	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110					09/05/21 20:15	09/28/21 20:12	1

Client Sample ID: FSS-181-081821

Lab Sample ID: 160-43124-13

Date Collected: 08/18/21 09:30

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 96.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.9		0.28	0.017	mg/Kg	☼	09/12/21 07:16	09/13/21 20:29	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/14/21 16:15	09/14/21 21:07	1

Client Sample ID: FSS-067-081821

Lab Sample ID: 160-43124-14

Date Collected: 08/18/21 09:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.407	J	0.229	0.231	3.00	0.356	pCi/g	09/18/21 17:16	09/30/21 21:46	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-067-081821

Lab Sample ID: 160-43124-14

Date Collected: 08/18/21 09:00

Matrix: Solid

Date Received: 08/19/21 09:00

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	77.9		40 - 110	09/18/21 17:16	09/30/21 21:46	1
Y Carrier	95.3		40 - 110	09/18/21 17:16	09/30/21 21:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.154	U	0.214	0.214	1.00	0.413	pCi/g	09/09/21 10:38	09/11/21 02:15	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00421	U	0.0193	0.0193	1.00	0.0632	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	0.0400	U	0.0372	0.0373	1.00	0.0408	pCi/g	09/05/21 16:27	09/18/21 21:18	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	102		30 - 110	09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.230		0.0839	0.0860	1.00	0.0437	pCi/g	09/05/21 20:37	09/18/21 21:14	1
Uranium-235/236	0.0291		0.0329	0.0330	1.00	0.0291	pCi/g	09/05/21 20:37	09/18/21 21:14	1
Uranium-238	0.195		0.0763	0.0779	1.00	0.0233	pCi/g	09/05/21 20:37	09/18/21 21:14	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	88.4		30 - 110	09/05/21 20:37	09/18/21 21:14	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.258	U	0.527	0.528	5.00	0.912	pCi/g	09/17/21 06:21	09/18/21 10:36	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.372		0.154	0.158		0.132	pCi/g	08/26/21 11:31	09/19/21 22:12	1
Bismuth-212	0.142	U	0.536	0.537		0.961	pCi/g	08/26/21 11:31	09/19/21 22:12	1
Bismuth-214	0.266		0.0940	0.0978		0.104	pCi/g	08/26/21 11:31	09/19/21 22:12	1
Lead-212	0.413		0.0727	0.0896		0.0659	pCi/g	08/26/21 11:31	09/19/21 22:12	1
Lead-214	0.304		0.0778	0.0837		0.101	pCi/g	08/26/21 11:31	09/19/21 22:12	1
Potassium-40	5.27		0.955	1.09		0.638	pCi/g	08/26/21 11:31	09/19/21 22:12	1
Radium-226	0.266		0.0940	0.0978	1.00	0.104	pCi/g	08/26/21 11:31	09/19/21 22:12	1
Thorium-232	0.372		0.154	0.158		0.132	pCi/g	08/26/21 11:31	09/19/21 22:12	1
Americium-241	0.0529	U	0.117	0.117		0.200	pCi/g	08/26/21 11:31	09/19/21 22:12	1
Cesium-137	0.193		0.0481	0.0520		0.0289	pCi/g	08/26/21 11:31	09/19/21 22:12	1
Cobalt-60	-0.00262	U	0.0435	0.0435		0.0543	pCi/g	08/26/21 11:31	09/19/21 22:12	1
Europium-152	0.0710	U	0.110	0.111		0.148	pCi/g	08/26/21 11:31	09/19/21 22:12	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-067-081821

Lab Sample ID: 160-43124-14

Date Collected: 08/18/21 09:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	-0.0147	U	0.0563	0.0563		0.0982	pCi/g	08/26/21 11:31	09/19/21 22:12	1
Europium-155	0.0166	U	0.0985	0.0985		0.400	pCi/g	08/26/21 11:31	09/19/21 22:12	1
Sodium-22	-0.0190	U	0.0465	0.0465		0.0832	pCi/g	08/26/21 11:31	09/19/21 22:12	1
Zinc-65	0.0271	U	0.109	0.109		0.196	pCi/g	08/26/21 11:31	09/19/21 22:12	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.38		0.735	0.749	5.00	1.18	pCi/g	09/09/21 16:32	09/20/21 04:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	106		40 - 110					09/09/21 16:32	09/20/21 04:09	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.741	U	1.31	1.31	5.00	2.22	pCi/g	09/05/21 20:15	09/28/21 20:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	102		30 - 110					09/05/21 20:15	09/28/21 20:46	1

Client Sample ID: FSS-067-081821

Lab Sample ID: 160-43124-14

Date Collected: 08/18/21 09:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 97.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.5		0.28	0.017	mg/Kg	☼	09/12/21 07:16	09/13/21 20:33	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/14/21 16:15	09/14/21 21:09	1

Client Sample ID: FSS-068-081821

Lab Sample ID: 160-43124-15

Date Collected: 08/18/21 09:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.00626	U J	0.195	0.195	3.00	0.358	pCi/g	09/18/21 17:16	09/30/21 21:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	65.6		40 - 110					09/18/21 17:16	09/30/21 21:46	1
Y Carrier	96.1		40 - 110					09/18/21 17:16	09/30/21 21:46	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-068-081821

Lab Sample ID: 160-43124-15

Date Collected: 08/18/21 09:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.000	U	0.243	0.243	1.00	0.446	pCi/g	09/09/21 10:38	09/11/21 02:37	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00590	U	0.0235	0.0235	1.00	0.0560	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	0.00985	U	0.0228	0.0229	1.00	0.0487	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.5		30 - 110					09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.175		0.0749	0.0763	1.00	0.0455	pCi/g	09/05/21 20:37	09/18/21 21:14	1
Uranium-235/236	0.0202	U	0.0280	0.0281	1.00	0.0303	pCi/g	09/05/21 20:37	09/18/21 21:14	1
Uranium-238	0.162		0.0711	0.0723	1.00	0.0243	pCi/g	09/05/21 20:37	09/18/21 21:14	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	83.6		30 - 110					09/05/21 20:37	09/18/21 21:14	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0611	U	0.530	0.530	5.00	0.897	pCi/g	09/17/21 06:21	09/18/21 11:10	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.282		0.211	0.213		0.224	pCi/g	08/26/21 11:31	09/19/21 22:14	1
Bismuth-212	-0.293	U	0.808	0.809		1.42	pCi/g	08/26/21 11:31	09/19/21 22:14	1
Bismuth-214	0.0594	U	0.121	0.121		0.369	pCi/g	08/26/21 11:31	09/19/21 22:14	1
Lead-212	0.286		0.0756	0.0810		0.0855	pCi/g	08/26/21 11:31	09/19/21 22:14	1
Lead-214	0.271		0.0948	0.0986		0.103	pCi/g	08/26/21 11:31	09/19/21 22:14	1
Potassium-40	3.83		0.856	0.936		0.367	pCi/g	08/26/21 11:31	09/19/21 22:14	1
Radium-226	0.0594	U	0.121	0.121	1.00	0.369	pCi/g	08/26/21 11:31	09/19/21 22:14	1
Thorium-232	0.282		0.211	0.213		0.224	pCi/g	08/26/21 11:31	09/19/21 22:14	1
Americium-241	-0.0743	U	0.166	0.166		0.284	pCi/g	08/26/21 11:31	09/19/21 22:14	1
Cesium-137	0.117		0.0526	0.0539		0.0500	pCi/g	08/26/21 11:31	09/19/21 22:14	1
Cobalt-60	0.0355	U	0.0180	0.0183		0.0364	pCi/g	08/26/21 11:31	09/19/21 22:14	1
Europium-152	0.0957	U	0.0689	0.0696		0.143	pCi/g	08/26/21 11:31	09/19/21 22:14	1
Europium-154	0.114	U	0.0543	0.0556		0.122	pCi/g	08/26/21 11:31	09/19/21 22:14	1
Europium-155	0.000	U	0.0889	0.0889		0.466	pCi/g	08/26/21 11:31	09/19/21 22:14	1
Sodium-22	-0.0191	U	0.0577	0.0577		0.105	pCi/g	08/26/21 11:31	09/19/21 22:14	1
Zinc-65	-0.0780	U	0.166	0.166		0.289	pCi/g	08/26/21 11:31	09/19/21 22:14	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-068-081821

Lab Sample ID: 160-43124-15

Date Collected: 08/18/21 09:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.70		0.777	0.796	5.00	1.23	pCi/g	09/09/21 16:32	09/20/21 05:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	104		40 - 110					09/09/21 16:32	09/20/21 05:15	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.05	U	1.43	1.43	5.00	2.38	pCi/g	09/05/21 20:15	09/28/21 21:19	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.5		30 - 110					09/05/21 20:15	09/28/21 21:19	1

Client Sample ID: FSS-068-081821

Lab Sample ID: 160-43124-15

Date Collected: 08/18/21 09:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 94.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	12		0.30	0.018	mg/Kg	☼	09/12/21 07:16	09/13/21 20:44	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/14/21 16:15	09/14/21 21:12	1

Client Sample ID: FSS-069-081821

Lab Sample ID: 160-43124-16

Date Collected: 08/18/21 09:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.170	U J	0.185	0.186	3.00	0.311	pCi/g	09/18/21 17:16	09/30/21 21:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.1		40 - 110					09/18/21 17:16	09/30/21 21:46	1
Y Carrier	97.6		40 - 110					09/18/21 17:16	09/30/21 21:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0850	U	0.240	0.241	1.00	0.461	pCi/g	09/09/21 10:38	09/11/21 03:00	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-069-081821

Lab Sample ID: 160-43124-16

Date Collected: 08/18/21 09:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	0.0108	U	0.0131	0.0131	1.00	0.0201	pCi/g	09/05/21 16:27	09/20/21 11:29	1
Plutonium-239/240	0.00120	U	0.00738	0.00738	1.00	0.0202	pCi/g	09/05/21 16:27	09/20/21 11:29	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.9		30 - 110					09/05/21 16:27	09/20/21 11:29	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.258		0.0916	0.0940	1.00	0.0406	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-235/236	0.0287	U	0.0358	0.0359	1.00	0.0505	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-238	0.190		0.0809	0.0824	1.00	0.0595	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.0		30 - 110					09/05/21 20:37	09/18/21 21:20	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.528	U	0.717	0.719	5.00	1.22	pCi/g	09/20/21 09:08	09/21/21 10:59	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.259	U	0.112	0.115		0.261	pCi/g	08/26/21 11:31	09/19/21 22:44	1
Bismuth-212	0.142	U	0.512	0.512		0.919	pCi/g	08/26/21 11:31	09/19/21 22:44	1
Bismuth-214	0.341		0.104	0.109		0.0957	pCi/g	08/26/21 11:31	09/19/21 22:44	1
Lead-212	0.317		0.0692	0.0800		0.0760	pCi/g	08/26/21 11:31	09/19/21 22:44	1
Lead-214	0.322		0.0816	0.0879		0.0719	pCi/g	08/26/21 11:31	09/19/21 22:44	1
Potassium-40	4.43		0.884	0.989		0.636	pCi/g	08/26/21 11:31	09/19/21 22:44	1
Radium-226	0.341		0.104	0.109	1.00	0.0957	pCi/g	08/26/21 11:31	09/19/21 22:44	1
Thorium-232	0.259	U	0.112	0.115		0.261	pCi/g	08/26/21 11:31	09/19/21 22:44	1
Americium-241	-0.0709	U	0.0544	0.0548		0.265	pCi/g	08/26/21 11:31	09/19/21 22:44	1
Cesium-137	0.135		0.0403	0.0426		0.0269	pCi/g	08/26/21 11:31	09/19/21 22:44	1
Cobalt-60	0.0154	U	0.0293	0.0293		0.0542	pCi/g	08/26/21 11:31	09/19/21 22:44	1
Europium-152	0.0415	U	0.0495	0.0496		0.151	pCi/g	08/26/21 11:31	09/19/21 22:44	1
Europium-154	0.0976		0.0428	0.0439		0.0969	pCi/g	08/26/21 11:31	09/19/21 22:44	1
Europium-155	-0.000909	U	0.0646	0.0646		0.231	pCi/g	08/26/21 11:31	09/19/21 22:44	1
Sodium-22	-0.00505	U	0.0364	0.0364		0.0697	pCi/g	08/26/21 11:31	09/19/21 22:44	1
Zinc-65	0.0461	U	0.113	0.113		0.199	pCi/g	08/26/21 11:31	09/19/21 22:44	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.54		0.758	0.774	5.00	1.21	pCi/g	09/09/21 16:32	09/20/21 06:21	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-069-081821

Lab Sample ID: 160-43124-16

Date Collected: 08/18/21 09:00

Matrix: Solid

Date Received: 08/19/21 09:00

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	107		40 - 110	09/09/21 16:32	09/20/21 06:21	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.0507	U	1.42	1.42	5.00	2.52	pCi/g	09/05/21 20:15	09/28/21 21:54	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.9		30 - 110	09/05/21 20:15	09/28/21 21:54	1

Client Sample ID: FSS-069-081821

Lab Sample ID: 160-43124-16

Date Collected: 08/18/21 09:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 95.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.9		0.31	0.019	mg/Kg	☼	09/12/21 07:16	09/13/21 20:47	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.6	ug/Kg	☼	09/14/21 16:15	09/14/21 21:14	1

Client Sample ID: FSS-070-081821

Lab Sample ID: 160-43124-17

Date Collected: 08/18/21 09:45

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.113	U J	0.176	0.176	3.00	0.303	pCi/g	09/18/21 17:16	09/30/21 21:46	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	82.5		40 - 110	09/18/21 17:16	09/30/21 21:46	1
Y Carrier	96.8		40 - 110	09/18/21 17:16	09/30/21 21:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0423	U	0.235	0.235	1.00	0.420	pCi/g	09/09/21 10:38	09/11/21 03:22	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00169	U	0.00332	0.00332	1.00	0.0328	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	0.0119	U	0.0191	0.0191	1.00	0.0328	pCi/g	09/05/21 16:27	09/18/21 21:18	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	98.2		30 - 110	09/05/21 16:27	09/18/21 21:18	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-070-081821

Lab Sample ID: 160-43124-17

Date Collected: 08/18/21 09:45

Matrix: Solid

Date Received: 08/19/21 09:00

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Uranium-233/234	0.195		0.0789	0.0805	1.00	0.0496	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-235/236	0.0200	U	0.0277	0.0277	1.00	0.0299	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-238	0.214		0.0816	0.0835	1.00	0.0387	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	79.5		30 - 110					09/05/21 20:37	09/18/21 21:20	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Carbon-14	0.0631	U	0.503	0.503	5.00	0.890	pCi/g	09/20/21 09:08	09/21/21 12:07	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Actinium 228	0.463		0.269	0.273		0.275	pCi/g	08/26/21 11:31	09/19/21 22:45	1
Bismuth-212	0.000	U	0.508	0.508		1.22	pCi/g	08/26/21 11:31	09/19/21 22:45	1
Bismuth-214	0.424		0.123	0.130		0.120	pCi/g	08/26/21 11:31	09/19/21 22:45	1
Lead-212	0.476		0.0957	0.107		0.102	pCi/g	08/26/21 11:31	09/19/21 22:45	1
Lead-214	0.321		0.0951	0.100		0.132	pCi/g	08/26/21 11:31	09/19/21 22:45	1
Potassium-40	4.41		0.932	1.03		0.378	pCi/g	08/26/21 11:31	09/19/21 22:45	1
Radium-226	0.424		0.123	0.130	1.00	0.120	pCi/g	08/26/21 11:31	09/19/21 22:45	1
Thorium-232	0.463		0.269	0.273		0.275	pCi/g	08/26/21 11:31	09/19/21 22:45	1
Americium-241	-0.0401	U	0.164	0.164		0.283	pCi/g	08/26/21 11:31	09/19/21 22:45	1
Cesium-137	0.00872	U	0.0746	0.0746		0.134	pCi/g	08/26/21 11:31	09/19/21 22:45	1
Cobalt-60	0.0111	U	0.0191	0.0192		0.0703	pCi/g	08/26/21 11:31	09/19/21 22:45	1
Europium-152	0.0406	U	0.0503	0.0505		0.200	pCi/g	08/26/21 11:31	09/19/21 22:45	1
Europium-154	0.0975	U	0.100	0.101		0.118	pCi/g	08/26/21 11:31	09/19/21 22:45	1
Europium-155	-0.0958	U	0.339	0.339		0.579	pCi/g	08/26/21 11:31	09/19/21 22:45	1
Sodium-22	-0.0312	U	0.0520	0.0520		0.0906	pCi/g	08/26/21 11:31	09/19/21 22:45	1
Zinc-65	0.000	U	0.0244	0.0244		0.190	pCi/g	08/26/21 11:31	09/19/21 22:45	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	2.47		0.758	0.799	5.00	1.13	pCi/g	09/09/21 16:32	09/20/21 07:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	111	Q	40 - 110					09/09/21 16:32	09/20/21 07:27	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	0.207	U	1.19	1.19	5.00	2.06	pCi/g	09/05/21 20:15	09/28/21 22:27	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-070-081821

Lab Sample ID: 160-43124-17

Date Collected: 08/18/21 09:45

Matrix: Solid

Date Received: 08/19/21 09:00

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	98.2		30 - 110	09/05/21 20:15	09/28/21 22:27	1

Client Sample ID: FSS-070-081821

Lab Sample ID: 160-43124-17

Date Collected: 08/18/21 09:45

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 96.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.1		0.31	0.019	mg/Kg	☼	09/12/21 07:16	09/13/21 20:51	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/14/21 16:15	09/14/21 21:17	1

Client Sample ID: FSS-071-081821

Lab Sample ID: 160-43124-18

Date Collected: 08/18/21 09:45

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.275	J	0.171	0.172	3.00	0.266	pCi/g	09/18/21 17:16	09/30/21 21:46	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Sr Carrier	79.1		40 - 110					09/18/21 17:16	09/30/21 21:46	1
Y Carrier	101		40 - 110					09/18/21 17:16	09/30/21 21:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.00604	U	0.248	0.248	1.00	0.461	pCi/g	09/09/21 10:38	09/11/21 03:45	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00188	U	0.00369	0.00369	1.00	0.0364	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	0.000	U	0.00369	0.00369	1.00	0.0226	pCi/g	09/05/21 16:27	09/18/21 21:18	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Pu-242 (T)	91.5		30 - 110					09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.135		0.0634	0.0644	1.00	0.0457	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-235/236	0.0345	U	0.0363	0.0364	1.00	0.0445	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-238	0.188		0.0739	0.0755	1.00	0.0413	pCi/g	09/05/21 20:37	09/18/21 21:20	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-071-081821

Lab Sample ID: 160-43124-18

Date Collected: 08/18/21 09:45

Matrix: Solid

Date Received: 08/19/21 09:00

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	89.3		30 - 110	09/05/21 20:37	09/18/21 21:20	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.0295	U	0.700	0.700	5.00	1.25	pCi/g	09/20/21 09:08	09/21/21 12:30	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.196		0.147	0.148		0.182	pCi/g	08/26/21 11:31	09/19/21 23:15	1
Bismuth-212	-0.419	U	0.709	0.711		1.22	pCi/g	08/26/21 11:31	09/19/21 23:15	1
Bismuth-214	0.369		0.109	0.115		0.101	pCi/g	08/26/21 11:31	09/19/21 23:15	1
Lead-212	0.368		0.0690	0.0834		0.0607	pCi/g	08/26/21 11:31	09/19/21 23:15	1
Lead-214	0.340		0.0848	0.0916		0.0871	pCi/g	08/26/21 11:31	09/19/21 23:15	1
Potassium-40	2.96		0.764	0.819		0.662	pCi/g	08/26/21 11:31	09/19/21 23:15	1
Radium-226	0.369		0.109	0.115	1.00	0.101	pCi/g	08/26/21 11:31	09/19/21 23:15	1
Thorium-232	0.196		0.147	0.148		0.182	pCi/g	08/26/21 11:31	09/19/21 23:15	1
Americium-241	-0.0350	U	0.0286	0.0288		0.158	pCi/g	08/26/21 11:31	09/19/21 23:15	1
Cesium-137	0.0205	U	0.0501	0.0501		0.0880	pCi/g	08/26/21 11:31	09/19/21 23:15	1
Cobalt-60	0.0490		0.0277	0.0281		0.0301	pCi/g	08/26/21 11:31	09/19/21 23:15	1
Europium-152	0.0533	U	0.107	0.107		0.144	pCi/g	08/26/21 11:31	09/19/21 23:15	1
Europium-154	-0.00298	U	0.0519	0.0519		0.0923	pCi/g	08/26/21 11:31	09/19/21 23:15	1
Europium-155	-0.000946	U	0.0358	0.0358		0.455	pCi/g	08/26/21 11:31	09/19/21 23:15	1
Sodium-22	-0.0171	U	0.0401	0.0402		0.0725	pCi/g	08/26/21 11:31	09/19/21 23:15	1
Zinc-65	0.0145	U	0.111	0.111		0.203	pCi/g	08/26/21 11:31	09/19/21 23:15	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.34		0.726	0.739	5.00	1.17	pCi/g	09/09/21 16:32	09/20/21 08:34	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	104		40 - 110	09/09/21 16:32	09/20/21 08:34	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.605	U	1.39	1.39	5.00	2.39	pCi/g	09/05/21 20:15	09/28/21 23:01	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	91.5		30 - 110	09/05/21 20:15	09/28/21 23:01	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-071-081821

Lab Sample ID: 160-43124-18

Date Collected: 08/18/21 09:45

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 98.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.6		0.28	0.017	mg/Kg	☼	09/12/21 07:16	09/13/21 20:54	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/14/21 16:15	09/14/21 21:19	1

Client Sample ID: FSS-072-081821

Lab Sample ID: 160-43124-19

Date Collected: 08/18/21 09:45

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.106	U J	0.162	0.162	3.00	0.277	pCi/g	09/18/21 17:16	09/30/21 21:46	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Sr Carrier</i>	81.6		40 - 110					09/18/21 17:16	09/30/21 21:46	1
<i>Y Carrier</i>	102		40 - 110					09/18/21 17:16	09/30/21 21:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.151	U	0.225	0.225	1.00	0.434	pCi/g	09/09/21 10:38	09/11/21 04:08	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0202	U	0.0201	0.0201	1.00	0.0745	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	-0.0331	U	0.0153	0.0155	1.00	0.0795	pCi/g	09/05/21 16:27	09/18/21 21:18	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	91.7		30 - 110					09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.226		0.0852	0.0872	1.00	0.0709	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-235/236	0.00229	U	0.0196	0.0196	1.00	0.0567	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-238	0.237		0.0845	0.0868	1.00	0.0578	pCi/g	09/05/21 20:37	09/18/21 21:20	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Uranium-232</i>	83.3		30 - 110					09/05/21 20:37	09/18/21 21:20	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.0298	U	0.624	0.624	5.00	1.12	pCi/g	09/20/21 09:08	09/21/21 12:52	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-072-081821

Lab Sample ID: 160-43124-19

Date Collected: 08/18/21 09:45

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.355		0.110	0.115		0.293	pCi/g	08/26/21 11:31	09/19/21 23:53	1
Bismuth-212	0.495	U	0.902	0.903		1.56	pCi/g	08/26/21 11:31	09/19/21 23:53	1
Bismuth-214	0.458		0.125	0.133		0.116	pCi/g	08/26/21 11:31	09/19/21 23:53	1
Lead-212	0.406		0.0957	0.104		0.110	pCi/g	08/26/21 11:31	09/19/21 23:53	1
Lead-214	0.386		0.0993	0.106		0.143	pCi/g	08/26/21 11:31	09/19/21 23:53	1
Potassium-40	4.16		0.935	1.02		0.403	pCi/g	08/26/21 11:31	09/19/21 23:53	1
Radium-226	0.458		0.125	0.133	1.00	0.116	pCi/g	08/26/21 11:31	09/19/21 23:53	1
Thorium-232	0.355		0.110	0.115		0.293	pCi/g	08/26/21 11:31	09/19/21 23:53	1
Americium-241	0.0607	U	0.168	0.168		0.289	pCi/g	08/26/21 11:31	09/19/21 23:53	1
Cesium-137	0.0197	U	0.0412	0.0412		0.0734	pCi/g	08/26/21 11:31	09/19/21 23:53	1
Cobalt-60	-0.0181	U	0.0863	0.0863		0.0999	pCi/g	08/26/21 11:31	09/19/21 23:53	1
Europium-152	-0.0139	U	0.0284	0.0284		0.205	pCi/g	08/26/21 11:31	09/19/21 23:53	1
Europium-154	-0.0141	U	0.0294	0.0294		0.140	pCi/g	08/26/21 11:31	09/19/21 23:53	1
Europium-155	0.0667	U	0.118	0.118		0.274	pCi/g	08/26/21 11:31	09/19/21 23:53	1
Sodium-22	0.0140	U	0.0518	0.0518		0.0966	pCi/g	08/26/21 11:31	09/19/21 23:53	1
Zinc-65	-0.0581	U	0.188	0.188		0.332	pCi/g	08/26/21 11:31	09/19/21 23:53	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.10	U	0.724	0.733	5.00	1.18	pCi/g	09/09/21 16:32	09/20/21 09:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	105		40 - 110					09/09/21 16:32	09/20/21 09:40	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.400	U	1.40	1.40	5.00	2.46	pCi/g	09/05/21 20:15	09/28/21 23:34	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	91.7		30 - 110					09/05/21 20:15	09/28/21 23:34	1

Client Sample ID: FSS-072-081821

Lab Sample ID: 160-43124-19

Date Collected: 08/18/21 09:45

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 97.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.8		0.29	0.018	mg/Kg	☼	09/12/21 07:16	09/13/21 20:58	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/14/21 16:15	09/14/21 21:22	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-073-081821

Lab Sample ID: 160-43124-20

Date Collected: 08/18/21 10:30

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.00750	U J	0.167	0.167	3.00	0.310	pCi/g	09/18/21 17:16	09/30/21 21:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	67.7		40 - 110					09/18/21 17:16	09/30/21 21:46	1
Y Carrier	98.7		40 - 110					09/18/21 17:16	09/30/21 21:46	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0689	U	0.238	0.238	1.00	0.421	pCi/g	09/09/21 10:43	09/11/21 11:32	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00386	U	0.00535	0.00536	1.00	0.0432	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	-0.00386	U	0.00535	0.00536	1.00	0.0433	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	91.0		30 - 110					09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.105		0.0645	0.0651	1.00	0.0754	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-235/236	0.0200	U	0.0278	0.0278	1.00	0.0300	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-238	0.249		0.0894	0.0917	1.00	0.0536	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	80.8		30 - 110					09/05/21 20:37	09/18/21 21:20	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0847	U	0.728	0.729	5.00	1.31	pCi/g	09/20/21 09:08	09/21/21 13:15	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.576		0.172	0.181		0.105	pCi/g	08/26/21 11:31	09/19/21 23:16	1
Bismuth-212	0.834		0.385	0.394		0.341	pCi/g	08/26/21 11:31	09/19/21 23:16	1
Bismuth-214	0.428		0.149	0.155		0.158	pCi/g	08/26/21 11:31	09/19/21 23:16	1
Lead-212	0.424		0.0986	0.108		0.114	pCi/g	08/26/21 11:31	09/19/21 23:16	1
Lead-214	0.439		0.109	0.118		0.124	pCi/g	08/26/21 11:31	09/19/21 23:16	1
Potassium-40	5.61		1.09	1.22		0.406	pCi/g	08/26/21 11:31	09/19/21 23:16	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-073-081821

Lab Sample ID: 160-43124-20

Date Collected: 08/18/21 10:30

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.428		0.149	0.155	1.00	0.158	pCi/g	08/26/21 11:31	09/19/21 23:16	1
Thorium-232	0.576		0.172	0.181		0.105	pCi/g	08/26/21 11:31	09/19/21 23:16	1
Americium-241	0.0742	U	0.168	0.168		0.288	pCi/g	08/26/21 11:31	09/19/21 23:16	1
Cesium-137	0.0344	U	0.0627	0.0628		0.109	pCi/g	08/26/21 11:31	09/19/21 23:16	1
Cobalt-60	0.0546		0.0234	0.0240		0.0403	pCi/g	08/26/21 11:31	09/19/21 23:16	1
Europium-152	0.116	U	0.161	0.162		0.193	pCi/g	08/26/21 11:31	09/19/21 23:16	1
Europium-154	0.0763	U	0.110	0.110		0.145	pCi/g	08/26/21 11:31	09/19/21 23:16	1
Europium-155	0.0000000	U	0.254	0.254		0.441	pCi/g	08/26/21 11:31	09/19/21 23:16	1
	100									
Sodium-22	-0.0475	U	0.0679	0.0680		0.116	pCi/g	08/26/21 11:31	09/19/21 23:16	1
Zinc-65	0.000	U	0.0185	0.0185		0.262	pCi/g	08/26/21 11:31	09/19/21 23:16	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.22	U	0.764	0.774	5.00	1.24	pCi/g	09/09/21 16:32	09/20/21 10:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	97.9		40 - 110					09/09/21 16:32	09/20/21 10:46	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.319	U	1.33	1.33	5.00	2.39	pCi/g	09/05/21 20:15	09/29/21 00:08	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	91.0		30 - 110					09/05/21 20:15	09/29/21 00:08	1

Client Sample ID: FSS-073-081821

Lab Sample ID: 160-43124-20

Date Collected: 08/18/21 10:30

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 98.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.3		0.30	0.018	mg/Kg	☼	09/12/21 07:16	09/13/21 21:01	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/14/21 16:15	09/14/21 21:29	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-074-081821

Lab Sample ID: 160-43124-21

Date Collected: 08/18/21 10:30

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0339	U	0.177	0.177	3.00	0.317	pCi/g	09/18/21 16:37	09/30/21 21:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.7		40 - 110					09/18/21 16:37	09/30/21 21:30	1
Y Carrier	96.1		40 - 110					09/18/21 16:37	09/30/21 21:30	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0955	U	0.219	0.219	1.00	0.375	pCi/g	09/09/21 10:43	09/11/21 11:55	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.000	U	0.00377	0.00377	1.00	0.0231	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	0.000	U	0.00377	0.00377	1.00	0.0231	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	88.3		30 - 110					09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.257		0.0900	0.0924	1.00	0.0493	pCi/g	09/05/21 20:37	09/20/21 20:54	1
Uranium-235/236	0.0173	U	0.0279	0.0279	1.00	0.0480	pCi/g	09/05/21 20:37	09/20/21 20:54	1
Uranium-238	0.203		0.0797	0.0814	1.00	0.0445	pCi/g	09/05/21 20:37	09/20/21 20:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	85.3		30 - 110					09/05/21 20:37	09/20/21 20:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.235	U	0.571	0.571	5.00	0.994	pCi/g	09/20/21 09:08	09/21/21 13:38	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.272		0.141	0.144		0.132	pCi/g	08/26/21 12:50	09/18/21 09:43	1
Bismuth-212	0.159	U	0.882	0.882		1.55	pCi/g	08/26/21 12:50	09/18/21 09:43	1
Bismuth-214	0.261		0.0897	0.0936		0.0944	pCi/g	08/26/21 12:50	09/18/21 09:43	1
Lead-212	0.387		0.0692	0.0848		0.0592	pCi/g	08/26/21 12:50	09/18/21 09:43	1
Lead-214	0.279		0.108	0.112		0.106	pCi/g	08/26/21 12:50	09/18/21 09:43	1
Potassium-40	4.22		0.869	0.966		0.640	pCi/g	08/26/21 12:50	09/18/21 09:43	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-074-081821

Lab Sample ID: 160-43124-21

Date Collected: 08/18/21 10:30

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.261		0.0897	0.0936	1.00	0.0944	pCi/g	08/26/21 12:50	09/18/21 09:43	1
Thorium-232	0.272		0.141	0.144		0.132	pCi/g	08/26/21 12:50	09/18/21 09:43	1
Americium-241	0.0553	U	0.121	0.121		0.207	pCi/g	08/26/21 12:50	09/18/21 09:43	1
Cesium-137	-0.0152	U	0.0535	0.0535		0.0947	pCi/g	08/26/21 12:50	09/18/21 09:43	1
Cobalt-60	-0.0500	U	0.0907	0.0909		0.0984	pCi/g	08/26/21 12:50	09/18/21 09:43	1
Europium-152	-0.0557	U	0.0989	0.0991		0.169	pCi/g	08/26/21 12:50	09/18/21 09:43	1
Europium-154	0.0422	U	0.0797	0.0798		0.116	pCi/g	08/26/21 12:50	09/18/21 09:43	1
Europium-155	-0.000915	U	0.142	0.142		0.367	pCi/g	08/26/21 12:50	09/18/21 09:43	1
Sodium-22	0.0165	U	0.0296	0.0296		0.0526	pCi/g	08/26/21 12:50	09/18/21 09:43	1
Zinc-65	-0.0000000 0161	U	0.114	0.114		0.210	pCi/g	08/26/21 12:50	09/18/21 09:43	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.25		0.734	0.745	5.00	1.18	pCi/g	09/13/21 15:48	09/23/21 23:47	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	98.2		40 - 110					09/13/21 15:48	09/23/21 23:47	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.15	U	1.49	1.50	5.00	2.48	pCi/g	09/05/21 20:15	09/29/21 00:42	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	88.3		30 - 110					09/05/21 20:15	09/29/21 00:42	1

Client Sample ID: FSS-074-081821

Lab Sample ID: 160-43124-21

Date Collected: 08/18/21 10:30

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 97.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.82		0.29	0.017	mg/Kg	☼	09/12/21 07:16	09/13/21 21:05	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.1	ug/Kg	☼	09/14/21 16:15	09/14/21 21:32	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-075-081821

Lab Sample ID: 160-43124-22

Date Collected: 08/18/21 10:30

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0936	U	0.210	0.210	3.00	0.366	pCi/g	09/18/21 16:37	09/30/21 21:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	71.7		40 - 110					09/18/21 16:37	09/30/21 21:32	1
Y Carrier	97.9		40 - 110					09/18/21 16:37	09/30/21 21:32	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0358	U	0.214	0.214	1.00	0.377	pCi/g	09/09/21 10:43	09/11/21 12:17	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00207	U	0.00407	0.00407	1.00	0.0402	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	0.00831	U	0.0163	0.0163	1.00	0.0249	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	82.4		30 - 110					09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.322		0.103	0.106	1.00	0.0413	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-235/236	0.0106	U	0.0208	0.0208	1.00	0.0318	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-238	0.264		0.0947	0.0972	1.00	0.0568	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.3		30 - 110					09/05/21 20:37	09/18/21 21:20	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0172	U	0.568	0.568	5.00	1.02	pCi/g	09/20/21 09:08	09/21/21 14:00	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.580		0.116	0.130		0.134	pCi/g	08/26/21 12:50	09/20/21 11:34	1
Bismuth-212	0.313	U	0.534	0.535		0.921	pCi/g	08/26/21 12:50	09/20/21 11:34	1
Bismuth-214	0.312		0.0944	0.0996		0.0892	pCi/g	08/26/21 12:50	09/20/21 11:34	1
Lead-212	0.466		0.0777	0.0976		0.0709	pCi/g	08/26/21 12:50	09/20/21 11:34	1
Lead-214	0.342		0.0777	0.0852		0.105	pCi/g	08/26/21 12:50	09/20/21 11:34	1
Potassium-40	3.29		1.21	1.25		1.16	pCi/g	08/26/21 12:50	09/20/21 11:34	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-075-081821

Lab Sample ID: 160-43124-22

Date Collected: 08/18/21 10:30

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.312		0.0944	0.0996	1.00	0.0892	pCi/g	08/26/21 12:50	09/20/21 11:34	1
Thorium-232	0.580		0.116	0.130		0.134	pCi/g	08/26/21 12:50	09/20/21 11:34	1
Americium-241	0.0462	U	0.113	0.114		0.195	pCi/g	08/26/21 12:50	09/20/21 11:34	1
Cesium-137	-0.00804	U	0.0501	0.0501		0.0902	pCi/g	08/26/21 12:50	09/20/21 11:34	1
Cobalt-60	0.00922	U	0.0379	0.0379		0.0544	pCi/g	08/26/21 12:50	09/20/21 11:34	1
Europium-152	0.0655	U	0.157	0.158		0.142	pCi/g	08/26/21 12:50	09/20/21 11:34	1
Europium-154	0.0319	U	0.0630	0.0631		0.0935	pCi/g	08/26/21 12:50	09/20/21 11:34	1
Europium-155	0.0541	U	0.224	0.224		0.384	pCi/g	08/26/21 12:50	09/20/21 11:34	1
Sodium-22	-0.00127	U	0.0357	0.0357		0.0699	pCi/g	08/26/21 12:50	09/20/21 11:34	1
Zinc-65	0.00727	U	0.113	0.113		0.207	pCi/g	08/26/21 12:50	09/20/21 11:34	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.977	U	0.691	0.699	5.00	1.13	pCi/g	09/13/21 15:48	09/24/21 00:54	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	105		40 - 110					09/13/21 15:48	09/24/21 00:54	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.311	U	1.54	1.54	5.00	2.68	pCi/g	09/05/21 20:15	09/29/21 01:15	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	82.4		30 - 110					09/05/21 20:15	09/29/21 01:15	1

Client Sample ID: FSS-075-081821

Lab Sample ID: 160-43124-22

Date Collected: 08/18/21 10:30

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 98.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.5		0.30	0.018	mg/Kg	☼	09/12/21 07:16	09/13/21 21:23	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.2	ug/Kg	☼	09/14/21 16:15	09/14/21 21:34	1

Client Sample ID: FSS-076-081821

Lab Sample ID: 160-43124-23

Date Collected: 08/18/21 10:45

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.258	U	0.201	0.202	3.00	0.326	pCi/g	09/18/21 16:37	09/30/21 21:32	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-076-081821

Lab Sample ID: 160-43124-23

Date Collected: 08/18/21 10:45

Matrix: Solid

Date Received: 08/19/21 09:00

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	78.0		40 - 110	09/18/21 16:37	09/30/21 21:32	1
Y Carrier	94.6		40 - 110	09/18/21 16:37	09/30/21 21:32	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.131	U	0.230	0.230	1.00	0.394	pCi/g	09/09/21 10:43	09/11/21 12:40	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00202	U	0.00395	0.00396	1.00	0.0391	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	0.00202	U	0.0173	0.0173	1.00	0.0500	pCi/g	09/05/21 16:27	09/18/21 21:18	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	82.9		30 - 110	09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.274		0.0908	0.0936	1.00	0.0432	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-235/236	0.0144	U	0.0274	0.0274	1.00	0.0537	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-238	0.212		0.0800	0.0819	1.00	0.0431	pCi/g	09/05/21 20:37	09/18/21 21:20	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	90.6		30 - 110	09/05/21 20:37	09/18/21 21:20	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.240	U	0.614	0.614	5.00	1.07	pCi/g	09/20/21 09:08	09/21/21 14:23	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.447		0.138	0.145		0.0823	pCi/g	08/26/21 12:50	09/18/21 09:44	1
Bismuth-212	-0.250	U	0.691	0.691		1.22	pCi/g	08/26/21 12:50	09/18/21 09:44	1
Bismuth-214	0.375		0.0940	0.101		0.0727	pCi/g	08/26/21 12:50	09/18/21 09:44	1
Lead-212	0.417		0.0804	0.0962		0.0805	pCi/g	08/26/21 12:50	09/18/21 09:44	1
Lead-214	0.383		0.0826	0.0913		0.0828	pCi/g	08/26/21 12:50	09/18/21 09:44	1
Potassium-40	4.08		0.894	0.983		0.673	pCi/g	08/26/21 12:50	09/18/21 09:44	1
Radium-226	0.375		0.0940	0.101	1.00	0.0727	pCi/g	08/26/21 12:50	09/18/21 09:44	1
Thorium-232	0.447		0.138	0.145		0.0823	pCi/g	08/26/21 12:50	09/18/21 09:44	1
Americium-241	0.0591	U	0.159	0.159		0.272	pCi/g	08/26/21 12:50	09/18/21 09:44	1
Cesium-137	0.0894		0.0415	0.0425		0.0363	pCi/g	08/26/21 12:50	09/18/21 09:44	1
Cobalt-60	-0.0549	U	0.104	0.104		0.116	pCi/g	08/26/21 12:50	09/18/21 09:44	1
Europium-152	0.0676	U	0.0999	0.100		0.162	pCi/g	08/26/21 12:50	09/18/21 09:44	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-076-081821

Lab Sample ID: 160-43124-23

Date Collected: 08/18/21 10:45

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0443	U	0.0769	0.0771		0.107	pCi/g	08/26/21 12:50	09/18/21 09:44	1
Europium-155	-0.00424	U	0.128	0.128		0.338	pCi/g	08/26/21 12:50	09/18/21 09:44	1
Sodium-22	-0.0126	U	0.0486	0.0486		0.0894	pCi/g	08/26/21 12:50	09/18/21 09:44	1
Zinc-65	-0.0937	U	0.106	0.107		0.289	pCi/g	08/26/21 12:50	09/18/21 09:44	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.933	U	0.944	0.949	5.00	1.57	pCi/g	09/13/21 15:48	09/21/21 17:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	89.9		40 - 110					09/13/21 15:48	09/21/21 17:16	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.0867	U	1.63	1.63	5.00	2.93	pCi/g	09/05/21 20:15	09/29/21 01:49	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	82.9		30 - 110					09/05/21 20:15	09/29/21 01:49	1

Client Sample ID: FSS-076-081821

Lab Sample ID: 160-43124-23

Date Collected: 08/18/21 10:45

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 97.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	12		0.30	0.018	mg/Kg	☼	09/12/21 07:16	09/13/21 21:40	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	J	18	6.0	ug/Kg	☼	09/14/21 16:15	09/14/21 21:37	1

Client Sample ID: FSS-077-081821

Lab Sample ID: 160-43124-24

Date Collected: 08/18/21 10:45

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.136	U	0.195	0.195	3.00	0.372	pCi/g	09/18/21 16:37	09/30/21 21:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	74.6		40 - 110					09/18/21 16:37	09/30/21 21:33	1
Y Carrier	95.0		40 - 110					09/18/21 16:37	09/30/21 21:33	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-077-081821

Lab Sample ID: 160-43124-24

Date Collected: 08/18/21 10:45

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.102	U	0.225	0.225	1.00	0.387	pCi/g	09/09/21 10:43	09/11/21 13:03	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00603	U	0.00682	0.00684	1.00	0.0497	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	-0.00402	U	0.00558	0.00559	1.00	0.0451	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	88.8		30 - 110					09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.337		0.0986	0.102	1.00	0.0415	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-235/236	0.0161	U	0.0260	0.0260	1.00	0.0446	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-238	0.229		0.0823	0.0844	1.00	0.0494	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	89.2		30 - 110					09/05/21 20:37	09/18/21 21:20	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.147	U	0.711	0.711	5.00	1.25	pCi/g	09/20/21 09:08	09/21/21 14:46	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.354		0.111	0.117		0.0670	pCi/g	08/26/21 12:50	09/20/21 11:36	1
Bismuth-212	0.287	U	0.452	0.453		0.777	pCi/g	08/26/21 12:50	09/20/21 11:36	1
Bismuth-214	0.320		0.0956	0.101		0.0901	pCi/g	08/26/21 12:50	09/20/21 11:36	1
Lead-212	0.470		0.0696	0.0916		0.0506	pCi/g	08/26/21 12:50	09/20/21 11:36	1
Lead-214	0.374		0.0752	0.0843		0.0820	pCi/g	08/26/21 12:50	09/20/21 11:36	1
Potassium-40	4.99		0.829	0.968		0.264	pCi/g	08/26/21 12:50	09/20/21 11:36	1
Radium-226	0.320		0.0956	0.101	1.00	0.0901	pCi/g	08/26/21 12:50	09/20/21 11:36	1
Thorium-232	0.354		0.111	0.117		0.0670	pCi/g	08/26/21 12:50	09/20/21 11:36	1
Americium-241	-0.0563	U	0.142	0.142		0.243	pCi/g	08/26/21 12:50	09/20/21 11:36	1
Cesium-137	0.103		0.0359	0.0374		0.0272	pCi/g	08/26/21 12:50	09/20/21 11:36	1
Cobalt-60	0.0111	U	0.0194	0.0195		0.0262	pCi/g	08/26/21 12:50	09/20/21 11:36	1
Europium-152	0.0750	U	0.115	0.115		0.150	pCi/g	08/26/21 12:50	09/20/21 11:36	1
Europium-154	0.0258	U	0.0350	0.0351		0.105	pCi/g	08/26/21 12:50	09/20/21 11:36	1
Europium-155	0.000	U	0.0752	0.0752		0.401	pCi/g	08/26/21 12:50	09/20/21 11:36	1
Sodium-22	0.0195	U	0.0358	0.0359		0.0632	pCi/g	08/26/21 12:50	09/20/21 11:36	1
Zinc-65	0.0411	U	0.0886	0.0887		0.156	pCi/g	08/26/21 12:50	09/20/21 11:36	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-077-081821

Lab Sample ID: 160-43124-24

Date Collected: 08/18/21 10:45

Matrix: Solid

Date Received: 08/19/21 09:00

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.13	U	0.894	0.902	5.00	1.48	pCi/g	09/13/21 15:48	09/21/21 18:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	98.4		40 - 110					09/13/21 15:48	09/21/21 18:22	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.685	U	1.53	1.53	5.00	2.64	pCi/g	09/05/21 20:15	09/29/21 02:22	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	88.8		30 - 110					09/05/21 20:15	09/29/21 02:22	1

Client Sample ID: FSS-077-081821

Lab Sample ID: 160-43124-24

Date Collected: 08/18/21 10:45

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 97.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.2		0.30	0.018	mg/Kg	☼	09/12/21 07:16	09/13/21 21:44	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.2	ug/Kg	☼	09/14/21 16:15	09/14/21 21:40	1

Client Sample ID: FSS-078-081821

Lab Sample ID: 160-43124-25

Date Collected: 08/18/21 10:45

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.109	U	0.172	0.172	3.00	0.297	pCi/g	09/18/21 16:37	09/30/21 21:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	75.9		40 - 110					09/18/21 16:37	09/30/21 21:35	1
Y Carrier	98.7		40 - 110					09/18/21 16:37	09/30/21 21:35	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0854	U	0.221	0.221	1.00	0.380	pCi/g	09/09/21 10:43	09/11/21 13:26	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-078-081821

Lab Sample ID: 160-43124-25

Date Collected: 08/18/21 10:45

Matrix: Solid

Date Received: 08/19/21 09:00

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	-0.00186	U	0.00365	0.00366	1.00	0.0361	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	-0.00187	U	0.00366	0.00366	1.00	0.0361	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	92.1		30 - 110					09/05/21 16:27	09/18/21 21:18	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.275		0.0956	0.0983	1.00	0.0557	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-235/236	0.0285	U	0.0356	0.0357	1.00	0.0502	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-238	0.214		0.0832	0.0851	1.00	0.0403	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	81.7		30 - 110					09/05/21 20:37	09/18/21 21:20	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.0631	U	0.703	0.703	5.00	1.25	pCi/g	09/20/21 09:08	09/21/21 15:08	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.627		0.182	0.192		0.108	pCi/g	08/26/21 12:50	09/18/21 10:26	1
Bismuth-212	0.574	U	1.04	1.04		1.79	pCi/g	08/26/21 12:50	09/18/21 10:26	1
Bismuth-214	0.688		0.187	0.199		0.172	pCi/g	08/26/21 12:50	09/18/21 10:26	1
Lead-212	0.350		0.0911	0.0979		0.106	pCi/g	08/26/21 12:50	09/18/21 10:26	1
Lead-214	0.576		0.148	0.159		0.141	pCi/g	08/26/21 12:50	09/18/21 10:26	1
Potassium-40	5.96		1.14	1.28		0.418	pCi/g	08/26/21 12:50	09/18/21 10:26	1
Radium-226	0.688		0.187	0.199	1.00	0.172	pCi/g	08/26/21 12:50	09/18/21 10:26	1
Thorium-232	0.627		0.182	0.192		0.108	pCi/g	08/26/21 12:50	09/18/21 10:26	1
Americium-241	0.0274	U	0.168	0.168		0.291	pCi/g	08/26/21 12:50	09/18/21 10:26	1
Cesium-137	-0.00913	U	0.0604	0.0604		0.110	pCi/g	08/26/21 12:50	09/18/21 10:26	1
Cobalt-60	-0.0300	U	0.0908	0.0908		0.104	pCi/g	08/26/21 12:50	09/18/21 10:26	1
Europium-152	0.0740	U	0.114	0.114		0.213	pCi/g	08/26/21 12:50	09/18/21 10:26	1
Europium-154	0.0880	U	0.115	0.115		0.148	pCi/g	08/26/21 12:50	09/18/21 10:26	1
Europium-155	0.0322	U	0.177	0.178		0.310	pCi/g	08/26/21 12:50	09/18/21 10:26	1
Sodium-22	-0.0327	U	0.0675	0.0675		0.119	pCi/g	08/26/21 12:50	09/18/21 10:26	1
Zinc-65	0.000750	U	0.179	0.179		0.327	pCi/g	08/26/21 12:50	09/18/21 10:26	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.178	U	0.918	0.918	5.00	1.63	pCi/g	09/13/21 15:48	09/21/21 19:29	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-078-081821

Lab Sample ID: 160-43124-25

Date Collected: 08/18/21 10:45

Matrix: Solid

Date Received: 08/19/21 09:00

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	96.3		40 - 110	09/13/21 15:48	09/21/21 19:29	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.610	U	1.39	1.39	5.00	2.37	pCi/g	09/05/21 20:15	09/29/21 02:56	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	92.1		30 - 110	09/05/21 20:15	09/29/21 02:56	1

Client Sample ID: FSS-078-081821

Lab Sample ID: 160-43124-25

Date Collected: 08/18/21 10:45

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 95.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.2		0.29	0.017	mg/Kg	☼	09/12/21 07:16	09/13/21 21:54	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	6.0	ug/Kg	☼	09/14/21 16:15	09/14/21 21:42	1

Client Sample ID: FSS-079-081821

Lab Sample ID: 160-43124-26

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0808	U	0.162	0.162	3.00	0.311	pCi/g	09/18/21 16:37	09/30/21 21:35	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	75.6		40 - 110	09/18/21 16:37	09/30/21 21:35	1
Y Carrier	99.4		40 - 110	09/18/21 16:37	09/30/21 21:35	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0159	U	0.215	0.215	1.00	0.380	pCi/g	09/09/21 10:43	09/11/21 13:48	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0149	U	0.0263	0.0264	1.00	0.0498	pCi/g	09/05/21 16:27	09/18/21 21:18	1
Plutonium-239/240	0.00560	U	0.0151	0.0151	1.00	0.0361	pCi/g	09/05/21 16:27	09/18/21 21:18	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	88.7		30 - 110	09/05/21 16:27	09/18/21 21:18	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-079-081821

Lab Sample ID: 160-43124-26

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.221		0.0785	0.0806	1.00	0.0348	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-235/236	-0.00224	U	0.00438	0.00439	1.00	0.0433	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Uranium-238	0.242		0.0821	0.0845	1.00	0.0347	pCi/g	09/05/21 20:37	09/18/21 21:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	87.8		30 - 110					09/05/21 20:37	09/18/21 21:20	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.123	U	0.716	0.716	5.00	1.26	pCi/g	09/20/21 09:08	09/21/21 15:31	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.241	U	0.176	0.178		0.247	pCi/g	08/26/21 12:50	09/20/21 11:37	1
Bismuth-212	-0.0117	U	0.491	0.491		0.917	pCi/g	08/26/21 12:50	09/20/21 11:37	1
Bismuth-214	0.371		0.0945	0.102		0.0704	pCi/g	08/26/21 12:50	09/20/21 11:37	1
Lead-212	0.347		0.0741	0.0862		0.0784	pCi/g	08/26/21 12:50	09/20/21 11:37	1
Lead-214	0.351		0.0827	0.0901		0.0999	pCi/g	08/26/21 12:50	09/20/21 11:37	1
Potassium-40	4.46		0.912	1.02		0.652	pCi/g	08/26/21 12:50	09/20/21 11:37	1
Radium-226	0.371		0.0945	0.102	1.00	0.0704	pCi/g	08/26/21 12:50	09/20/21 11:37	1
Thorium-232	0.241	U	0.176	0.178		0.247	pCi/g	08/26/21 12:50	09/20/21 11:37	1
Americium-241	0.00335	U	0.117	0.117		0.165	pCi/g	08/26/21 12:50	09/20/21 11:37	1
Cesium-137	0.292		0.0571	0.0644		0.0213	pCi/g	08/26/21 12:50	09/20/21 11:37	1
Cobalt-60	0.0214	U	0.0311	0.0312		0.0565	pCi/g	08/26/21 12:50	09/20/21 11:37	1
Europium-152	0.106	U	0.138	0.139		0.150	pCi/g	08/26/21 12:50	09/20/21 11:37	1
Europium-154	0.0178	U	0.0287	0.0288		0.116	pCi/g	08/26/21 12:50	09/20/21 11:37	1
Europium-155	-0.0888	U	0.0599	0.0606		0.405	pCi/g	08/26/21 12:50	09/20/21 11:37	1
Sodium-22	-0.0230	U	0.0413	0.0414		0.0727	pCi/g	08/26/21 12:50	09/20/21 11:37	1
Zinc-65	-0.000205	U	0.132	0.132		0.241	pCi/g	08/26/21 12:50	09/20/21 11:37	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.375	U	0.898	0.899	5.00	1.55	pCi/g	09/13/21 15:48	09/21/21 20:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	93.9		40 - 110					09/13/21 15:48	09/21/21 20:35	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	0.272	U	1.34	1.34	5.00	2.33	pCi/g	09/05/21 20:15	09/29/21 03:29	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-079-081821

Lab Sample ID: 160-43124-26

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	88.7		30 - 110	09/05/21 20:15	09/29/21 03:29	1

Client Sample ID: FSS-079-081821

Lab Sample ID: 160-43124-26

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 96.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	24		0.27	0.017	mg/Kg	☼	09/12/21 07:16	09/13/21 21:58	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	10	J	19	6.1	ug/Kg	☼	09/14/21 16:15	09/14/21 21:45	1

Client Sample ID: FSS-279-081821

Lab Sample ID: 160-43124-27

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0786	U	0.189	0.190	3.00	0.333	pCi/g	09/18/21 16:37	09/30/21 21:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	73.4		40 - 110					09/18/21 16:37	09/30/21 21:35	1
Y Carrier	98.7		40 - 110					09/18/21 16:37	09/30/21 21:35	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0494	U	0.228	0.228	1.00	0.403	pCi/g	09/09/21 10:43	09/11/21 14:11	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0106	U	0.0390	0.0390	1.00	0.0873	pCi/g	09/05/21 17:56	09/14/21 17:40	1
Plutonium-239/240	-0.00266	U	0.00522	0.00523	1.00	0.0516	pCi/g	09/05/21 17:56	09/14/21 17:40	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	76.1		30 - 110					09/05/21 17:56	09/14/21 17:40	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0642	U	0.0932	0.0934	1.00	0.163	pCi/g	09/05/21 20:32	09/15/21 22:19	1
Uranium-235/236	-0.0200	U	0.0333	0.0333	1.00	0.117	pCi/g	09/05/21 20:32	09/15/21 22:19	1
Uranium-238	0.224		0.101	0.103	1.00	0.0876	pCi/g	09/05/21 20:32	09/15/21 22:19	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-279-081821

Lab Sample ID: 160-43124-27

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	67.8		30 - 110	09/05/21 20:32	09/15/21 22:19	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.281	U	0.450	0.451	5.00	0.773	pCi/g	09/20/21 09:08	09/21/21 15:54	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.277		0.150	0.153		0.146	pCi/g	08/26/21 12:50	09/18/21 10:27	1
Bismuth-212	-0.0155	U	0.538	0.538		1.00	pCi/g	08/26/21 12:50	09/18/21 10:27	1
Bismuth-214	0.240		0.0827	0.0862		0.0851	pCi/g	08/26/21 12:50	09/18/21 10:27	1
Lead-212	0.394		0.0806	0.0949		0.0842	pCi/g	08/26/21 12:50	09/18/21 10:27	1
Lead-214	0.284		0.0911	0.0956		0.0913	pCi/g	08/26/21 12:50	09/18/21 10:27	1
Potassium-40	3.44		0.958	1.02		0.862	pCi/g	08/26/21 12:50	09/18/21 10:27	1
Radium-226	0.240		0.0827	0.0862	1.00	0.0851	pCi/g	08/26/21 12:50	09/18/21 10:27	1
Thorium-232	0.277		0.150	0.153		0.146	pCi/g	08/26/21 12:50	09/18/21 10:27	1
Americium-241	-0.0719	U	0.188	0.188		0.321	pCi/g	08/26/21 12:50	09/18/21 10:27	1
Cesium-137	0.232		0.0522	0.0573		0.0225	pCi/g	08/26/21 12:50	09/18/21 10:27	1
Cobalt-60	0.0206	U	0.0492	0.0492		0.0596	pCi/g	08/26/21 12:50	09/18/21 10:27	1
Europium-152	0.0684	U	0.135	0.135		0.144	pCi/g	08/26/21 12:50	09/18/21 10:27	1
Europium-154	0.0449	U	0.102	0.102		0.109	pCi/g	08/26/21 12:50	09/18/21 10:27	1
Europium-155	0.0554	U	0.118	0.118		0.324	pCi/g	08/26/21 12:50	09/18/21 10:27	1
Sodium-22	0.0214	U	0.0187	0.0188		0.0315	pCi/g	08/26/21 12:50	09/18/21 10:27	1
Zinc-65	-0.0560	U	0.101	0.101		0.254	pCi/g	08/26/21 12:50	09/18/21 10:27	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	15.9		1.44	2.17	5.00	1.53	pCi/g	09/13/21 15:48	09/21/21 22:47	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	90.9		40 - 110	09/13/21 15:48	09/21/21 22:47	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.46	U	1.62	1.62	5.00	2.74	pCi/g	09/05/21 20:20	09/24/21 17:15	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	76.1		30 - 110	09/05/21 20:20	09/24/21 17:15	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-279-081821

Lab Sample ID: 160-43124-27

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 96.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	25		0.28	0.017	mg/Kg	☼	09/12/21 07:16	09/13/21 22:01	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	9.8	J	19	6.1	ug/Kg	☼	09/14/21 16:15	09/14/21 21:47	1

Client Sample ID: FSS-080-081821

Lab Sample ID: 160-43124-28

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.173	U	0.209	0.210	3.00	0.354	pCi/g	09/18/21 16:37	09/30/21 21:36	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Sr Carrier</i>	67.8		40 - 110					09/18/21 16:37	09/30/21 21:36	1
<i>Y Carrier</i>	98.3		40 - 110					09/18/21 16:37	09/30/21 21:36	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.131	U	0.239	0.239	1.00	0.411	pCi/g	09/09/21 10:43	09/11/21 14:33	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0202	U	0.0280	0.0281	1.00	0.0453	pCi/g	09/05/21 17:56	09/14/21 17:39	1
Plutonium-239/240	0.00607	U	0.0163	0.0164	1.00	0.0392	pCi/g	09/05/21 17:56	09/14/21 17:39	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	91.2		30 - 110					09/05/21 17:56	09/14/21 17:39	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.218		0.0885	0.0903	1.00	0.0678	pCi/g	09/05/21 20:32	09/16/21 11:21	1
Uranium-235/236	0.00537	U	0.0223	0.0223	1.00	0.0601	pCi/g	09/05/21 20:32	09/16/21 11:21	1
Uranium-238	0.237		0.0914	0.0935	1.00	0.0646	pCi/g	09/05/21 20:32	09/16/21 11:21	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Uranium-232</i>	82.0		30 - 110					09/05/21 20:32	09/16/21 11:21	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.257	U	0.708	0.708	5.00	1.23	pCi/g	09/21/21 10:06	09/22/21 15:33	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-080-081821

Lab Sample ID: 160-43124-28

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.362		0.131	0.136		0.102	pCi/g	08/26/21 12:50	09/20/21 12:11	1
Bismuth-212	0.0491	U	0.517	0.517		0.941	pCi/g	08/26/21 12:50	09/20/21 12:11	1
Bismuth-214	0.311		0.0813	0.0873		0.0750	pCi/g	08/26/21 12:50	09/20/21 12:11	1
Lead-212	0.355		0.0688	0.0822		0.0729	pCi/g	08/26/21 12:50	09/20/21 12:11	1
Lead-214	0.310		0.0775	0.0836		0.0982	pCi/g	08/26/21 12:50	09/20/21 12:11	1
Potassium-40	3.92		0.794	0.886		0.579	pCi/g	08/26/21 12:50	09/20/21 12:11	1
Radium-226	0.311		0.0813	0.0873	1.00	0.0750	pCi/g	08/26/21 12:50	09/20/21 12:11	1
Thorium-232	0.362		0.131	0.136		0.102	pCi/g	08/26/21 12:50	09/20/21 12:11	1
Americium-241	0.0519	U	0.119	0.119		0.203	pCi/g	08/26/21 12:50	09/20/21 12:11	1
Cesium-137	0.238		0.0616	0.0662		0.0733	pCi/g	08/26/21 12:50	09/20/21 12:11	1
Cobalt-60	-0.0286	U	0.0705	0.0705		0.0783	pCi/g	08/26/21 12:50	09/20/21 12:11	1
Europium-152	0.0543	U	0.0753	0.0755		0.137	pCi/g	08/26/21 12:50	09/20/21 12:11	1
Europium-154	-0.0139	U	0.0618	0.0618		0.107	pCi/g	08/26/21 12:50	09/20/21 12:11	1
Europium-155	0.0541	U	0.132	0.132		0.397	pCi/g	08/26/21 12:50	09/20/21 12:11	1
Sodium-22	0.0241	U	0.0179	0.0180		0.0254	pCi/g	08/26/21 12:50	09/20/21 12:11	1
Zinc-65	0.000	U	0.0120	0.0120		0.190	pCi/g	08/26/21 12:50	09/20/21 12:11	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.0924	U	1.01	1.01	5.00	1.75	pCi/g	09/13/21 15:48	09/21/21 23:53	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	<i>80.1</i>		<i>40 - 110</i>					<i>09/13/21 15:48</i>	<i>09/21/21 23:53</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.294	U	1.20	1.20	5.00	2.13	pCi/g	09/05/21 20:20	09/24/21 19:27	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	<i>91.2</i>		<i>30 - 110</i>					<i>09/05/21 20:20</i>	<i>09/24/21 19:27</i>	<i>1</i>

Client Sample ID: FSS-080-081821

Lab Sample ID: 160-43124-28

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 96.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	17		0.30	0.018	mg/Kg	☼	09/12/21 07:16	09/13/21 22:05	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.2	ug/Kg	☼	09/14/21 16:15	09/14/21 23:01	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-280-081821

Lab Sample ID: 160-43124-29

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.111	U	0.155	0.155	3.00	0.305	pCi/g	09/18/21 16:37	09/30/21 21:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	77.2		40 - 110					09/18/21 16:37	09/30/21 21:36	1
Y Carrier	97.2		40 - 110					09/18/21 16:37	09/30/21 21:36	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0429	U	0.221	0.221	1.00	0.388	pCi/g	09/09/21 10:43	09/11/21 14:56	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00477	U	0.00662	0.00663	1.00	0.0535	pCi/g	09/05/21 17:56	09/14/21 17:39	1
Plutonium-239/240	0.00956	U	0.0281	0.0281	1.00	0.0638	pCi/g	09/05/21 17:56	09/14/21 17:39	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.7		30 - 110					09/05/21 17:56	09/14/21 17:39	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.183		0.0827	0.0841	1.00	0.0611	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	-0.00285	U	0.00558	0.00559	1.00	0.0551	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.217		0.0879	0.0897	1.00	0.0442	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	78.6		30 - 110					09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.172	U	0.774	0.774	5.00	1.36	pCi/g	09/21/21 10:06	09/22/21 15:55	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.372		0.131	0.136		0.100	pCi/g	08/26/21 12:50	09/20/21 12:12	1
Bismuth-212	0.0189	U	0.488	0.488		0.893	pCi/g	08/26/21 12:50	09/20/21 12:12	1
Bismuth-214	0.278		0.113	0.116		0.114	pCi/g	08/26/21 12:50	09/20/21 12:12	1
Lead-212	0.324		0.0627	0.0750		0.0636	pCi/g	08/26/21 12:50	09/20/21 12:12	1
Lead-214	0.198		0.0784	0.0809		0.0845	pCi/g	08/26/21 12:50	09/20/21 12:12	1
Potassium-40	4.25		0.751	0.864		0.255	pCi/g	08/26/21 12:50	09/20/21 12:12	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-280-081821

Lab Sample ID: 160-43124-29

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.278		0.113	0.116	1.00	0.114	pCi/g	08/26/21 12:50	09/20/21 12:12	1
Thorium-232	0.372		0.131	0.136		0.100	pCi/g	08/26/21 12:50	09/20/21 12:12	1
Americium-241	0.000	U	0.0478	0.0478		0.128	pCi/g	08/26/21 12:50	09/20/21 12:12	1
Cesium-137	0.142		0.0460	0.0482		0.0371	pCi/g	08/26/21 12:50	09/20/21 12:12	1
Cobalt-60	0.0210	U	0.0117	0.0119		0.0252	pCi/g	08/26/21 12:50	09/20/21 12:12	1
Europium-152	0.00928	U	0.0243	0.0243		0.139	pCi/g	08/26/21 12:50	09/20/21 12:12	1
Europium-154	0.0472	U	0.0579	0.0581		0.0809	pCi/g	08/26/21 12:50	09/20/21 12:12	1
Europium-155	-0.0675	U	0.277	0.277		0.472	pCi/g	08/26/21 12:50	09/20/21 12:12	1
Sodium-22	-0.00992	U	0.0394	0.0394		0.0725	pCi/g	08/26/21 12:50	09/20/21 12:12	1
Zinc-65	0.000	U	0.0115	0.0115		0.159	pCi/g	08/26/21 12:50	09/20/21 12:12	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.651	U	0.778	0.781	5.00	1.30	pCi/g	09/13/21 15:48	09/22/21 01:00	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ni	99.3		40 - 110					09/13/21 15:48	09/22/21 01:00	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.0548	U	1.33	1.33	5.00	2.33	pCi/g	09/05/21 20:20	09/24/21 20:34	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Pu-242 (T)	79.7		30 - 110					09/05/21 20:20	09/24/21 20:34	1

Client Sample ID: FSS-280-081821

Lab Sample ID: 160-43124-29

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 96.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	18		0.30	0.018	mg/Kg	☼	09/12/21 07:16	09/13/21 22:08	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	6.6	J	20	6.5	ug/Kg	☼	09/14/21 16:15	09/14/21 23:03	1

Client Sample ID: FSS-081-081821

Lab Sample ID: 160-43124-30

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.190	U	0.207	0.208	3.00	0.347	pCi/g	09/18/21 16:37	09/30/21 21:36	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-081-081821

Lab Sample ID: 160-43124-30

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	71.1		40 - 110	09/18/21 16:37	09/30/21 21:36	1
Y Carrier	98.7		40 - 110	09/18/21 16:37	09/30/21 21:36	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0401	U	0.213	0.213	1.00	0.389	pCi/g	09/09/21 10:43	09/11/21 15:19	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00661	U	0.0263	0.0263	1.00	0.0627	pCi/g	09/05/21 17:56	09/14/21 17:39	1
Plutonium-239/240	0.000	U	0.00433	0.00433	1.00	0.0265	pCi/g	09/05/21 17:56	09/14/21 17:39	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	81.8		30 - 110	09/05/21 17:56	09/14/21 17:39	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0416	U	0.0858	0.0859	1.00	0.158	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	-0.0226	U	0.0329	0.0330	1.00	0.118	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.0881	U	0.0693	0.0697	1.00	0.0914	pCi/g	09/05/21 20:32	09/14/21 17:54	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	63.5		30 - 110	09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.529	U	0.677	0.680	5.00	1.15	pCi/g	09/21/21 10:06	09/22/21 16:18	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.578		0.108	0.122		0.0704	pCi/g	08/26/21 12:50	09/18/21 15:23	1
Bismuth-212	0.226	U	0.607	0.608		1.07	pCi/g	08/26/21 12:50	09/18/21 15:23	1
Bismuth-214	0.317		0.0844	0.0903		0.0786	pCi/g	08/26/21 12:50	09/18/21 15:23	1
Lead-212	0.353		0.0721	0.0848		0.0800	pCi/g	08/26/21 12:50	09/18/21 15:23	1
Lead-214	0.319		0.0716	0.0787		0.0777	pCi/g	08/26/21 12:50	09/18/21 15:23	1
Potassium-40	3.69		0.796	0.878		0.607	pCi/g	08/26/21 12:50	09/18/21 15:23	1
Radium-226	0.317		0.0844	0.0903	1.00	0.0786	pCi/g	08/26/21 12:50	09/18/21 15:23	1
Thorium-232	0.578		0.108	0.122		0.0704	pCi/g	08/26/21 12:50	09/18/21 15:23	1
Americium-241	0.0188	U	0.121	0.121		0.209	pCi/g	08/26/21 12:50	09/18/21 15:23	1
Cesium-137	0.0237	U	0.0432	0.0433		0.0748	pCi/g	08/26/21 12:50	09/18/21 15:23	1
Cobalt-60	0.0146	U	0.0100	0.0101		0.0516	pCi/g	08/26/21 12:50	09/18/21 15:23	1
Europium-152	0.0737	U	0.131	0.132		0.122	pCi/g	08/26/21 12:50	09/18/21 15:23	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-081-081821

Lab Sample ID: 160-43124-30

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0284	U	0.0566	0.0567		0.0915	pCi/g	08/26/21 12:50	09/18/21 15:23	1
Europium-155	0.0617	U	0.162	0.163		0.278	pCi/g	08/26/21 12:50	09/18/21 15:23	1
Sodium-22	0.0506		0.0265	0.0269		0.0266	pCi/g	08/26/21 12:50	09/18/21 15:23	1
Zinc-65	0.0423	U	0.0881	0.0882		0.155	pCi/g	08/26/21 12:50	09/18/21 15:23	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.744	U	0.847	0.850	5.00	1.43	pCi/g	09/13/21 15:48	09/22/21 02:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	96.1		40 - 110					09/13/21 15:48	09/22/21 02:06	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.432	U	1.38	1.38	5.00	2.37	pCi/g	09/05/21 20:20	09/24/21 21:40	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	81.8		30 - 110					09/05/21 20:20	09/24/21 21:40	1

Client Sample ID: FSS-081-081821

Lab Sample ID: 160-43124-30

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 95.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.6		0.29	0.018	mg/Kg	☼	09/12/21 07:16	09/13/21 22:12	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.1	ug/Kg	☼	09/14/21 16:15	09/14/21 23:06	1

Client Sample ID: FSS-281-081821

Lab Sample ID: 160-43124-31

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.140	U	0.171	0.171	3.00	0.336	pCi/g	09/18/21 16:37	09/30/21 21:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	72.0		40 - 110					09/18/21 16:37	09/30/21 21:36	1
Y Carrier	97.2		40 - 110					09/18/21 16:37	09/30/21 21:36	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-281-081821

Lab Sample ID: 160-43124-31

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0902	U	0.218	0.218	1.00	0.374	pCi/g	09/09/21 10:43	09/11/21 15:42	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00449	U	0.0285	0.0285	1.00	0.0792	pCi/g	09/05/21 17:56	09/14/21 17:39	1
Plutonium-239/240	-0.0135	U	0.0108	0.0108	1.00	0.0675	pCi/g	09/05/21 17:56	09/14/21 17:39	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.5		30 - 110					09/05/21 17:56	09/14/21 17:39	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.205		0.0995	0.101	1.00	0.100	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	0.0194	U	0.0370	0.0370	1.00	0.0725	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.221		0.0985	0.100	1.00	0.0816	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	68.9		30 - 110					09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0649	U	0.615	0.615	5.00	1.11	pCi/g	09/21/21 10:06	09/22/21 16:41	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.532		0.168	0.176		0.224	pCi/g	08/26/21 12:50	09/18/21 15:24	1
Bismuth-212	-0.503	U	0.930	0.931		1.60	pCi/g	08/26/21 12:50	09/18/21 15:24	1
Bismuth-214	0.0787	U	0.142	0.142		0.387	pCi/g	08/26/21 12:50	09/18/21 15:24	1
Lead-212	0.484		0.0914	0.104		0.0899	pCi/g	08/26/21 12:50	09/18/21 15:24	1
Lead-214	0.391		0.119	0.126		0.122	pCi/g	08/26/21 12:50	09/18/21 15:24	1
Potassium-40	4.42		0.919	1.02		0.366	pCi/g	08/26/21 12:50	09/18/21 15:24	1
Radium-226	0.0787	U	0.142	0.142	1.00	0.387	pCi/g	08/26/21 12:50	09/18/21 15:24	1
Thorium-232	0.532		0.168	0.176		0.224	pCi/g	08/26/21 12:50	09/18/21 15:24	1
Americium-241	-0.0722	U	0.156	0.157		0.268	pCi/g	08/26/21 12:50	09/18/21 15:24	1
Cesium-137	-0.00288	U	0.0652	0.0652		0.119	pCi/g	08/26/21 12:50	09/18/21 15:24	1
Cobalt-60	0.0105	U	0.0361	0.0362		0.0681	pCi/g	08/26/21 12:50	09/18/21 15:24	1
Europium-152	0.0612	U	0.114	0.115		0.175	pCi/g	08/26/21 12:50	09/18/21 15:24	1
Europium-154	0.0463	U	0.0769	0.0771		0.130	pCi/g	08/26/21 12:50	09/18/21 15:24	1
Europium-155	0.000	U	0.0635	0.0635		0.402	pCi/g	08/26/21 12:50	09/18/21 15:24	1
Sodium-22	-0.0238	U	0.0584	0.0584		0.105	pCi/g	08/26/21 12:50	09/18/21 15:24	1
Zinc-65	0.000	U	0.0167	0.0167		0.241	pCi/g	08/26/21 12:50	09/18/21 15:24	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43124-1

Client Sample ID: FSS-281-081821

Lab Sample ID: 160-43124-31

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.168	U	0.813	0.813	5.00	1.42	pCi/g	09/13/21 15:48	09/22/21 03:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	101		40 - 110					09/13/21 15:48	09/22/21 03:13	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.713	U	1.28	1.28	5.00	2.15	pCi/g	09/05/21 20:20	09/24/21 22:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.5		30 - 110					09/05/21 20:20	09/24/21 22:46	1

Client Sample ID: FSS-281-081821

Lab Sample ID: 160-43124-31

Date Collected: 08/18/21 11:00

Matrix: Solid

Date Received: 08/19/21 09:00

Percent Solids: 95.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.8		0.29	0.017	mg/Kg	☼	09/12/21 07:16	09/13/21 22:15	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/14/21 16:15	09/14/21 23:08	1

Laboratory Report

Eurofins TestAmerica, St. Louis
13715 Rider Trail North
Earth City, MO 63045
United States
Attention: Ivan H Vania
Telephone: 314-298-8566

Report Date 10/01/2021
Sample Receipt Date 08/24/2021
RJ Lee Group Job No. AOH1063223-0
Authorization/P.O. No.
Client Job No./Name 160-43124-1

Analysis: Asbestos in Bulk Samples by Point Count

Method: NYELAP Method 198.1

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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546365.HPL	FSS-059-081821 (160-43124-1)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546366.HPL	FSS-259-081821 (160-43124-2)	Yes	1	ND		100.00	Q, CA, AM, OP, MI, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546367.HPL	FSS-060-081821 (160-43124-3)	Yes	1	ND		100.00	Q, CA, AM, F, OP, M	EAF-09/30/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43124-1

RJ Lee Group Job No: AOH1063223-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546368.HPL	FSS-260-081821 (160-43124-4)	Yes	1	ND		100.00	Q, CA, AM, F, OP, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546369.HPL	FSS-061-081821 (160-43124-5)	Yes	1	ND		100.00	Q, CA, AM, F, OP, M	EAF-09/30/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546370.HPL	FSS-261-081821 (160-43124-6)	Yes	1	ND		100.00	Q, CA, AM, F, OP, M	EAF-09/30/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546371.HPL	FSS-062-081821 (160-43124-7)	Yes	1	ND		100.00	Q, CA, AM, F, OP, M	EAF-09/30/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546372.HPL	FSS-063-081821 (160-43124-8)	Yes	1	ND		100.00	Q, CA, OP, M	EAF-09/30/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43124-1

RJ Lee Group Job No: AOH1063223-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546373.HPL	FSS-064-081821 (160-43124-9)	Yes	1	ND		100.00	Q, CA, F, OP, MI, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546374.HPL	FSS-065-081821 (160-43124-11)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546375.HPL	FSS-066-081821 (160-43124-12)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546376.HPL	FSS-066-081821 (160-43124-13)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546377.HPL	FSS-067-081821 (160-43124-14)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-09/30/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43124-1

RJ Lee Group Job No: AOH1063223-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546378.HPL	FSS-068-081821 (160-43124-15)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAJ-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546379.HPL	FSS-069-081821 (160-43124-16)	Yes	1	ND		100.00	Q, CA, OP, MI, M	EAJ-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546380.HPL	FSS-070-081821 (160-43124-17)	Yes	1	ND		100.00	Q, CA, AM, F, OP, M	EAJ-09/30/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546381.HPL	FSS-071-081821 (160-43124-18)	Yes	1	ND		100.00	Q, CA, AM, F, OP, M	EAJ-09/30/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546382.HPL	FSS-072-081821 (160-43124-19)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAJ-09/30/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43124-1

RJ Lee Group Job No: AOH1063223-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546383.HPL	FSS-073-081821 (160-43124-20)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546384.HPL	FSS-074-081821 (160-43124-21)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546385.HPL	FSS-075-081821 (160-43124-22)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546386.HPL	FSS-076-081821 (160-43124-23)	Yes	1	ND		100.00	Q, CA, F, OP, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546387.HPL	FSS-077-081821 (160-43124-24)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43124-1

RJ Lee Group Job No: AOH1063223-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546388.HPL	FSS-078-081821 (160-43124-25)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546389.HPL	FSS-079-081821 (160-43124-26)	Yes	1	ND		100.00	Q, CA, OP, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546390.HPL	FSS-279-081821 (160-43124-27)	Yes	1	ND		100.00	Q, CA, AM, OP, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546391.HPL	FSS-080-081821 (160-43124-28)	Yes	1	ND		100.00	Q, CA, AM, F, OP, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546392.HPL	FSS-280-081821 (160-43124-29)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43124-1

RJ Lee Group Job No: AOH1063223-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546393.HPL	FSS-081-081821 (160-43124-30)	Yes	1	ND		100.00	Q, CA, AM, F, OP, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss: 0.0%								
10546394.HPL	FSS-281-081821 (160-43124-31)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/01/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss: 0.0%								

Client Job No./Name: 160-43124-1

RJ Lee Group Job No: AOH1063223-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
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Authorized Signature: _____

Elizabeth Fischer, Microscopist

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ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- AM = Amphibole
- B = Binder
- CA = Carbonates
- CL = Clay
- F = Feldspar
- G = Gypsum
- HY = Hydromagnesite
- M = Miscellaneous
- MI = Mica
- OP = Opaque
- OR = Organic
- P = Perlite
- Q = Quartz
- T = Tar
- V = Vermiculite

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43154-1	FSS-082-081921	Solid	08/19/21 13:00	08/20/21 08:41
160-43154-2	FSS-083-081921	Solid	08/19/21 13:00	08/20/21 08:41
160-43154-3	FSS-084-081921	Solid	08/19/21 13:00	08/20/21 08:41
160-43154-7	FSS-085-081921	Solid	08/19/21 13:15	08/20/21 08:41
160-43154-8	FSS-086-081921	Solid	08/19/21 13:15	08/20/21 08:41
160-43154-9	FSS-087-081921	Solid	08/19/21 13:15	08/20/21 08:41
160-43154-10	FSS-091-081921	Solid	08/19/21 14:45	08/20/21 08:41
160-43154-11	FSS-092-081921	Solid	08/19/21 14:45	08/20/21 08:41
160-43154-12	FSS-093-081921	Solid	08/19/21 14:45	08/20/21 08:41

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43154-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/20/2021 8:41 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.5° C and 23.8° C.

Receipt Exceptions

Samples are logged in for MS and/or MSD analysis using the client sample ID as a parent sample ID, and the same ID with MS or MSD on the end is used for the spikes. This allows the system to calculate the QC statistics for sample duplicates. This was unknown to the client at the time the revised COC was delivered. The result was that three samples for three project points (one for each point) were analyzed in duplicate. One of each sample had an MS/MSD analyzed with it. The duplicate sample only results were reported in job 160-43145-2. Refer to Table 1 (Job 160-43154-1 - Updated Sample IDs) after the case narrative for a summary of this information.

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis. The report supplied by RJ LEE was annotated by the lab to account for the sample ID updates listed in the receipt exceptions section of the narrative.

METALS (ICP/MS)

Samples FSS-082-081921 (160-43154-1), FSS-083-081921 (160-43154-2), FSS-084-081921 (160-43154-3), FSS-085-081921 (160-43154-7), FSS-086-081921 (160-43154-8), FSS-087-081921 (160-43154-9), FSS-091-081921 (160-43154-10), FSS-092-081921 (160-43154-11) and FSS-093-081921 (160-43154-12) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 09/15/2021 and analyzed on 09/16/2021.

Preparation Batch 280-549130, Analytical Batch 280-549986:

The matrix spike (MS) recovery for lead was outside the lower control limit. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recoveries were within acceptance limits: Lead exceeded the RPD limit for the MS/MSD due to the MS low recovery: FSS-090-081921MS (160-43154-9) and FSS-090-081921MSD (160-43154-9).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-082-081921 (160-43154-1), FSS-083-081921 (160-43154-2), FSS-084-081921 (160-43154-3), FSS-085-081921 (160-43154-7), FSS-086-081921 (160-43154-8), FSS-087-081921 (160-43154-9), FSS-091-081921 (160-43154-10), FSS-092-081921 (160-43154-11) and FSS-093-081921 (160-43154-12) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B_ DoD5. The samples were prepared and analyzed on 09/15/2021.

Preparation Batch 280-549365, Analytical Batch 280-550080:

The matrix spike and matrix spike duplicate (MS/MSD) recoveries were outside the lower control limit for Hg. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recoveries were within acceptance limits: FSS-088-081921MS/MSD (160-43154-7).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples FSS-082-081921 (160-43154-1), FSS-083-081921 (160-43154-2), FSS-084-081921 (160-43154-3), FSS-085-081921 (160-43154-7), FSS-086-081921 (160-43154-8), FSS-087-081921 (160-43154-9), FSS-091-081921 (160-43154-10), FSS-092-081921 (160-43154-11) and FSS-093-081921 (160-43154-12) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 09/01/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-082-081921 (160-43154-1), FSS-083-081921 (160-43154-2), FSS-084-081921 (160-43154-3), FSS-085-081921 (160-43154-7), FSS-086-081921 (160-43154-8), FSS-087-081921 (160-43154-9), FSS-091-081921 (160-43154-10), FSS-092-081921 (160-43154-11) and FSS-093-081921 (160-43154-12) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 08/23/2021, prepared on 09/20/2021 and analyzed on 10/04/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-082-081921 (160-43154-1), FSS-083-081921 (160-43154-2), FSS-084-081921 (160-43154-3), FSS-085-081921 (160-43154-7), FSS-086-081921 (160-43154-8), FSS-087-081921 (160-43154-9), FSS-091-081921 (160-43154-10), FSS-092-081921 (160-43154-11) and FSS-093-081921 (160-43154-12) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 09/10/2021 and analyzed on 09/16/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-082-081921 (160-43154-1), FSS-083-081921 (160-43154-2), FSS-084-081921 (160-43154-3), FSS-085-081921 (160-43154-7), FSS-086-081921 (160-43154-8), FSS-087-081921 (160-43154-9), FSS-091-081921 (160-43154-10), FSS-092-081921 (160-43154-11) and FSS-093-081921 (160-43154-12) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 08/23/2021, prepared on 09/05/2021 and analyzed on 09/14/2021 and 09/15/2021.

Preparation Batch 160-527652:

The samples were inadvertently counted on a detector that did not have the daily background check performed. The daily background passed the day prior (10/3/2021) and the day after (10/5/2021) the sample counted. The sample activity was below the MDC and RL. The lab does not believe this excursion adversely affects the data: FSS-084-081921 (160-43154-3) and FSS-087-081921 (160-43154-9).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-082-081921 (160-43154-1), FSS-083-081921 (160-43154-2), FSS-084-081921 (160-43154-3), , , FSS-085-081921 (160-43154-7), FSS-086-081921 (160-43154-8), FSS-087-081921 (160-43154-9), FSS-091-081921 (160-43154-10), FSS-092-081921 (160-43154-11) and FSS-093-081921 (160-43154-12) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/23/2021, prepared on 09/05/2021 and analyzed on 09/14/2021 and 09/15/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-082-081921 (160-43154-1), FSS-083-081921 (160-43154-2), FSS-084-081921 (160-43154-3), FSS-085-081921 (160-43154-7), FSS-086-081921 (160-43154-8), FSS-087-081921 (160-43154-9), FSS-091-081921 (160-43154-10), FSS-092-081921 (160-43154-11) and FSS-093-081921 (160-43154-12) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 09/21/2021 and analyzed on 09/22/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-082-081921 (160-43154-1), FSS-083-081921 (160-43154-2), FSS-084-081921 (160-43154-3), FSS-085-081921 (160-43154-7), FSS-086-081921 (160-43154-8), FSS-087-081921 (160-43154-9), FSS-091-081921 (160-43154-10), FSS-092-081921 (160-43154-11) and FSS-093-081921 (160-43154-12) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/23/2021, prepared on 08/26/2021 and analyzed on 09/18/2021, 09/20/2021 and 09/22/2021.

Preparation Batch 160-524254:

The replicate precision for Pb-212 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for these statistical exceedances: (160-43154-D-9-F DU).

For samples FSS-082-081921 (160-43154-1), FSS-083-081921 (160-43154-2), FSS-084-081921 (160-43154-3), FSS-085-081921 (160-43154-7), FSS-086-081921 (160-43154-8), FSS-087-081921 (160-43154-9), (LCS 160-524254/2-A), (MB 160-524254/1-A), and (160-43154-D-9-F DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

Preparation Batch 160-524257:

For samples FSS-091-081921 (160-43154-10), FSS-092-081921 (160-43154-11), FSS-093-081921 (160-43154-12), (LCS 160-524257/2-A), (MB 160-524257/1-A), (160-43157-D-24-C), and (160-43157-D-24-D DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210

Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-082-081921 (160-43154-1), FSS-083-081921 (160-43154-2), FSS-084-081921 (160-43154-3), FSS-085-081921 (160-43154-7), FSS-086-081921 (160-43154-8), FSS-087-081921 (160-43154-9), FSS-091-081921 (160-43154-10), FSS-092-081921 (160-43154-11) and FSS-093-081921 (160-43154-12) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 08/23/2021, prepared on 09/13/2021 and 09/16/2021 and analyzed on 09/22/2021.

Preparation Batch 160-526820:

The Method Blank (MB) for the following samples activity above the MDC. The samples and blank did not have activity above the requested limit; therefore, the results were reported: FSS-082-081921 (160-43154-1), FSS-083-081921 (160-43154-2), FSS-084-081921 (160-43154-3), FSS-085-081921 (160-43154-7), FSS-086-081921 (160-43154-8), FSS-087-081921 (160-43154-9), (LCS 160-526820/2-A), (MB 160-526820/1-A), (160-43124-D-26-H), and (160-43124-D-26-M DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-082-081921 (160-43154-1), FSS-083-081921 (160-43154-2), FSS-084-081921 (160-43154-3), FSS-085-081921 (160-43154-7), FSS-086-081921 (160-43154-8), FSS-087-081921 (160-43154-9), FSS-091-081921 (160-43154-10), FSS-092-081921 (160-43154-11) and FSS-093-081921 (160-43154-12) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared on 09/05/2021 and analyzed on 09/24/2021 and 09/25/2021.

Preparation Batch 160-525621:

The Laboratory Control Sample (LCS) recovered above the upper control limit at 129% (125%). The samples had activity less than the MDC and requested limit; therefore the results were reported: FSS-082-081921 (160-43154-1), FSS-083-081921 (160-43154-2), FSS-084-081921 (160-43154-3), FSS-085-081921 (160-43154-7), FSS-086-081921 (160-43154-8), FSS-087-081921 (160-43154-9), FSS-091-081921 (160-43154-10), FSS-092-081921 (160-43154-11), FSS-093-081921 (160-43154-12), (LCS 160-525621/2-A), (MB 160-525621/1-A), (160-43124-D-27-G), and (160-43124-D-27-H DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Table 1. Job 160-43154-1 - Updated Sample IDs

Project Sample Point	Lab sample ID	Initial Client Sample ID	Revised Client Sample ID	Results Reported in Job #
SU 7C - SS00090 0"-6"	160-43154-4	FSS-085-091921	FSS-088-091921	160-43154-2
SU 7C - SS00090 0"-6"	160-43154-7	FSS-088-091921	FSS-085-091921	160-43154-1
SU 7C - SS00090 0"-6"	160-43154-7MS	FSS-088-091921MS	FSS-085-091921MS	160-43154-1
SU 7C - SS00090 0"-6"	160-43154-7MSD	FSS-088-091921MSD	FSS-085-091921MSD	160-43154-1
SU 7C - SS00090 6"-12"	160-43154-5	FSS-086-091921	FSS-089-091921	160-43154-2
SU 7C - SS00090 6"-12"	160-43154-8	FSS-089-091921	FSS-086-091921	160-43134-1
SU 7C - SS00090 6"-12"	160-43154-8MS	FSS-089-091921MS	FSS-086-091921MS	160-43134-1
SU 7C - SS00090 6"-12"	160-43154-8MSD	FSS-089-091921MSD	FSS-086-091921MSD	160-43134-1
SU 7C - SS00090 18"-24"	160-43154-6	FSS-087-091921	FSS-090-091921	160-43154-2
SU 7C - SS00090 18"-24"	160-43154-9	FSS-090-091921	FSS-087-091921	160-43134-1
SU 7C - SS00090 18"-24"	160-43154-9	FSS-090-091921MS	FSS-087-091921MS	160-43134-1
SU 7C - SS00090 18"-24"	160-43154-9	FSS-090-091921MSD	FSS-087-091921MSD	160-43134-1



160-43154 Chain of Custody

Chain of Custody Record



Environment Testing
TestAmerica

TestAmerica Laboratories, Inc. d/b/a Eurolfins TestAmerica

Client Contact Email: d.ours@fpm-remediations.com Tel/Fax: (315) 336-7721 ext. 218 Address 181 Kenwood Avenue Oneida, NY 13421 (315) 336-7721 ext. 218 Phone Fax (315) 336-7722 FAX Project Name: BNL 705 Stack Demo Site: BNL P O # 1085-20-01-01		Project manager: Dan Ours W <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other: <input checked="" type="checkbox"/>		Site Contact: Doug Beard Lab Contact: Ivan Vania		Date: 08-19-21 Carrier: Fed Ex		COC No.: 3 of 3 COCs TALS Project #: _____ Sampler: J. Gollhofer For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:	
Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below 30 Days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Sample Identification		Sample Type (C=Comp, G=Grab)		Matrix		# of Cont.	
Sample Date		Sample Time		Sample Matrix		Filtered Sample (Y/N)		Performance (Y/N)	
19-Aug		13:00		C S		N		N	
19-Aug		13:00		C S		N		N	
19-Aug		13:00		C S		N		N	
19-Aug		13:15		C S		N		N	
19-Aug		13:15		C S		N		N	
19-Aug		13:15		C S		N		N	
19-Aug		13:15		C S		N		N	
19-Aug		13:15		C S		N		N	
19-Aug		13:15		C S		N		N	
19-Aug		14:45		C S		N		N	
19-Aug		14:45		C S		N		N	
19-Aug		14:45		C S		N		N	

Non-Hazard Flammable Skin Irritant Poison B Unknown
 Return to Client Disposal by Lab Archive for _____ Months

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am-241, Co-60, Na-22, Zn-65, Th-232, Eu-152, Eu-154, Eu-155

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other _____
Possible Hazard Identification: Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Cooler Temp. (°C): Obs'd: _____ Corrd: _____ Received by: Fed Ex Received by: <i>Sara Worthington</i> Company: <i>GHSC</i> Received in Laboratory by: _____ Company: _____		Therm ID No.: _____ Date/Time: _____ Date/Time: 8/20/21 0841 Date/Time: _____ Date/Time: _____	
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Chain of Custody Record



Regulatory Program: DW NPDES RCRA Other:

Project Manager: Dan Ours
Email: d.ours@fpm-remediations.com
Tel/Fax: (315) 336-7721 ext. 218

Client Contact
Address 181 Kenwood Avenue
Oneida, NY 13421
Phone (315) 336-7721 ext. 218
FAX (315) 336-7722
Project Name: BNL 705 Stack Demo
Site: BNL
P O # 1085-20-01-01

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below 30 Days
 2 weeks
 1 week
 2 days
 1 day

Site Contact: Doug Beard
Lab Contact: Ivan Vania

Date: 08-19-21
Carrier: Fed Ex

COC No: 3 of 3 COCs

TALS Project #: J. Gollifner

For Lab Use Only:
Walk-in Client:
Lab Sampling:

Job / SDG No.:

Sample Specific Notes:

SU 7C - SS010 0"-6"

SU 7C - SS010 6"-12"

SU 7C - SS010 18"-24"

SU 7C - SS009 0"-6"

SU 7C - SS009 6"-12"

SU 7C - SS009 18"-24"

SU 7C - SS009 0"-6" MS/MSD

SU 7C - SS009 6"-12" MS/MSD

SU 7C - SS009 18"-24" MS/MSD

SU 7C - SS008 0"-6"

SU 7C - SS008 6"-12"

SU 7C - SS008 18"-24"

Alpha Spec Pu 238,239,240

Alpha Spec U 234,235,238

Pu 241 by LSC

C-14 Tritium

NI-63

Mercury - EPA 7470A

Lead (ICP/MS) - 6020B

Asbestos - EPA600 R-93

Sr-90 (GFP)

Gamma Spec: Ra-226+detects

Perform MS / MSD (Y / N)

Filtered Sample (Y / N)

Sample Date

Sample Time

Sample Type (C=Comp, G=Grab)

Matrix

of Cont.

Sample Identification

FSS-082-081921

FSS-083-081921

FSS-084-081921

FSS-085-081921

FSS-086-081921

FSS-087-081921

FSS-088-081924 FSS-085-081921MS/MSD

FSS-089-081924 FSS-086-081921MS/MSD

FSS-090-081924 FSS-087-081921MS/MSD

FSS-091-081921

FSS-092-081921

FSS-093-081921

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:

Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazardous Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-212, Pb-214, Ac-228, Bi-212, Pb-214, Ac-228, Bi-212, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu154, Eu155

Note: FSS-085 through -087 have corresponding MS/MSD requests and are shown in duplicate. Original (strike-out) IDs for -088 through -090 are no longer valid sample IDs.

Revised COC Red TA - [Signature]

Custody Seal No.: [] Yes [] No

Relinquished by: Douglas Beard

Relinquished by:

Relinquished by:

Company: Cabrera Services, Inc.

Company:

Company:

Company:

Date/Time: 8-19-21/17:00

Date/Time:

Date/Time:

Date/Time:

Received by: Fed Ex

Received by:

Received in Laboratory by:

Company:

Company:

Company:

Company:

Cooler Temp. (°C):

Obs'd:

Cor'd:

Therm ID No.:

Return to Client Disposal by Lab Archive for: Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Form No. CA-C-WI-002, Rev. 4.33, dated 5/4/2020

Chain of Custody Record



Client Information (Sub Contract Lab)		Lab Pkt: Verita, Ivan H		Carrier Tracking Id#		COC No: 160-217993.1	
Client Contact: Shipping/Receiving		E-Mail: Ivan.Vanua@Eurofinsell.com		State of Origin: New York		Page: Page 1 of 2	
Company: TestAmerica Laboratories, Inc.		Address: 4955 Yarrow Street.		DoD - A2LA, DoD - ANAB; NELAP - New York		Lab #: 160-43154-1	
City: Arvada		State: CO, 80002		Analysis Requested		Preservation Codes: A - HCL M - Hexane N - None O - Acetic P - Na2OAS Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecylsulfate U - Acetone V - MCAA W - pH 4.5 X - EDTA Y - EDA Z - other (specify)	
Phone: 303-736-0100(Tel) 303-431-7171(Fax)		PO #:		Perform (MS/MSD) (Yes or No)		Total Number of Containers	
Email:		WO #:		Field Filtered Sample (Yes or No)		Special Instructions/Note:	
Project Name: BNL Decommissioning Project		Project #: 16009147		Molature		7471B_D0D57471B_Prep Mercury	
SOW#:		Due Date Requested: 10/3/2021		TAT Requested (days):		9020B_D0D57471B (MOD) (CPMS Metals Pb Only)	
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Type (C-comb, G-grab) in (Time, unit)	
FSS-082-081921 (160-43154-1)		8/19/21		13:00		Solid	
FSS-083-081921 (160-43154-2)		8/19/21		13:00		Solid	
FSS-084-081921 (160-43154-3)		8/19/21		13:00		Solid	
FSS-085-081921 (160-43154-4)		8/19/21		13:15		Solid	
FSS-086-081921 (160-43154-5)		8/19/21		13:15		Solid	
FSS-087-081921 (160-43154-6)		8/19/21		13:15		Solid	
FSS-088-081921 (160-43154-7)		8/19/21		13:15		Solid	
FSS-088-081921 (160-43154-7MS)		8/19/21		13:15		MS	
FSS-088-081921 (160-43154-7MSD)		8/19/21		13:15		MSD	
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, sample & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody if the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately, if all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>							
Possible Hazard Identification							
Unclassified							
Deliverable Requested: I, II, III, IV, Other (specify)							
Empty Kit Relinquished by:							
Date:							
Primary Deliverable Rank: 2							
Special Instructions/QC Requirements:							
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)							
Return To Client <input type="checkbox"/> Disposal B/ Lab <input type="checkbox"/> Archive For <input type="checkbox"/> Months							
Multiple of Shipment							
Received by:		Date:		Date/Time:		Company:	
[Signature]		8/23/2021 17:00		17:00		E-TADEN	
Received by:		Date:		Date/Time:		Company:	
[Signature]		8/23/2021 17:00		17:00		E-TADEN	
Received by:		Date:		Date/Time:		Company:	
[Signature]		8/23/2021 17:00		17:00		E-TADEN	
Custody Seals Intact:		Custody Seal No.:		Cooler Temperature (°C) and Other Remarks:		Company:	
A Yes Δ No				18.3 IR1 1.0			

Chain of Custody Record



Client Information (Sub Contract Lab)		Lab P/L Vania, Ivan H		Carrier Tracking Ref# 160-217993.2	
Client Contact: Shipping/Receiving		E-Mail Ivan.Vania@Eurofinsst.com		State of Origin New York	
Company TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD - AZLA; DoD - ANAB; NELAP - New York		Page 2 of 2	
Address 4855 Yarrow Street, NY		Due Date Requested: 10/3/2021		Lab # 160-43154-1	
City Arvada		TAT Requested (days):		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other	
State, Zip CO, 80002		PO #		M - Hexane N - Nitro O - AgNO3 P - Na2O4 Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MeCAA W - DM 4.5 Z - other (specify)	
Phone: 303-736-0100(Tel) 303-431-7171(Fax)		VOC #		Total Number of Containers	
Email		Project # 16009147		Special Instructions/Note:	
Project Name: BNL Decommissioning Project		SOW#			

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (In-water, Swab, Groundwater, Other)	Field Filtered Sample (Yes or No)	Performs MS/MSD (Yes or No)	Mutators	60208_D009/3050B (MOD) ICMS Metals Pb Only	7471B_D008/7471B_Prep Mercury	Total Number of Containers	Special Instructions/Note:
FSS-089-081921 (160-43154-8)	8/19/21	1:15 Eastern	MS	Solid	X	X	X	X	X	1	
FSS-089-081921 (160-43154-9MS)	8/19/21	13:15 Eastern	MS	Solid	X	X	X	X	X	1	
FSS-089-081921 (160-43154-9MSD)	8/19/21	13:15 Eastern	MSD	Solid	X	X	X	X	X	1	
FSS-090-081921 (160-43154-9)	8/19/21	13:15 Eastern	MS	Solid	X	X	X	X	X	1	
FSS-090-081921 (160-43154-9MS)	8/19/21	13:15 Eastern	MS	Solid	X	X	X	X	X	1	
FSS-090-081921 (160-43154-9MSD)	8/19/21	13:15 Eastern	MSD	Solid	X	X	X	X	X	1	
FSS-091-081921 (160-43154-10)	8/19/21	14:45 Eastern	MS	Solid	X	X	X	X	X	1	
FSS-092-081921 (160-43154-11)	8/19/21	14:45 Eastern	MSD	Solid	X	X	X	X	X	1	
FSS-093-081921 (160-43154-12)	8/19/21	14:45 Eastern	MSD	Solid	X	X	X	X	X	1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/testing/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification

Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) Disposal By Lab Archive For _____ Months
 Empty Kit Requisitioned by: _____

Time: _____ Date: _____

Primary Deliverable Rank: 2

Received by: *[Signature]* Date/Time: 8/23/2021 17:00 Company: EASA
 Received by: _____ Date/Time: 18/09/2021 14:20 Company: EASA
 Received by: _____ Date/Time: _____ Company: _____

Cooler Temperature(s) °C and Other Remarks: _____



Chain of Custody Record

Sampler: AOH1063241-0

Client Information (Sub Contract Lab)
 Client Contact: Shipping/Receiving
 Company: RJ Lee Group, Inc
 Address: 350 Hochberg Rd,
 City: Monroeville
 State, Zip: PA, 15146
 Phone:
 Email:
 Project Name: BNIL Decommissioning Project
 Site:
 Lab P/N: Vania, Ivan H
 E-Mail: Ivan.Vania@Eurofins.com
 State of Origin: New York
 Carrier Tracking No(s):
 COC No: 160-217894.1
 Page: Page 1 of 2
 Job #: 160-43154-1
 Preservation Codes:
 A - HCL
 M - Hexane
 B - NaOH
 O - AshNo2
 C - Zn Acetate
 P - NaZnO4S
 D - Nitric Acid
 Q - NaZSO3
 E - NaHSO4
 R - MeOH
 F - Amchlor
 S - H2SO4
 H - Ascorbic Acid
 T - TSP Dodecahydrate
 I - Ice
 U - Acetone
 J - DI Water
 V - NCA
 K - EDTA
 W - pH 4-5
 L - EDA
 Z - other (specify)
 Other:

Analysis Requested

Sample ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=Soil, O=Other, T=Trace, A=Asst)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Sub (Asbestos - PLM-EPA600-R-93/LAP-080.03)	Asbestos - PLM-EPA600-R-93/LAP-080.03	Total Number of Containers	Special Instructions/Notes:
FSS-082-081921 (160-43154-1)	8/19/21	13:00 Eastern		Solid	X	X	X	X	1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-083-081921 (160-43154-2)	8/19/21	13:00 Eastern		Solid	X	X	X	X	1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-084-081921 (160-43154-3)	8/19/21	13:00 Eastern		Solid	X	X	X	X	1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-085-081921 (160-43154-4)	8/19/21	13:15 Eastern		Solid	X	X	X	X	1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-086-081921 (160-43154-5)	8/19/21	13:15 Eastern		Solid	X	X	X	X	1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-087-081921 (160-43154-6)	8/19/21	13:15 Eastern		Solid	X	X	X	X	1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-088-081921 (160-43154-7)	8/19/21	13:15 Eastern	MS	Solid	X	X	X	X	1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-089-081921 (160-43154-7MSD)	8/19/21	13:15 Eastern	MSD	Solid	X	X	X	X	1	Asbestos - PLM-EPA600-R-93/LAP-080.03

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontracted laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify)
 Primary Deliverable Rank: 2
 Date:
 Method of Shipment:
 Return To Client Disposal By Lab Archive For Months
 Special Instructions/QC Requirements:

Empty Kit Relinquished by:
 Relinquished by: [Signature]
 Date/Time: 8/23/2021 17:00
 Company: EA SLL
 Relinquished by: [Signature]
 Date/Time: 8/23/2021 1:00PM
 Company: [Signature]
 Relinquished by: [Signature]
 Date/Time: [Signature]
 Company: [Signature]
 Relinquished by: [Signature]
 Date/Time: [Signature]
 Company: [Signature]
 Custody Seal No.:
 Δ Yes Δ No
 Custody Seals Intact:
 Cooler Temperature(s) °C and Other Remarks:

Eurofins TestAmerica, St. Louis
 13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8586 Fax: 314-298-8757

Chain of Custody Record

eurofins
 Environment Testing
 America

Client Information (Sub Contract Lab) Client Contact: R.J. Lee Group, Inc. Shipping/Receiving: R.J. Lee Group, Inc. Address: 350 Hochberg Rd. City: Monroeville State, Zip: PA, 15146 Phone: PA, 15146 Email:		Lab P/N: Vania, Ivan H State of Origin: New York E-Mail: Ivan.Vania@Eurofins.com Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Carrier Tracking No(s): 160-217994.2 Page: Page 2 of 2 Job #: 160-43154-1	
Due Date Requested: 10/4/2021 TAT Requested (days):		Analysis Requested SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03) <input checked="" type="checkbox"/> Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> Perform MSMSD (Yes or No) <input checked="" type="checkbox"/> Total Number of Containers: 1		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Project Name: BNL Decommissioning Project Site:	Project #: 16009147 SSOW#:	Matrix (Wet/Dry, Swab, Comminuted, etc.) Preservation Code:	Sample Type (C=Comp, G=grab) Sample Time Sample Date	Sample Time Sample Date	Matrix (Wet/Dry, Swab, Comminuted, etc.) Preservation Code:
Sample Identification - Client ID (Lab ID) FSS-091-081921 (160-43154-8) FSS-091-081921 (160-43154-9MS) FSS-091-081921 (160-43154-9MSD) FSS-091-081921 (160-43154-9) FSS-091-081921 (160-43154-9MS) FSS-091-081921 (160-43154-9MSD) FSS-091-081921 (160-43154-10) FSS-092-081921 (160-43154-11) FSS-093-081921 (160-43154-12)		13:15 Eastern 13:15 Eastern 13:15 Eastern 13:15 Eastern 13:15 Eastern 13:15 Eastern 14:45 Eastern 14:45 Eastern 14:45 Eastern	8/19/21 8/19/21 8/19/21 8/19/21 8/19/21 8/19/21 8/19/21 8/19/21	Solid Solid Solid Solid Solid Solid Solid Solid	X X X X X X X X
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.					
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) _____ Primary Deliverable Rank: 2 Date: _____ Time: _____ Method of Shipment: _____ Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Relinquished by: <i>[Signature]</i> Date/Time: 8/23/2021 17:00 Company: EPA STD		Relinquished by: <i>[Signature]</i> Date/Time: 8/25/2021 1:00PM Company: <i>[Signature]</i>		Relinquished by: _____ Date/Time: _____ Company: _____	
Relinquished by: _____ Date/Time: _____ Company: _____		Relinquished by: _____ Date/Time: _____ Company: _____		Relinquished by: _____ Date/Time: _____ Company: _____	
Custody Seals Intact: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Cooler Temperature(s) °C and Other Remarks:			

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-082-081921

Lab Sample ID: 160-43154-1

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/20/21 08:41

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0898	U	0.157	0.157	3.00	0.304	pCi/g	09/20/21 10:28	10/04/21 17:18	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.7		40 - 110					09/20/21 10:28	10/04/21 17:18	1
Y Carrier	99.8		40 - 110					09/20/21 10:28	10/04/21 17:18	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.239	U	0.271	0.272	1.00	0.526	pCi/g	09/10/21 15:03	09/16/21 17:48	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0316	U	0.0347	0.0348	1.00	0.111	pCi/g	09/05/21 17:56	09/14/21 17:39	1
Plutonium-239/240	-0.0122	U	0.0238	0.0239	1.00	0.0829	pCi/g	09/05/21 17:56	09/14/21 17:39	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	84.0		30 - 110					09/05/21 17:56	09/14/21 17:39	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.157		0.0783	0.0793	1.00	0.0596	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	0.0240	U	0.0332	0.0333	1.00	0.0360	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.190		0.0844	0.0859	1.00	0.0465	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	69.5		30 - 110					09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0400	U	0.572	0.572	5.00	1.03	pCi/g	09/21/21 10:06	09/22/21 17:03	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.528		0.151	0.160		0.0828	pCi/g	08/26/21 12:50	09/20/21 12:13	1
Bismuth-212	0.368	U	0.690	0.691		1.20	pCi/g	08/26/21 12:50	09/20/21 12:13	1
Bismuth-214	0.334		0.108	0.113		0.101	pCi/g	08/26/21 12:50	09/20/21 12:13	1
Lead-212	0.376		0.0797	0.0928		0.0862	pCi/g	08/26/21 12:50	09/20/21 12:13	1
Lead-214	0.325		0.0894	0.0953		0.104	pCi/g	08/26/21 12:50	09/20/21 12:13	1
Potassium-40	3.54		0.845	0.916		0.678	pCi/g	08/26/21 12:50	09/20/21 12:13	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-082-081921

Lab Sample ID: 160-43154-1

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/20/21 08:41

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.334		0.108	0.113	1.00	0.101	pCi/g	08/26/21 12:50	09/20/21 12:13	1
Thorium-232	0.528		0.151	0.160		0.0828	pCi/g	08/26/21 12:50	09/20/21 12:13	1
Americium-241	-0.00465	U	0.163	0.163		0.283	pCi/g	08/26/21 12:50	09/20/21 12:13	1
Cesium-137	0.100		0.0389	0.0402		0.0314	pCi/g	08/26/21 12:50	09/20/21 12:13	1
Cobalt-60	-0.00727	U	0.0645	0.0645		0.0783	pCi/g	08/26/21 12:50	09/20/21 12:13	1
Europium-152	0.0634	U	0.0375	0.0380		0.181	pCi/g	08/26/21 12:50	09/20/21 12:13	1
Europium-154	0.0651	U	0.0984	0.0987		0.103	pCi/g	08/26/21 12:50	09/20/21 12:13	1
Europium-155	0.0572	U	0.126	0.126		0.355	pCi/g	08/26/21 12:50	09/20/21 12:13	1
Sodium-22	-0.00703	U	0.0397	0.0397		0.0756	pCi/g	08/26/21 12:50	09/20/21 12:13	1
Zinc-65	-0.0139	U	0.146	0.146		0.244	pCi/g	08/26/21 12:50	09/20/21 12:13	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.624	U	0.804	0.807	5.00	1.35	pCi/g	09/13/21 15:48	09/22/21 04:19	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	<i>101</i>		<i>40 - 110</i>					<i>09/13/21 15:48</i>	<i>09/22/21 04:19</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.15	U	1.53	1.53	5.00	2.66	pCi/g	09/05/21 20:20	09/24/21 23:52	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	<i>84.0</i>		<i>30 - 110</i>					<i>09/05/21 20:20</i>	<i>09/24/21 23:52</i>	<i>1</i>

Client Sample ID: FSS-082-081921

Lab Sample ID: 160-43154-1

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/20/21 08:41

Percent Solids: 98.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.7		0.28	0.017	mg/Kg	☼	09/15/21 07:52	09/16/21 02:07	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	13	J	18	5.7	ug/Kg	☼	09/15/21 15:00	09/15/21 16:41	1

Client Sample ID: FSS-083-081921

Lab Sample ID: 160-43154-2

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/20/21 08:41

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0228	U	0.154	0.154	3.00	0.279	pCi/g	09/20/21 10:28	10/04/21 17:18	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-083-081921

Lab Sample ID: 160-43154-2

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/20/21 08:41

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	81.3		40 - 110	09/20/21 10:28	10/04/21 17:18	1
Y Carrier	101		40 - 110	09/20/21 10:28	10/04/21 17:18	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.367	U	0.258	0.260	1.00	0.523	pCi/g	09/10/21 15:03	09/16/21 18:10	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00460	U	0.0278	0.0278	1.00	0.0691	pCi/g	09/05/21 17:56	09/14/21 17:39	1
Plutonium-239/240	0.0253	U	0.0316	0.0317	1.00	0.0446	pCi/g	09/05/21 17:56	09/14/21 17:39	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	93.1		30 - 110	09/05/21 17:56	09/14/21 17:39	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.167		0.0799	0.0811	1.00	0.0621	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	0.00867	U	0.0234	0.0234	1.00	0.0560	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.267		0.0980	0.100	1.00	0.0449	pCi/g	09/05/21 20:32	09/14/21 17:54	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	78.5		30 - 110	09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.304	U	0.700	0.701	5.00	1.21	pCi/g	09/21/21 10:06	09/22/21 18:11	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.145	U	0.159	0.160		0.263	pCi/g	08/26/21 12:50	09/18/21 15:25	1
Bismuth-212	0.000	U	0.400	0.400		1.46	pCi/g	08/26/21 12:50	09/18/21 15:25	1
Bismuth-214	0.0526	U	0.183	0.183		0.345	pCi/g	08/26/21 12:50	09/18/21 15:25	1
Lead-212	0.381		0.0810	0.0943		0.0873	pCi/g	08/26/21 12:50	09/18/21 15:25	1
Lead-214	0.334		0.0966	0.102		0.0871	pCi/g	08/26/21 12:50	09/18/21 15:25	1
Potassium-40	3.58		0.860	0.932		0.693	pCi/g	08/26/21 12:50	09/18/21 15:25	1
Radium-226	0.0526	U	0.183	0.183	1.00	0.345	pCi/g	08/26/21 12:50	09/18/21 15:25	1
Thorium-232	0.145	U	0.159	0.160		0.263	pCi/g	08/26/21 12:50	09/18/21 15:25	1
Americium-241	-0.0559	U	0.168	0.168		0.289	pCi/g	08/26/21 12:50	09/18/21 15:25	1
Cesium-137	0.144		0.0415	0.0440		0.0227	pCi/g	08/26/21 12:50	09/18/21 15:25	1
Cobalt-60	-0.0357	U	0.0833	0.0834		0.0953	pCi/g	08/26/21 12:50	09/18/21 15:25	1
Europium-152	0.0855	U	0.138	0.138		0.153	pCi/g	08/26/21 12:50	09/18/21 15:25	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-083-081921

Lab Sample ID: 160-43154-2

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/20/21 08:41

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0290	U	0.0591	0.0592		0.102	pCi/g	08/26/21 12:50	09/18/21 15:25	1
Europium-155	0.0268	U	0.0846	0.0846		0.356	pCi/g	08/26/21 12:50	09/18/21 15:25	1
Sodium-22	-0.00144	U	0.0281	0.0281		0.0581	pCi/g	08/26/21 12:50	09/18/21 15:25	1
Zinc-65	0.00587	U	0.136	0.136		0.248	pCi/g	08/26/21 12:50	09/18/21 15:25	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.438	U	0.843	0.844	5.00	1.45	pCi/g	09/13/21 15:48	09/22/21 05:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	101		40 - 110					09/13/21 15:48	09/22/21 05:26	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.532	U	1.40	1.40	5.00	2.49	pCi/g	09/05/21 20:20	09/25/21 00:58	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	93.1		30 - 110					09/05/21 20:20	09/25/21 00:58	1

Client Sample ID: FSS-083-081921

Lab Sample ID: 160-43154-2

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/20/21 08:41

Percent Solids: 97.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	4.4		0.29	0.018	mg/Kg	☼	09/15/21 07:52	09/16/21 02:11	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	J	20	6.4	ug/Kg	☼	09/15/21 15:00	09/15/21 16:44	1

Client Sample ID: FSS-084-081921

Lab Sample ID: 160-43154-3

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/20/21 08:41

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0957	U	0.169	0.169	3.00	0.324	pCi/g	09/20/21 10:28	10/04/21 17:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.7		40 - 110					09/20/21 10:28	10/04/21 17:27	1
Y Carrier	99.8		40 - 110					09/20/21 10:28	10/04/21 17:27	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-084-081921

Lab Sample ID: 160-43154-3

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/20/21 08:41

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.295	U	0.252	0.254	1.00	0.501	pCi/g	09/10/21 15:03	09/16/21 18:33	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00443	U	0.0184	0.0184	1.00	0.0496	pCi/g	09/05/21 17:56	09/15/21 22:21	1
Plutonium-239/240	-0.0111	U	0.00971	0.00975	1.00	0.0630	pCi/g	09/05/21 17:56	09/15/21 22:21	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	76.2		30 - 110					09/05/21 17:56	09/15/21 22:21	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.157		0.0752	0.0763	1.00	0.0678	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	-0.00257	U	0.00504	0.00505	1.00	0.0498	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.122		0.0628	0.0636	1.00	0.0399	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.8		30 - 110					09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.977	U	0.838	0.844	5.00	1.38	pCi/g	09/21/21 10:06	09/22/21 18:34	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.232		0.0946	0.0974		0.108	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Bismuth-212	-0.134	U	0.462	0.463		0.824	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Bismuth-214	0.186		0.0785	0.0807		0.0884	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Lead-212	0.292		0.0693	0.0786		0.0672	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Lead-214	0.174		0.0567	0.0594		0.0934	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Potassium-40	3.89		0.746	0.841		0.521	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Radium-226	0.186		0.0785	0.0807	1.00	0.0884	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Thorium-232	0.232		0.0946	0.0974		0.108	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Americium-241	0.0459	U	0.105	0.105		0.179	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Cesium-137	0.0569		0.0219	0.0226		0.0161	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Cobalt-60	0.00341	U	0.00655	0.00656		0.0591	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Europium-152	0.0501	U	0.0690	0.0692		0.123	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Europium-154	0.0260	U	0.0479	0.0480		0.0820	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Europium-155	-0.0533	U	0.123	0.123		0.214	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Sodium-22	-0.0197	U	0.0328	0.0328		0.0571	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Zinc-65	-0.0615	U	0.125	0.125		0.216	pCi/g	08/26/21 12:50	09/18/21 15:59	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-084-081921

Lab Sample ID: 160-43154-3

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/20/21 08:41

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.742	U	0.777	0.781	5.00	1.30	pCi/g	09/13/21 15:48	09/22/21 06:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	102		40 - 110					09/13/21 15:48	09/22/21 06:32	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.409	U	1.53	1.53	5.00	2.66	pCi/g	09/05/21 20:20	09/25/21 02:05	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	76.2		30 - 110					09/05/21 20:20	09/25/21 02:05	1

Client Sample ID: FSS-084-081921

Lab Sample ID: 160-43154-3

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/20/21 08:41

Percent Solids: 97.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.0		0.28	0.017	mg/Kg	☼	09/15/21 07:52	09/16/21 02:14	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	J	19	6.2	ug/Kg	☼	09/15/21 15:00	09/15/21 16:46	1

Client Sample ID: FSS-085-081921

Lab Sample ID: 160-43154-7

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0182	U	0.183	0.183	3.00	0.330	pCi/g	09/20/21 10:28	10/04/21 17:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.5		40 - 110					09/20/21 10:28	10/04/21 17:24	1
Y Carrier	102		40 - 110					09/20/21 10:28	10/04/21 17:24	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.239	U	0.260	0.261	1.00	0.507	pCi/g	09/10/21 15:03	09/16/21 20:03	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-085-081921

Lab Sample ID: 160-43154-7

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	-0.00274	U	0.00537	0.00538	1.00	0.0531	pCi/g	09/05/21 17:56	09/14/21 17:39	1
Plutonium-239/240	-0.00275	U	0.00538	0.00539	1.00	0.0531	pCi/g	09/05/21 17:56	09/14/21 17:39	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	64.5		30 - 110					09/05/21 17:56	09/14/21 17:39	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.257		0.100	0.102	1.00	0.0607	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	0.000	U	0.00598	0.00598	1.00	0.0366	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.164		0.0793	0.0804	1.00	0.0474	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	70.1		30 - 110					09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.162	U	0.515	0.515	5.00	0.899	pCi/g	09/21/21 10:06	09/22/21 20:04	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.383		0.114	0.120		0.143	pCi/g	08/26/21 12:50	09/18/21 16:31	1
Bismuth-212	0.181	U	0.430	0.431		0.758	pCi/g	08/26/21 12:50	09/18/21 16:31	1
Bismuth-214	0.208		0.0721	0.0752		0.0773	pCi/g	08/26/21 12:50	09/18/21 16:31	1
Lead-212	0.278		0.0586	0.0684		0.0640	pCi/g	08/26/21 12:50	09/18/21 16:31	1
Lead-214	0.243		0.0700	0.0743		0.0732	pCi/g	08/26/21 12:50	09/18/21 16:31	1
Potassium-40	2.40		0.609	0.654		0.521	pCi/g	08/26/21 12:50	09/18/21 16:31	1
Radium-226	0.208		0.0721	0.0752	1.00	0.0773	pCi/g	08/26/21 12:50	09/18/21 16:31	1
Thorium-232	0.383		0.114	0.120		0.143	pCi/g	08/26/21 12:50	09/18/21 16:31	1
Americium-241	0.00673	U	0.100	0.100		0.175	pCi/g	08/26/21 12:50	09/18/21 16:31	1
Cesium-137	0.0657		0.0235	0.0244		0.0161	pCi/g	08/26/21 12:50	09/18/21 16:31	1
Cobalt-60	0.0107	U	0.0370	0.0370		0.0444	pCi/g	08/26/21 12:50	09/18/21 16:31	1
Europium-152	0.0670	U	0.0929	0.0932		0.102	pCi/g	08/26/21 12:50	09/18/21 16:31	1
Europium-154	0.0294	U	0.0314	0.0316		0.0846	pCi/g	08/26/21 12:50	09/18/21 16:31	1
Europium-155	-0.0657	U	0.117	0.117		0.361	pCi/g	08/26/21 12:50	09/18/21 16:31	1
Sodium-22	0.0103	U	0.0233	0.0233		0.0428	pCi/g	08/26/21 12:50	09/18/21 16:31	1
Zinc-65	0.000	U	0.0572	0.0572		0.175	pCi/g	08/26/21 12:50	09/18/21 16:31	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.596	U	0.884	0.886	5.00	1.50	pCi/g	09/13/21 15:48	09/22/21 10:57	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-085-081921

Lab Sample ID: 160-43154-7

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	92.7		40 - 110	09/13/21 15:48	09/22/21 10:57	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.08	U	1.38	1.38	5.00	2.33	pCi/g	09/05/21 20:20	09/25/21 06:30	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	64.5		30 - 110	09/05/21 20:20	09/25/21 06:30	1

Client Sample ID: FSS-085-081921

Lab Sample ID: 160-43154-7

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Percent Solids: 97.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	10		0.28	0.017	mg/Kg	☼	09/15/21 07:52	09/16/21 02:37	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	6.4	J	19	6.3	ug/Kg	☼	09/15/21 15:00	09/15/21 16:57	1

Client Sample ID: FSS-086-081921

Lab Sample ID: 160-43154-8

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.212	U	0.200	0.200	3.00	0.330	pCi/g	09/20/21 10:28	10/04/21 17:25	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	79.2		40 - 110	09/20/21 10:28	10/04/21 17:25	1
Y Carrier	98.7		40 - 110	09/20/21 10:28	10/04/21 17:25	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.233	U	0.250	0.251	1.00	0.483	pCi/g	09/10/21 15:03	09/16/21 20:26	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0109	U	0.0322	0.0322	1.00	0.0731	pCi/g	09/05/21 18:15	09/14/21 17:39	1
Plutonium-239/240	0.00821	U	0.0221	0.0221	1.00	0.0530	pCi/g	09/05/21 18:15	09/14/21 17:39	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	62.9		30 - 110	09/05/21 18:15	09/14/21 17:39	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-086-081921

Lab Sample ID: 160-43154-8

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Uranium-233/234	0.175		0.0990	0.100	1.00	0.120	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	-0.00326	U	0.00638	0.00639	1.00	0.0630	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.227		0.0988	0.101	1.00	0.0743	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	64.5		30 - 110					09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Carbon-14	0.423	U	0.551	0.553	5.00	0.934	pCi/g	09/21/21 10:06	09/22/21 20:27	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Actinium 228	0.505		0.198	0.205		0.166	pCi/g	08/26/21 12:50	09/18/21 16:32	1
Bismuth-212	-0.384	U	0.826	0.827		1.44	pCi/g	08/26/21 12:50	09/18/21 16:32	1
Bismuth-214	0.300		0.115	0.119		0.134	pCi/g	08/26/21 12:50	09/18/21 16:32	1
Lead-212	0.313		0.0792	0.0855		0.0907	pCi/g	08/26/21 12:50	09/18/21 16:32	1
Lead-214	0.243		0.121	0.123		0.136	pCi/g	08/26/21 12:50	09/18/21 16:32	1
Potassium-40	4.11		0.880	0.969		0.361	pCi/g	08/26/21 12:50	09/18/21 16:32	1
Radium-226	0.300		0.115	0.119	1.00	0.134	pCi/g	08/26/21 12:50	09/18/21 16:32	1
Thorium-232	0.505		0.198	0.205		0.166	pCi/g	08/26/21 12:50	09/18/21 16:32	1
Americium-241	0.0616	U	0.148	0.149		0.255	pCi/g	08/26/21 12:50	09/18/21 16:32	1
Cesium-137	0.0250	U	0.0476	0.0476		0.0832	pCi/g	08/26/21 12:50	09/18/21 16:32	1
Cobalt-60	-0.0389	U	0.0960	0.0960		0.107	pCi/g	08/26/21 12:50	09/18/21 16:32	1
Europium-152	0.0207	U	0.0269	0.0270		0.184	pCi/g	08/26/21 12:50	09/18/21 16:32	1
Europium-154	0.0829	U	0.106	0.106		0.123	pCi/g	08/26/21 12:50	09/18/21 16:32	1
Europium-155	-0.0000000	U	0.298	0.298		0.514	pCi/g	08/26/21 12:50	09/18/21 16:32	1
Sodium-22	-0.00157	U	0.0442	0.0442		0.0864	pCi/g	08/26/21 12:50	09/18/21 16:32	1
Zinc-65	-0.00724	U	0.119	0.119		0.222	pCi/g	08/26/21 12:50	09/18/21 16:32	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.677	U	0.894	0.897	5.00	1.50	pCi/g	09/13/21 15:48	09/22/21 12:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	86.5		40 - 110					09/13/21 15:48	09/22/21 12:03	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-2.28	U	1.29	1.31	5.00	2.31	pCi/g	09/05/21 20:20	09/25/21 07:36	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-086-081921

Lab Sample ID: 160-43154-8

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	62.9		30 - 110	09/05/21 20:20	09/25/21 07:36	1

Client Sample ID: FSS-086-081921

Lab Sample ID: 160-43154-8

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Percent Solids: 85.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.0		0.33	0.020	mg/Kg	☼	09/15/21 07:52	09/16/21 02:55	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	17	U	22	7.2	ug/Kg	☼	09/15/21 15:00	09/15/21 17:15	1

Client Sample ID: FSS-087-081921

Lab Sample ID: 160-43154-9

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0170	U	0.154	0.154	3.00	0.287	pCi/g	09/20/21 10:28	10/04/21 17:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.9		40 - 110					09/20/21 10:28	10/04/21 17:25	1
Y Carrier	98.7		40 - 110					09/20/21 10:28	10/04/21 17:25	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.190	U	0.261	0.262	1.00	0.502	pCi/g	09/10/21 15:03	09/16/21 20:49	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00411	U	0.0171	0.0171	1.00	0.0460	pCi/g	09/05/21 18:15	09/14/21 17:39	1
Plutonium-239/240	-0.00205	U	0.0185	0.0185	1.00	0.0585	pCi/g	09/05/21 18:15	09/14/21 17:39	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	76.8		30 - 110					09/05/21 18:15	09/14/21 17:39	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.124		0.0729	0.0737	1.00	0.0846	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	-0.0133	U	0.0261	0.0261	1.00	0.0908	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.107		0.0607	0.0613	1.00	0.0479	pCi/g	09/05/21 20:32	09/14/21 17:54	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-087-081921

Lab Sample ID: 160-43154-9

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	75.4		30 - 110	09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.405	U	0.802	0.803	5.00	1.38	pCi/g	09/21/21 10:06	09/22/21 20:50	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.488		0.218	0.223		0.209	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Bismuth-212	0.000	U	0.192	0.192		1.07	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Bismuth-214	0.504		0.133	0.143		0.103	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Lead-212	0.432		0.0849	0.101		0.0828	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Lead-214	0.401		0.0944	0.103		0.0892	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Potassium-40	2.93		1.08	1.12		1.08	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Radium-226	0.504		0.133	0.143	1.00	0.103	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Thorium-232	0.488		0.218	0.223		0.209	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Americium-241	-0.0693	U	0.191	0.191		0.327	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Cesium-137	0.0224	U	0.0463	0.0464		0.0813	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Cobalt-60	0.0300	U	0.0222	0.0224		0.0352	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Europium-152	0.116	U	0.167	0.168		0.147	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Europium-154	0.0678	U	0.119	0.119		0.120	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Europium-155	0.0574	U	0.132	0.132		0.357	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Sodium-22	-0.0169	U	0.0453	0.0453		0.0828	pCi/g	08/26/21 12:50	09/18/21 15:59	1
Zinc-65	-0.00458	U	0.0910	0.0910		0.234	pCi/g	08/26/21 12:50	09/18/21 15:59	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.919	U	0.925	0.929	5.00	1.54	pCi/g	09/13/21 15:48	09/22/21 13:09	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	90.2		40 - 110	09/13/21 15:48	09/22/21 13:09	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.34	U	1.01	1.02	5.00	1.74	pCi/g	09/05/21 20:20	09/25/21 08:42	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	76.8		30 - 110	09/05/21 20:20	09/25/21 08:42	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-087-081921

Lab Sample ID: 160-43154-9

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Percent Solids: 97.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.2	J J	0.29	0.018	mg/Kg	*	09/15/21 07:52	09/16/21 03:14	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	6.0	ug/Kg	*	09/15/21 15:00	09/15/21 17:22	1

Client Sample ID: FSS-091-081921

Lab Sample ID: 160-43154-10

Date Collected: 08/19/21 14:45

Matrix: Solid

Date Received: 08/20/21 08:41

ccf 10/21/21

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.193	U	0.167	0.168	3.00	0.273	pCi/g	09/20/21 10:28	10/04/21 17:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.7		40 - 110					09/20/21 10:28	10/04/21 17:25	1
Y Carrier	98.7		40 - 110					09/20/21 10:28	10/04/21 17:25	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.185	U	0.260	0.261	1.00	0.498	pCi/g	09/10/21 15:03	09/16/21 21:11	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0183	U	0.0305	0.0305	1.00	0.107	pCi/g	09/05/21 18:15	09/14/21 17:39	1
Plutonium-239/240	0.0275	U	0.0427	0.0428	1.00	0.0755	pCi/g	09/05/21 18:15	09/14/21 17:39	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Fu-242 (T)	55.7		30 - 110					09/05/21 18:15	09/14/21 17:39	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.119		0.0741	0.0747	1.00	0.0776	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	0.0225	U	0.0362	0.0362	1.00	0.0622	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.131		0.0765	0.0772	1.00	0.0733	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	67.3		30 - 110					09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.271	U	0.740	0.740	5.00	1.29	pCi/g	09/21/21 10:06	09/22/21 21:12	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-091-081921

Lab Sample ID: 160-43154-10

Date Collected: 08/19/21 14:45

Matrix: Solid

Date Received: 08/20/21 08:41

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.423		0.131	0.138		0.149	pCi/g	08/26/21 13:50	09/22/21 07:28	1
Bismuth-212	-0.505	U	0.873	0.874		1.50	pCi/g	08/26/21 13:50	09/22/21 07:28	1
Bismuth-214	0.399		0.118	0.125		0.108	pCi/g	08/26/21 13:50	09/22/21 07:28	1
Lead-212	0.395		0.0864	0.0999		0.0986	pCi/g	08/26/21 13:50	09/22/21 07:28	1
Lead-214	0.388		0.106	0.113		0.0884	pCi/g	08/26/21 13:50	09/22/21 07:28	1
Potassium-40	3.37		1.07	1.13		1.03	pCi/g	08/26/21 13:50	09/22/21 07:28	1
Radium-226	0.399		0.118	0.125	1.00	0.108	pCi/g	08/26/21 13:50	09/22/21 07:28	1
Thorium-232	0.423		0.131	0.138		0.149	pCi/g	08/26/21 13:50	09/22/21 07:28	1
Americium-241	-0.0637	U	0.175	0.175		0.300	pCi/g	08/26/21 13:50	09/22/21 07:28	1
Cesium-137	0.187		0.0562	0.0594		0.0444	pCi/g	08/26/21 13:50	09/22/21 07:28	1
Cobalt-60	0.0166	U	0.0496	0.0496		0.0610	pCi/g	08/26/21 13:50	09/22/21 07:28	1
Europium-152	0.0901	U	0.176	0.177		0.172	pCi/g	08/26/21 13:50	09/22/21 07:28	1
Europium-154	0.0517	U	0.0655	0.0657		0.133	pCi/g	08/26/21 13:50	09/22/21 07:28	1
Europium-155	0.0317	U	0.0869	0.0869		0.241	pCi/g	08/26/21 13:50	09/22/21 07:28	1
Sodium-22	0.00729	U	0.0301	0.0301		0.0590	pCi/g	08/26/21 13:50	09/22/21 07:28	1
Zinc-65	-0.0674	U	0.0863	0.0865		0.256	pCi/g	08/26/21 13:50	09/22/21 07:28	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.184	U	0.838	0.839	5.00	1.50	pCi/g	09/16/21 12:04	09/22/21 19:27	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	98.5		40 - 110					09/16/21 12:04	09/22/21 19:27	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.60	U	1.50	1.51	5.00	2.55	pCi/g	09/05/21 20:20	09/25/21 09:48	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	55.7		30 - 110					09/05/21 20:20	09/25/21 09:48	1

Client Sample ID: FSS-091-081921

Lab Sample ID: 160-43154-10

Date Collected: 08/19/21 14:45

Matrix: Solid

Date Received: 08/20/21 08:41

Percent Solids: 86.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	11		0.32	0.020	mg/Kg	☼	09/15/21 07:52	09/16/21 03:25	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	6.7	J	21	6.7	ug/Kg	☼	09/15/21 15:00	09/15/21 17:35	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-092-081921

Lab Sample ID: 160-43154-11

Date Collected: 08/19/21 14:45

Matrix: Solid

Date Received: 08/20/21 08:41

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.148	U	0.179	0.180	3.00	0.349	pCi/g	09/20/21 10:28	10/04/21 17:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.0		40 - 110					09/20/21 10:28	10/04/21 17:25	1
Y Carrier	96.8		40 - 110					09/20/21 10:28	10/04/21 17:25	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.322	U	0.247	0.249	1.00	0.494	pCi/g	09/10/21 15:03	09/16/21 21:34	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0228	U	0.0169	0.0170	1.00	0.102	pCi/g	09/05/21 18:15	09/14/21 17:39	1
Plutonium-239/240	0.00976	U	0.0263	0.0263	1.00	0.0630	pCi/g	09/05/21 18:15	09/14/21 17:39	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	51.3		30 - 110					09/05/21 18:15	09/14/21 17:39	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.237		0.109	0.110	1.00	0.0853	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	0.0261	U	0.0420	0.0421	1.00	0.0722	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.138		0.0858	0.0866	1.00	0.0898	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	60.1		30 - 110					09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0940	U	0.666	0.666	5.00	1.20	pCi/g	09/21/21 10:06	09/22/21 21:35	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.323		0.129	0.133		0.169	pCi/g	08/26/21 13:50	09/22/21 15:00	1
Bismuth-212	0.000	U	0.313	0.313		0.898	pCi/g	08/26/21 13:50	09/22/21 15:00	1
Bismuth-214	0.286		0.0874	0.0921		0.0889	pCi/g	08/26/21 13:50	09/22/21 15:00	1
Lead-212	0.405		0.0670	0.0844		0.0496	pCi/g	08/26/21 13:50	09/22/21 15:00	1
Lead-214	0.202		0.106	0.108		0.163	pCi/g	08/26/21 13:50	09/22/21 15:00	1
Potassium-40	2.79		1.05	1.09		1.02	pCi/g	08/26/21 13:50	09/22/21 15:00	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-092-081921

Lab Sample ID: 160-43154-11

Date Collected: 08/19/21 14:45

Matrix: Solid

Date Received: 08/20/21 08:41

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.286		0.0874	0.0921	1.00	0.0889	pCi/g	08/26/21 13:50	09/22/21 15:00	1
Thorium-232	0.323		0.129	0.133		0.169	pCi/g	08/26/21 13:50	09/22/21 15:00	1
Americium-241	-0.0624	U	0.0488	0.0492		0.164	pCi/g	08/26/21 13:50	09/22/21 15:00	1
Cesium-137	0.256		0.0556	0.0614		0.0316	pCi/g	08/26/21 13:50	09/22/21 15:00	1
Cobalt-60	0.0130	U	0.0247	0.0248		0.0524	pCi/g	08/26/21 13:50	09/22/21 15:00	1
Europium-152	0.0446	U	0.0685	0.0686		0.143	pCi/g	08/26/21 13:50	09/22/21 15:00	1
Europium-154	0.0486	U	0.0705	0.0707		0.0891	pCi/g	08/26/21 13:50	09/22/21 15:00	1
Europium-155	0.0250	U	0.0885	0.0885		0.225	pCi/g	08/26/21 13:50	09/22/21 15:00	1
Sodium-22	-0.0391	U	0.0538	0.0539		0.0913	pCi/g	08/26/21 13:50	09/22/21 15:00	1
Zinc-65	0.000499	U	0.113	0.113		0.207	pCi/g	08/26/21 13:50	09/22/21 15:00	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.225	U	0.806	0.806	5.00	1.40	pCi/g	09/16/21 12:04	09/22/21 20:33	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	93.6		40 - 110					09/16/21 12:04	09/22/21 20:33	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.933	U	1.67	1.67	5.00	2.79	pCi/g	09/05/21 20:20	09/25/21 10:55	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	51.3		30 - 110					09/05/21 20:20	09/25/21 10:55	1

Client Sample ID: FSS-092-081921

Lab Sample ID: 160-43154-11

Date Collected: 08/19/21 14:45

Matrix: Solid

Date Received: 08/20/21 08:41

Percent Solids: 96.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	8.1		0.29	0.017	mg/Kg	☼	09/15/21 07:52	09/16/21 03:29	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	30		20	6.5	ug/Kg	☼	09/15/21 15:00	09/15/21 17:38	1

Client Sample ID: FSS-093-081921

Lab Sample ID: 160-43154-12

Date Collected: 08/19/21 14:45

Matrix: Solid

Date Received: 08/20/21 08:41

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.567		0.238	0.242	3.00	0.346	pCi/g	09/20/21 10:28	10/04/21 17:26	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-093-081921

Lab Sample ID: 160-43154-12

Date Collected: 08/19/21 14:45

Matrix: Solid

Date Received: 08/20/21 08:41

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	70.7		40 - 110	09/20/21 10:28	10/04/21 17:26	1
Y Carrier	98.3		40 - 110	09/20/21 10:28	10/04/21 17:26	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.251	U	0.256	0.257	1.00	0.499	pCi/g	09/10/21 15:03	09/16/21 21:57	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00984	U	0.0289	0.0289	1.00	0.0657	pCi/g	09/05/21 18:15	09/14/21 17:39	1
Plutonium-239/240	0.00738	U	0.0199	0.0199	1.00	0.0476	pCi/g	09/05/21 18:15	09/14/21 17:39	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.6		30 - 110	09/05/21 18:15	09/14/21 17:39	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0996		0.0736	0.0741	1.00	0.0984	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	0.000	U	0.00593	0.00593	1.00	0.0363	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.267		0.101	0.103	1.00	0.0543	pCi/g	09/05/21 20:32	09/14/21 17:54	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	67.0		30 - 110	09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.243	U	0.808	0.808	5.00	1.42	pCi/g	09/21/21 10:06	09/22/21 21:58	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.297		0.206	0.208		0.237	pCi/g	08/26/21 13:50	09/22/21 15:01	1
Bismuth-212	-0.325	U	0.797	0.797		1.40	pCi/g	08/26/21 13:50	09/22/21 15:01	1
Bismuth-214	0.447		0.145	0.151		0.157	pCi/g	08/26/21 13:50	09/22/21 15:01	1
Lead-212	0.379		0.0896	0.0977		0.101	pCi/g	08/26/21 13:50	09/22/21 15:01	1
Lead-214	0.244		0.114	0.116		0.223	pCi/g	08/26/21 13:50	09/22/21 15:01	1
Potassium-40	4.37		1.12	1.20		0.744	pCi/g	08/26/21 13:50	09/22/21 15:01	1
Radium-226	0.447		0.145	0.151	1.00	0.157	pCi/g	08/26/21 13:50	09/22/21 15:01	1
Thorium-232	0.297		0.206	0.208		0.237	pCi/g	08/26/21 13:50	09/22/21 15:01	1
Americium-241	0.0585	U	0.164	0.164		0.282	pCi/g	08/26/21 13:50	09/22/21 15:01	1
Cesium-137	0.152		0.0648	0.0665		0.0626	pCi/g	08/26/21 13:50	09/22/21 15:01	1
Cobalt-60	0.00174	U	0.0575	0.0575		0.0722	pCi/g	08/26/21 13:50	09/22/21 15:01	1
Europium-152	-0.0164	U	0.0367	0.0368		0.174	pCi/g	08/26/21 13:50	09/22/21 15:01	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-1

Client Sample ID: FSS-093-081921

Lab Sample ID: 160-43154-12

Date Collected: 08/19/21 14:45

Matrix: Solid

Date Received: 08/20/21 08:41

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0749	U	0.132	0.132		0.130	pCi/g	08/26/21 13:50	09/22/21 15:01	1
Europium-155	0.0804	U	0.311	0.312		0.533	pCi/g	08/26/21 13:50	09/22/21 15:01	1
Sodium-22	0.00169	U	0.0338	0.0338		0.0698	pCi/g	08/26/21 13:50	09/22/21 15:01	1
Zinc-65	0.000	U	0.0177	0.0177		0.231	pCi/g	08/26/21 13:50	09/22/21 15:01	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.277	U	0.886	0.887	5.00	1.57	pCi/g	09/16/21 12:04	09/22/21 21:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	84.9		40 - 110					09/16/21 12:04	09/22/21 21:39	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.49	U	1.19	1.20	5.00	2.05	pCi/g	09/05/21 20:20	09/25/21 12:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.6		30 - 110					09/05/21 20:20	09/25/21 12:01	1

Client Sample ID: FSS-093-081921

Lab Sample ID: 160-43154-12

Date Collected: 08/19/21 14:45

Matrix: Solid

Date Received: 08/20/21 08:41

Percent Solids: 96.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	10		0.30	0.018	mg/Kg	☼	09/15/21 07:52	09/16/21 03:33	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.2	ug/Kg	☼	09/15/21 15:00	09/15/21 17:40	1



Laboratory Report

Eurofins TestAmerica, St. Louis
 13715 Rider Trail North
 Earth City, MO 63045
 United States
 Attention: Ivan H Vania
 Telephone: 314-298-8566

Report Date 09/27/2021
 Sample Receipt Date 08/25/2021
 RJ Lee Group Job No. AOH1063241-0
 Authorization/P.O. No.
 Client Job No./Name 160-43154-1

Analysis: Asbestos in Bulk Samples by Point Count
 Method: NYELAP Method 198.1

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546504.HPL	FSS-082-081921 (160-43154-1)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description: Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								
10546505.HPL	FSS-083-081921 (160-43154-2)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description: Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								
10546506.HPL	FSS-084-081921 (160-43154-3)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description: Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								



Laboratory Report (Cont)

Client Job No./Name: 160-43154-1 RJ Lee Group Job No: AOH1063241-0

RJLG Sample Number	Client Sample Number	Client Sample	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546507.HPL	FSS- 086 ⁸⁸ -081921 (160-43154-4)	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.	Yes	1	ND	100.00	100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Weight Loss: 0.0%									
10546508.HPL	FSS- 086 ⁸⁹ -081921 (160-43154-5)	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.	Yes	1	ND	100.00	100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Weight Loss: 0.0%									
10546509.HPL	FSS- 086 ⁹⁰ -081921 (160-43154-6)	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.	Yes	1	ND	100.00	100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Weight Loss: 0.0%									
10546510.HPL	FSS- 086 ⁸⁵ -081921 (160-43154-7)	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.	Yes	1	ND	100.00	100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Weight Loss: 0.0%									
10546511.HPL	FSS- 086 ⁸⁶ -081921 (160-43154-8)	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.	Yes	1	ND	100.00	100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Weight Loss: 0.0%									



Laboratory Report (Cont)

Client Job No./Name: 160-43154-1 RJ Lee Group Job No: AOH1063241-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546512.HPL	FSS-090-081921 (160-43154-9) 87	Yes	1	ND	100.00	100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10546513.HPL	FSS-091-081921 (160-43154-10)	Yes	1	ND	100.00	100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10546514.HPL	FSS-092-081921 (160-43154-11)	Yes	1	ND	100.00	100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10546515.HPL	FSS-093-081921 (160-43154-12)	Yes	1	ND	100.00	100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								

Client Job No./Name: 160-43154-1

RJ Lee Group Job No: AOH1063241-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
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Elizabeth Fischer

Authorized Signature:

Elizabeth Fischer, Microscopist

ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- AM = Amphibole
- B = Binder
- CA = Carbonates
- CL = Clay
- F = Feldspar
- G = Gypsum
- HY = Hydromagnesite
- M = Miscellaneous
- MI = Mica
- OP = Opaque
- OR = Organic
- P = Perlite
- Q = Quartz
- T = Tar
- V = Vermiculite

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43154-4	FSS-088-081921	Solid	08/19/21 13:15	08/20/21 08:41
160-43154-5	FSS-089-081921	Solid	08/19/21 13:15	08/20/21 08:41
160-43154-6	FSS-090-081921	Solid	08/19/21 13:15	08/20/21 08:41

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43154-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/20/2021 8:41 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.5° C and 23.8° C.

Receipt Exceptions

Samples are logged in for MS and/or MSD analysis using the client sample ID as a parent sample ID, and the same ID with MS or MSD on the end is used for the spikes. This allows the system to calculate the QC statistics for sample duplicates. This was unknown to the client at the time the revised COC was delivered. The result was that three samples for three project points (one for each point) were analyzed in duplicate. One of each sample had an MS/MSD analyzed with it. The duplicate sample only results were reported in job 160-43145-2. Refer to Table 1 (Job 160-43154-1 - Updated Sample IDs) after the case narrative for a summary of this information.

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis. The report supplied by RJ LEE was annotated by the lab to account for the sample ID updates listed in the receipt exceptions section of the narrative.

METALS (ICP/MS)

Samples FSS-088-081921 (160-43154-4), FSS-089-081921 (160-43154-5) and FSS-090-081921 (160-43154-6) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 09/15/2021 and analyzed on 09/16/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-088-081921 (160-43154-4), FSS-089-081921 (160-43154-5) and FSS-090-081921 (160-43154-6) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B_ DoD5. The samples were prepared and analyzed on 09/15/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples FSS-088-081921 (160-43154-4), FSS-089-081921 (160-43154-5) and FSS-090-081921 (160-43154-6) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 09/01/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-088-081921 (160-43154-4), FSS-089-081921 (160-43154-5) and FSS-090-081921 (160-43154-6) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 08/23/2021, prepared on 09/20/2021 and analyzed on 10/04/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-088-081921 (160-43154-4), FSS-089-081921 (160-43154-5) and FSS-090-081921 (160-43154-6) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 09/10/2021 and analyzed on 09/16/2021.

Preparation Batch 160-526292

The sample exhibited a negative result greater in magnitude than the 3 sigma TPU. This occurrence was evaluated and determined to be random in nature. Sporadic occurrences such as this are statistically expected: FSS-088-081921 (160-43154-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-088-081921 (160-43154-4), FSS-089-081921 (160-43154-5) and FSS-090-081921 (160-43154-6) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 08/23/2021, prepared on 09/05/2021 and analyzed on 09/14/2021 and 09/15/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-088-081921 (160-43154-4), FSS-089-081921 (160-43154-5) and FSS-090-081921 (160-43154-6) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/23/2021, prepared on 09/05/2021 and analyzed on 09/14/2021 and 09/15/2021.

Preparation Batch 160-525622:

The daily pulser check was inadvertently not performed on the detector on the day it was used to count the sample. However, the day before and the day after the sample was counted, the daily pulser check was performed and was within acceptable QC limits demonstrating detector stability. In addition, tracer recovery was in range and the count met the detection goal indicating no adverse effect. FSS-089-081921 (160-43154-5).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-088-081921 (160-43154-4), FSS-089-081921 (160-43154-5) and FSS-090-081921 (160-43154-6) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 09/21/2021 and analyzed on 09/22/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-088-081921 (160-43154-4), FSS-089-081921 (160-43154-5) and FSS-090-081921 (160-43154-6) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/23/2021, prepared on 08/26/2021 and analyzed on 09/18/2021 and 09/20/2021.

Preparation Batch 160-524254:

The replicate precision for Pb-212 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton

background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (160-43154-D-9-F DU).

For samples FSS-088-081921 (160-43154-4), FSS-089-081921 (160-43154-5), FSS-090-081921 (160-43154-6), (LCS 160-524254/2-A), (MB 160-524254/1-A), (160-43154-D-9-E), and (160-43154-D-9-F DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-088-081921 (160-43154-4), FSS-089-081921 (160-43154-5) and FSS-090-081921 (160-43154-6) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 08/23/2021, prepared on 09/13/2021 and analyzed on 09/22/2021.

Preparation Batch 160-526820:

The Method Blank (MB) had activity above the MDC. However the activities for the samples and method blank were less than the requested limit; therefore, the data was reported: FSS-088-081921 (160-43154-4), FSS-089-081921 (160-43154-5), FSS-090-081921 (160-43154-6), (LCS 160-526820/2-A), (MB 160-526820/1-A), (160-43124-D-26-H), and (160-43124-D-26-M DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-088-081921 (160-43154-4), FSS-089-081921 (160-43154-5) and FSS-090-081921 (160-43154-6) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared on 09/05/2021 and analyzed on 09/25/2021.

Preparation Batch 160-525621:

The Laboratory Control Sample (LCS) recovered above the upper QC limit at 129% (125%). The sample activities were less than the MDC; therefore, the data was reported: FSS-088-081921 (160-43154-4), FSS-089-081921 (160-43154-5), FSS-090-081921 (160-43154-6), (LCS 160-525621/2-A), (MB 160-525621/1-A), (160-43124-D-27-G), and (160-43124-D-27-H DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Table 1. Job 160-43154-1 - Updated Sample IDs

Project Sample Point	Lab sample ID	Initial Client Sample ID	Revised Client Sample ID	Results Reported in Job #
SU 7C - SS00090 0"-6"	160-43154-4	FSS-085-091921	FSS-088-091921	160-43154-2
SU 7C - SS00090 0"-6"	160-43154-7	FSS-088-091921	FSS-085-091921	160-43154-1
SU 7C - SS00090 0"-6"	160-43154-7MS	FSS-088-091921MS	FSS-085-091921MS	160-43154-1
SU 7C - SS00090 0"-6"	160-43154-7MSD	FSS-088-091921MSD	FSS-085-091921MSD	160-43154-1
SU 7C - SS00090 6"-12"	160-43154-5	FSS-086-091921	FSS-089-091921	160-43154-2
SU 7C - SS00090 6"-12"	160-43154-8	FSS-089-091921	FSS-086-091921	160-43134-1
SU 7C - SS00090 6"-12"	160-43154-8MS	FSS-089-091921MS	FSS-086-091921MS	160-43134-1
SU 7C - SS00090 6"-12"	160-43154-8MSD	FSS-089-091921MSD	FSS-086-091921MSD	160-43134-1
SU 7C - SS00090 18"-24"	160-43154-6	FSS-087-091921	FSS-090-091921	160-43154-2
SU 7C - SS00090 18"-24"	160-43154-9	FSS-090-091921	FSS-087-091921	160-43134-1
SU 7C - SS00090 18"-24"	160-43154-9	FSS-090-091921MS	FSS-087-091921MS	160-43134-1
SU 7C - SS00090 18"-24"	160-43154-9	FSS-090-091921MSD	FSS-087-091921MSD	160-43134-1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-2

Client Sample ID: FSS-088-081921

Lab Sample ID: 160-43154-4

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.00818	U	0.164	0.164	3.00	0.298	pCi/g	09/20/21 10:28	10/04/21 17:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.5		40 - 110					09/20/21 10:28	10/04/21 17:22	1
Y Carrier	101		40 - 110					09/20/21 10:28	10/04/21 17:22	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.435	U	0.235	0.238	1.00	0.494	pCi/g	09/10/21 15:03	09/16/21 18:56	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00882	U	0.0173	0.0173	1.00	0.0265	pCi/g	09/05/21 17:56	09/14/21 17:39	1
Plutonium-239/240	0.000	U	0.00433	0.00433	1.00	0.0265	pCi/g	09/05/21 17:56	09/14/21 17:39	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	73.1		30 - 110					09/05/21 17:56	09/14/21 17:39	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.179		0.0923	0.0934	1.00	0.0995	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	-0.0122	U	0.0120	0.0120	1.00	0.0817	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.123		0.0760	0.0767	1.00	0.0865	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	68.0		30 - 110					09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.125	U	0.773	0.774	5.00	1.36	pCi/g	09/21/21 10:06	09/22/21 18:57	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.532		0.148	0.157		0.0924	pCi/g	08/26/21 12:50	09/18/21 15:58	1
Bismuth-212	-0.300	U	0.662	0.662		1.16	pCi/g	08/26/21 12:50	09/18/21 15:58	1
Bismuth-214	0.362		0.124	0.129		0.120	pCi/g	08/26/21 12:50	09/18/21 15:58	1
Lead-212	0.438		0.0871	0.0979		0.0880	pCi/g	08/26/21 12:50	09/18/21 15:58	1
Lead-214	0.380		0.0949	0.102		0.108	pCi/g	08/26/21 12:50	09/18/21 15:58	1
Potassium-40	3.26		0.780	0.844		0.358	pCi/g	08/26/21 12:50	09/18/21 15:58	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-2

Client Sample ID: FSS-088-081921

Lab Sample ID: 160-43154-4

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.362		0.124	0.129	1.00	0.120	pCi/g	08/26/21 12:50	09/18/21 15:58	1
Thorium-232	0.532		0.148	0.157		0.0924	pCi/g	08/26/21 12:50	09/18/21 15:58	1
Americium-241	0.0612	U	0.145	0.145		0.249	pCi/g	08/26/21 12:50	09/18/21 15:58	1
Cesium-137	-0.00887	U	0.0643	0.0643		0.116	pCi/g	08/26/21 12:50	09/18/21 15:58	1
Cobalt-60	-0.00440	U	0.0175	0.0175		0.0888	pCi/g	08/26/21 12:50	09/18/21 15:58	1
Europium-152	0.0962	U	0.134	0.135		0.414	pCi/g	08/26/21 12:50	09/18/21 15:58	1
Europium-154	0.0172	U	0.0750	0.0750		0.112	pCi/g	08/26/21 12:50	09/18/21 15:58	1
Europium-155	0.000	U	0.0995	0.0995		0.545	pCi/g	08/26/21 12:50	09/18/21 15:58	1
Sodium-22	0.0124	U	0.0460	0.0461		0.0859	pCi/g	08/26/21 12:50	09/18/21 15:58	1
Zinc-65	0.000	U	0.0327	0.0327		0.157	pCi/g	08/26/21 12:50	09/18/21 15:58	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.303	U	0.675	0.676	5.00	1.16	pCi/g	09/13/21 15:48	09/22/21 07:38	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ni	117	Q	40 - 110					09/13/21 15:48	09/22/21 07:38	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.636	U	1.09	1.09	5.00	1.78	pCi/g	09/05/21 20:20	09/25/21 03:11	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Pu-242 (T)	73.1		30 - 110					09/05/21 20:20	09/25/21 03:11	1

Client Sample ID: FSS-088-081921

Lab Sample ID: 160-43154-4

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Percent Solids: 98.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	12		0.29	0.018	mg/Kg	☼	09/15/21 07:52	09/16/21 02:18	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	20		19	6.3	ug/Kg	☼	09/15/21 15:00	09/15/21 16:49	1

Client Sample ID: FSS-089-081921

Lab Sample ID: 160-43154-5

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.00339	U	0.173	0.173	3.00	0.316	pCi/g	09/20/21 10:28	10/04/21 17:22	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-2

Client Sample ID: FSS-089-081921

Lab Sample ID: 160-43154-5

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	78.1		40 - 110	09/20/21 10:28	10/04/21 17:22	1
Y Carrier	101		40 - 110	09/20/21 10:28	10/04/21 17:22	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.270	U	0.254	0.255	1.00	0.499	pCi/g	09/10/21 15:03	09/16/21 19:18	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00249	U	0.00488	0.00489	1.00	0.0482	pCi/g	09/05/21 17:56	09/14/21 17:39	1
Plutonium-239/240	0.000	U	0.00489	0.00489	1.00	0.0299	pCi/g	09/05/21 17:56	09/14/21 17:39	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	69.7		30 - 110	09/05/21 17:56	09/14/21 17:39	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.122		0.0707	0.0714	1.00	0.0615	pCi/g	09/05/21 20:32	09/15/21 22:19	1
Uranium-235/236	0.0124	U	0.0242	0.0243	1.00	0.0371	pCi/g	09/05/21 20:32	09/15/21 22:19	1
Uranium-238	0.181		0.0852	0.0864	1.00	0.0614	pCi/g	09/05/21 20:32	09/15/21 22:19	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	67.7		30 - 110	09/05/21 20:32	09/15/21 22:19	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.223	U	0.721	0.722	5.00	1.26	pCi/g	09/21/21 10:06	09/22/21 19:19	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.450		0.107	0.116		0.120	pCi/g	08/26/21 12:50	09/20/21 12:48	1
Bismuth-212	0.222	U	0.473	0.474		0.829	pCi/g	08/26/21 12:50	09/20/21 12:48	1
Bismuth-214	0.219		0.0774	0.0805		0.0918	pCi/g	08/26/21 12:50	09/20/21 12:48	1
Lead-212	0.0317	U	0.0783	0.0784		0.135	pCi/g	08/26/21 12:50	09/20/21 12:48	1
Lead-214	0.276		0.0849	0.0894		0.0829	pCi/g	08/26/21 12:50	09/20/21 12:48	1
Potassium-40	3.00		0.712	0.773		0.582	pCi/g	08/26/21 12:50	09/20/21 12:48	1
Radium-226	0.219		0.0774	0.0805	1.00	0.0918	pCi/g	08/26/21 12:50	09/20/21 12:48	1
Thorium-232	0.450		0.107	0.116		0.120	pCi/g	08/26/21 12:50	09/20/21 12:48	1
Americium-241	0.0461	U	0.0931	0.0932		0.159	pCi/g	08/26/21 12:50	09/20/21 12:48	1
Cesium-137	-0.0348	U	0.0548	0.0549		0.0936	pCi/g	08/26/21 12:50	09/20/21 12:48	1
Cobalt-60	0.0275	U	0.0149	0.0151		0.0495	pCi/g	08/26/21 12:50	09/20/21 12:48	1
Europium-152	0.0962	U	0.0858	0.0864		0.140	pCi/g	08/26/21 12:50	09/20/21 12:48	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-2

Client Sample ID: FSS-089-081921

Lab Sample ID: 160-43154-5

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.129		0.0527	0.0544		0.0941	pCi/g	08/26/21 12:50	09/20/21 12:48	1
Europium-155	0.0141	U	0.0603	0.0603		0.387	pCi/g	08/26/21 12:50	09/20/21 12:48	1
Sodium-22	0.0312		0.0204	0.0206		0.0255	pCi/g	08/26/21 12:50	09/20/21 12:48	1
Zinc-65	0.0574	U	0.107	0.108		0.186	pCi/g	08/26/21 12:50	09/20/21 12:48	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.327	U	0.978	0.978	5.00	1.73	pCi/g	09/13/21 15:48	09/22/21 08:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	86.7		40 - 110					09/13/21 15:48	09/22/21 08:44	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.30	U	1.25	1.25	5.00	2.14	pCi/g	09/05/21 20:20	09/25/21 04:17	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	69.7		30 - 110					09/05/21 20:20	09/25/21 04:17	1

Client Sample ID: FSS-089-081921

Lab Sample ID: 160-43154-5

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Percent Solids: 84.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.6		0.30	0.018	mg/Kg	☼	09/15/21 07:52	09/16/21 02:22	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	J	23	7.6	ug/Kg	☼	09/15/21 15:00	09/15/21 16:51	1

Client Sample ID: FSS-090-081921

Lab Sample ID: 160-43154-6

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.00337	U	0.157	0.157	3.00	0.289	pCi/g	09/20/21 10:28	10/04/21 17:23	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.3		40 - 110					09/20/21 10:28	10/04/21 17:23	1
Y Carrier	101		40 - 110					09/20/21 10:28	10/04/21 17:23	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-2

Client Sample ID: FSS-090-081921

Lab Sample ID: 160-43154-6

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.334	U	0.238	0.240	1.00	0.479	pCi/g	09/10/21 15:03	09/16/21 19:41	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0159	U	0.0266	0.0266	1.00	0.0937	pCi/g	09/05/21 17:56	09/15/21 22:21	1
Plutonium-239/240	-0.00798	U	0.00903	0.00906	1.00	0.0658	pCi/g	09/05/21 17:56	09/15/21 22:21	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	64.4		30 - 110					09/05/21 17:56	09/15/21 22:21	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.158		0.0879	0.0889	1.00	0.0911	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	-0.0166	U	0.0146	0.0147	1.00	0.0947	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.0801		0.0597	0.0600	1.00	0.0598	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	61.7		30 - 110					09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.400	U	0.700	0.702	5.00	1.20	pCi/g	09/21/21 10:06	09/22/21 19:42	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.515		0.205	0.212		0.262	pCi/g	08/26/21 12:50	09/20/21 12:49	1
Bismuth-212	0.442	U	0.842	0.843		1.46	pCi/g	08/26/21 12:50	09/20/21 12:49	1
Bismuth-214	0.313		0.112	0.116		0.120	pCi/g	08/26/21 12:50	09/20/21 12:49	1
Lead-212	0.305		0.0763	0.0824		0.0843	pCi/g	08/26/21 12:50	09/20/21 12:49	1
Lead-214	0.245		0.0948	0.0979		0.110	pCi/g	08/26/21 12:50	09/20/21 12:49	1
Potassium-40	3.76		1.01	1.08		0.690	pCi/g	08/26/21 12:50	09/20/21 12:49	1
Radium-226	0.313		0.112	0.116	1.00	0.120	pCi/g	08/26/21 12:50	09/20/21 12:49	1
Thorium-232	0.515		0.205	0.212		0.262	pCi/g	08/26/21 12:50	09/20/21 12:49	1
Americium-241	0.0542	U	0.142	0.142		0.245	pCi/g	08/26/21 12:50	09/20/21 12:49	1
Cesium-137	-0.0466	U	0.0762	0.0763		0.130	pCi/g	08/26/21 12:50	09/20/21 12:49	1
Cobalt-60	0.00866	U	0.0206	0.0207		0.0669	pCi/g	08/26/21 12:50	09/20/21 12:49	1
Europium-152	0.0950	U	0.0777	0.0783		0.200	pCi/g	08/26/21 12:50	09/20/21 12:49	1
Europium-154	0.0395	U	0.0649	0.0650		0.128	pCi/g	08/26/21 12:50	09/20/21 12:49	1
Europium-155	-0.0967	U	0.331	0.331		0.565	pCi/g	08/26/21 12:50	09/20/21 12:49	1
Sodium-22	0.0375		0.0260	0.0262		0.0346	pCi/g	08/26/21 12:50	09/20/21 12:49	1
Zinc-65	0.000	U	0.0232	0.0232		0.240	pCi/g	08/26/21 12:50	09/20/21 12:49	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43154-2

Client Sample ID: FSS-090-081921

Lab Sample ID: 160-43154-6

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.0922	U	0.767	0.767	5.00	1.34	pCi/g	09/13/21 15:48	09/22/21 09:50	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	97.5		40 - 110					09/13/21 15:48	09/22/21 09:50	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.55	U	1.30	1.31	5.00	2.23	pCi/g	09/05/21 20:20	09/25/21 05:24	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	64.4		30 - 110					09/05/21 20:20	09/25/21 05:24	1

Client Sample ID: FSS-090-081921

Lab Sample ID: 160-43154-6

Date Collected: 08/19/21 13:15

Matrix: Solid

Date Received: 08/20/21 08:41

Percent Solids: 83.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.1		0.31	0.019	mg/Kg	☼	09/15/21 07:52	09/16/21 02:25	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	12	J	21	6.8	ug/Kg	☼	09/15/21 15:00	09/15/21 16:54	1

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43157-1	FSS-094-081921	Solid	08/19/21 13:00	08/21/21 08:42
160-43157-2	FSS-095-081921	Solid	08/19/21 13:00	08/21/21 08:42
160-43157-3	FSS-096-081921	Solid	08/19/21 13:00	08/21/21 08:42
160-43157-4	FSS-097-081921	Solid	08/19/21 13:00	08/21/21 08:42
160-43157-5	FSS-297-081921	Solid	08/19/21 13:00	08/21/21 08:42
160-43157-6	FSS-098-082021	Solid	08/20/21 08:45	08/21/21 08:42
160-43157-7	FSS-298-082021	Solid	08/20/21 08:45	08/21/21 08:42
160-43157-8	FSS-099-082021	Solid	08/20/21 08:45	08/21/21 08:42
160-43157-9	FSS-299-082021	Solid	08/20/21 08:45	08/21/21 08:42
160-43157-10	FSS-100-082021	Solid	08/20/21 08:30	08/21/21 08:42
160-43157-11	FSS-101-082021	Solid	08/20/21 08:30	08/21/21 08:42
160-43157-12	FSS-102-082021	Solid	08/20/21 08:30	08/21/21 08:42
160-43157-13	FSS-103-082021	Solid	08/20/21 09:00	08/21/21 08:42
160-43157-14	FSS-104-082021	Solid	08/20/21 09:00	08/21/21 08:42
160-43157-15	FSS-105-082021	Solid	08/20/21 09:00	08/21/21 08:42
160-43157-16	FSS-106-082021	Solid	08/20/21 09:15	08/21/21 08:42
160-43157-17	FSS-107-082021	Solid	08/20/21 09:15	08/21/21 08:42
160-43157-18	FSS-108-082021	Solid	08/20/21 09:15	08/21/21 08:42
160-43157-19	FSS-109-082021	Solid	08/20/21 09:30	08/21/21 08:42
160-43157-20	FSS-110-082021	Solid	08/20/21 09:30	08/21/21 08:42
160-43157-21	FSS-111-082021	Solid	08/20/21 09:30	08/21/21 08:42
160-43157-22	FSS-112-082021	Solid	08/20/21 10:00	08/21/21 08:42
160-43157-23	FSS-113-082021	Solid	08/20/21 10:00	08/21/21 08:42
160-43157-24	FSS-114-082021	Solid	08/20/21 10:00	08/21/21 08:42

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43157-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/21/2021 8:42 AM and 08/25/2021 08:33 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 18.0° C, 23.6° C and 26.9° C.

Receipt Exceptions

The asbestos and radiochemistry volume was not received for the following samples on 08/21/2021: FSS-094-081921 (160-43157-1), FSS-095-081921 (160-43157-2), FSS-096-081921 (160-43157-3), FSS-097-081921 (160-43157-4), FSS-297-081921 (160-43157-5), FSS-098-082021 (160-43157-6), FSS-298-082021 (160-43157-7), FSS-099-082021 (160-43157-8), FSS-299-082021 (160-43157-9), FSS-100-082021 (160-43157-10), FSS-101-082021 (160-43157-11), and FSS-102-082021 (160-43157-12).

The following samples were received at the laboratory outside the required temperature criteria at 18.9 °C in Denver: FSS-094-081921 (160-43157-1), FSS-095-081921 (160-43157-2), FSS-096-081921 (160-43157-3), FSS-097-081921 (160-43157-4), FSS-297-081921 (160-43157-5), FSS-098-082021 (160-43157-6), FSS-298-082021 (160-43157-7), FSS-099-082021 (160-43157-8), FSS-299-082021 (160-43157-9), FSS-100-082021 (160-43157-10), FSS-101-082021 (160-43157-11), FSS-102-082021 (160-43157-12), FSS-103-082021 (160-43157-13), FSS-104-082021 (160-43157-14), FSS-105-082021 (160-43157-15), FSS-106-082021 (160-43157-16), FSS-107-082021 (160-43157-17), FSS-108-082021 (160-43157-18), FSS-109-082021 (160-43157-19), FSS-110-082021

(160-43157-20), FSS-111-082021 (160-43157-21), FSS-112-082021 (160-43157-22), FSS-113-082021 (160-43157-23), and FSS-114-082021 (160-43157-24).

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis.

METALS (ICP/MS)

Samples FSS-094-081921 (160-43157-1), FSS-095-081921 (160-43157-2), FSS-096-081921 (160-43157-3), FSS-097-081921 (160-43157-4), FSS-297-081921 (160-43157-5), FSS-098-082021 (160-43157-6), FSS-298-082021 (160-43157-7), FSS-099-082021 (160-43157-8), FSS-299-082021 (160-43157-9), FSS-100-082021 (160-43157-10), FSS-101-082021 (160-43157-11), FSS-102-082021 (160-43157-12), FSS-103-082021 (160-43157-13), FSS-104-082021 (160-43157-14), FSS-105-082021 (160-43157-15), FSS-106-082021 (160-43157-16), FSS-107-082021 (160-43157-17), FSS-108-082021 (160-43157-18), FSS-109-082021 (160-43157-19), FSS-110-082021 (160-43157-20), FSS-111-082021 (160-43157-21), FSS-112-082021 (160-43157-22), FSS-113-082021 (160-43157-23) and FSS-114-082021 (160-43157-24) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 09/15/2021 and analyzed on 09/15/2021 and 09/16/2021.

Preparation Batch 280-549132, Analytical Batch 280-549978:

The matrix spike / matrix spike duplicate (MS/MSD) recoveries were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Preparation Batch 280-549130, Analytical Batch 280-549130:

The matrix spike / matrix spike duplicate (MS/MSD) recoveries were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Preparation Batch 280-549986:

Lead failed the recovery criteria low for the MS of sample 160-43154-9. Lead exceeded the RPD limit for the MSD of sample 160-43154-9.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-094-081921 (160-43157-1), FSS-095-081921 (160-43157-2), FSS-096-081921 (160-43157-3), FSS-097-081921 (160-43157-4), FSS-297-081921 (160-43157-5), FSS-098-082021 (160-43157-6), FSS-298-082021 (160-43157-7), FSS-099-082021 (160-43157-8), FSS-299-082021 (160-43157-9), FSS-100-082021 (160-43157-10), FSS-101-082021 (160-43157-11), FSS-102-082021 (160-43157-12), FSS-103-082021 (160-43157-13), FSS-104-082021 (160-43157-14), FSS-105-082021 (160-43157-15), FSS-106-082021 (160-43157-16), FSS-107-082021 (160-43157-17), FSS-108-082021 (160-43157-18), FSS-109-082021 (160-43157-19), FSS-110-082021 (160-43157-20), FSS-111-082021 (160-43157-21), FSS-112-082021 (160-43157-22), FSS-113-082021 (160-43157-23) and FSS-114-082021 (160-43157-24) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B_ DoD5. The samples were prepared on 09/15/2021 and analyzed on 09/15/2021 and 09/16/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples FSS-094-081921 (160-43157-1), FSS-095-081921 (160-43157-2), FSS-096-081921 (160-43157-3), FSS-097-081921 (160-43157-4), FSS-297-081921 (160-43157-5), FSS-098-082021 (160-43157-6), FSS-298-082021 (160-43157-7), FSS-099-082021 (160-43157-8), FSS-299-082021 (160-43157-9), FSS-100-082021 (160-43157-10), FSS-101-082021 (160-43157-11), FSS-102-082021 (160-43157-12), FSS-103-082021 (160-43157-13), FSS-104-082021 (160-43157-14), FSS-105-082021 (160-43157-15), FSS-106-082021 (160-43157-16), FSS-107-082021 (160-43157-17), FSS-108-082021 (160-43157-18), FSS-109-082021 (160-43157-19), FSS-110-082021 (160-43157-20), FSS-111-082021 (160-43157-21), FSS-112-082021 (160-43157-22), FSS-113-082021 (160-43157-23) and FSS-114-082021 (160-43157-24) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 08/31/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-094-081921 (160-43157-1), FSS-095-081921 (160-43157-2), FSS-096-081921 (160-43157-3), FSS-097-081921 (160-43157-4), FSS-297-081921 (160-43157-5), FSS-098-082021 (160-43157-6), FSS-298-082021 (160-43157-7), FSS-099-082021 (160-43157-8), FSS-299-082021 (160-43157-9), FSS-100-082021 (160-43157-10), FSS-101-082021 (160-43157-11), FSS-102-082021 (160-43157-12), FSS-103-082021 (160-43157-13), FSS-104-082021 (160-43157-14), FSS-105-082021 (160-43157-15), FSS-106-082021 (160-43157-16), FSS-107-082021 (160-43157-17), FSS-108-082021 (160-43157-18), FSS-109-082021 (160-43157-19), FSS-110-082021 (160-43157-20), FSS-111-082021 (160-43157-21), FSS-112-082021 (160-43157-22), FSS-113-082021 (160-43157-23) and FSS-114-082021 (160-43157-24) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 08/23/2021 and 08/27/2021, prepared on 09/08/2021 and analyzed on 10/01/2021.

Preparation Batch 160-525828:

The carrier recovery is outside acceptance limit for the laboratory control sample (LCS). The LCS spike recoveries were within control limits, which demonstrates acceptable sample preparation and instrument performance. Therefore, this was an apparent anomaly in the

sample preparation, isolated to the LCS, which is not indicative of the entire batch: (LCS 160-525828/2-A).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-094-081921 (160-43157-1), FSS-095-081921 (160-43157-2), FSS-096-081921 (160-43157-3), FSS-097-081921 (160-43157-4), FSS-297-081921 (160-43157-5), FSS-098-082021 (160-43157-6), FSS-298-082021 (160-43157-7), FSS-099-082021 (160-43157-8), FSS-299-082021 (160-43157-9), FSS-100-082021 (160-43157-10), FSS-101-082021 (160-43157-11), FSS-102-082021 (160-43157-12), FSS-103-082021 (160-43157-13), FSS-104-082021 (160-43157-14), FSS-105-082021 (160-43157-15), FSS-106-082021 (160-43157-16), FSS-107-082021 (160-43157-17), FSS-108-082021 (160-43157-18), FSS-109-082021 (160-43157-19), FSS-110-082021 (160-43157-20), FSS-111-082021 (160-43157-21), FSS-112-082021 (160-43157-22), FSS-113-082021 (160-43157-23) and FSS-114-082021 (160-43157-24) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 09/14/2021 and 09/19/2021 and analyzed on 09/17/2021 and 09/21/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-094-081921 (160-43157-1), FSS-095-081921 (160-43157-2), FSS-096-081921 (160-43157-3), FSS-097-081921 (160-43157-4), FSS-297-081921 (160-43157-5), FSS-098-082021 (160-43157-6), FSS-298-082021 (160-43157-7), FSS-099-082021 (160-43157-8), FSS-299-082021 (160-43157-9), FSS-100-082021 (160-43157-10), FSS-101-082021 (160-43157-11), FSS-102-082021 (160-43157-12), FSS-103-082021 (160-43157-13), FSS-104-082021 (160-43157-14), FSS-105-082021 (160-43157-15), FSS-106-082021 (160-43157-16), FSS-107-082021 (160-43157-17), FSS-108-082021 (160-43157-18), FSS-109-082021 (160-43157-19), FSS-110-082021 (160-43157-20), FSS-111-082021 (160-43157-21), FSS-112-082021 (160-43157-22), FSS-113-082021 (160-43157-23) and FSS-114-082021 (160-43157-24) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 08/23/2021 and 08/27/2021, prepared on 09/05/2021, 09/07/2021 and 09/11/2021 and analyzed on 09/14/2021, 09/20/2021, 09/21/2021 and 09/22/2021.

limit for the duplicate of sample FSS-097-081921DU (160-43157-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-094-081921 (160-43157-1), FSS-095-081921 (160-43157-2), FSS-096-081921 (160-43157-3), FSS-097-081921 (160-43157-4), FSS-297-081921 (160-43157-5), FSS-098-082021 (160-43157-6), FSS-298-082021 (160-43157-7), FSS-099-082021 (160-43157-8), FSS-299-082021 (160-43157-9), FSS-100-082021 (160-43157-10), FSS-101-082021 (160-43157-11), FSS-102-082021 (160-43157-12), FSS-103-082021 (160-43157-13), FSS-104-082021 (160-43157-14), FSS-105-082021 (160-43157-15), FSS-106-082021 (160-43157-16), FSS-107-082021 (160-43157-17), FSS-108-082021 (160-43157-18), FSS-109-082021 (160-43157-19), FSS-110-082021 (160-43157-20), FSS-111-082021 (160-43157-21), FSS-112-082021 (160-43157-22), FSS-113-082021 (160-43157-23) and FSS-114-082021 (160-43157-24) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/23/2021 and 08/27/2021, prepared on 09/05/2021, 09/07/2021 and 09/12/2021 and analyzed on 09/14/2021, 09/20/2021, 09/21/2021 and 09/22/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-094-081921 (160-43157-1), FSS-095-081921 (160-43157-2), FSS-096-081921 (160-43157-3), FSS-097-081921 (160-43157-4), FSS-297-081921 (160-43157-5), FSS-098-082021 (160-43157-6), FSS-298-082021 (160-43157-7), FSS-099-082021 (160-43157-8), FSS-299-082021 (160-43157-9), FSS-100-082021 (160-43157-10), FSS-101-082021 (160-43157-11), FSS-102-082021 (160-43157-12), FSS-103-082021 (160-43157-13), FSS-104-082021 (160-43157-14), FSS-105-082021 (160-43157-15), FSS-106-082021 (160-43157-16), FSS-107-082021 (160-43157-17), FSS-108-082021 (160-43157-18), FSS-109-082021 (160-43157-19), FSS-110-082021 (160-43157-20), FSS-111-082021 (160-43157-21), FSS-112-082021 (160-43157-22), FSS-113-082021 (160-43157-23) and FSS-114-082021 (160-43157-24) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 09/22/2021 and 09/23/2021 and analyzed on 09/23/2021 and 09/27/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-094-081921 (160-43157-1), FSS-095-081921 (160-43157-2), FSS-096-081921 (160-43157-3), FSS-097-081921 (160-43157-4), FSS-297-081921 (160-43157-5), FSS-098-082021 (160-43157-6), FSS-298-082021 (160-43157-7), FSS-099-082021 (160-43157-8), FSS-299-082021 (160-43157-9), FSS-100-082021 (160-43157-10), FSS-101-082021 (160-43157-11), FSS-102-082021 (160-43157-12), FSS-103-082021 (160-43157-13), FSS-104-082021 (160-43157-14), FSS-105-082021 (160-43157-15), FSS-106-082021 (160-43157-16), FSS-107-082021 (160-43157-17), FSS-108-082021 (160-43157-18), FSS-109-082021 (160-43157-19), FSS-110-082021 (160-43157-20), FSS-111-082021 (160-43157-21), FSS-112-082021 (160-43157-22), FSS-113-082021 (160-43157-23) and FSS-114-082021 (160-43157-24) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/23/2021 and 08/25/2021, prepared on 08/26/2021 and 08/27/2021 and analyzed on 09/21/2021, 09/22/2021 and 09/23/2021.

Preparation Batch 160-524257:

For samples FSS-103-082021 (160-43157-13), FSS-104-082021 (160-43157-14), FSS-105-082021 (160-43157-15), FSS-106-082021

(160-43157-16), FSS-107-082021 (160-43157-17), FSS-108-082021 (160-43157-18), FSS-109-082021 (160-43157-19), FSS-110-082021 (160-43157-20), FSS-111-082021 (160-43157-21), FSS-112-082021 (160-43157-22), FSS-113-082021 (160-43157-23), FSS-114-082021 (160-43157-24), (LCS 160-524257/2-A), (MB 160-524257/1-A), and (160-43157-D-24-D DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

Preparation Batch 160-524480:

The MB z-score for Pb-214 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (MB 160-524480/1-A).

For samples FSS-094-081921 (160-43157-1), FSS-095-081921 (160-43157-2), FSS-096-081921 (160-43157-3), FSS-097-081921 (160-43157-4), FSS-297-081921 (160-43157-5), FSS-098-082021 (160-43157-6), FSS-298-082021 (160-43157-7), FSS-099-082021 (160-43157-8), FSS-299-082021 (160-43157-9), FSS-100-082021 (160-43157-10), FSS-101-082021 (160-43157-11), FSS-102-082021 (160-43157-12), (LCS 160-524480/2-A), (MB 160-524480/1-A), and (160-43157-D-12-E DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232

Ac-228 Ra-228
Th-227 Ra-223
Th-227 Ac-227
Th-227 Bi-214
Th-227 Pb-211
Bi-214 Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-094-081921 (160-43157-1), FSS-095-081921 (160-43157-2), FSS-096-081921 (160-43157-3), FSS-097-081921 (160-43157-4), FSS-297-081921 (160-43157-5), FSS-098-082021 (160-43157-6), FSS-298-082021 (160-43157-7), FSS-099-082021 (160-43157-8), FSS-299-082021 (160-43157-9), FSS-100-082021 (160-43157-10), FSS-101-082021 (160-43157-11), FSS-102-082021 (160-43157-12), FSS-103-082021 (160-43157-13), FSS-104-082021 (160-43157-14), FSS-105-082021 (160-43157-15), FSS-106-082021 (160-43157-16), FSS-107-082021 (160-43157-17), FSS-108-082021 (160-43157-18), FSS-109-082021 (160-43157-19), FSS-110-082021 (160-43157-20), FSS-111-082021 (160-43157-21), FSS-112-082021 (160-43157-22), FSS-113-082021 (160-43157-23) and FSS-114-082021 (160-43157-24) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 08/23/2021 and 08/27/2021, prepared on 09/16/2021 and analyzed on 09/22/2021, 09/23/2021 and 09/24/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-094-081921 (160-43157-1), FSS-095-081921 (160-43157-2), FSS-096-081921 (160-43157-3), FSS-097-081921 (160-43157-4), FSS-297-081921 (160-43157-5), FSS-098-082021 (160-43157-6), FSS-298-082021 (160-43157-7), FSS-099-082021 (160-43157-8), FSS-299-082021 (160-43157-9), FSS-100-082021 (160-43157-10), FSS-101-082021 (160-43157-11), FSS-102-082021 (160-43157-12), FSS-103-082021 (160-43157-13), FSS-104-082021 (160-43157-14), FSS-105-082021 (160-43157-15), FSS-106-082021 (160-43157-16), FSS-107-082021 (160-43157-17), FSS-108-082021 (160-43157-18), FSS-109-082021 (160-43157-19), FSS-110-082021 (160-43157-20), FSS-111-082021 (160-43157-21), FSS-112-082021 (160-43157-22), FSS-113-082021 (160-43157-23) and FSS-114-082021 (160-43157-24) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared on 09/05/2021, 09/07/2021 and 09/12/2021 and analyzed on 09/25/2021, 09/27/2021 and 09/29/2021.

Preparation Batch 160-525621:

The Laboratory Control Sample (LCS) recovered at 129% for Pu-241. The samples had activity less than the MDC and requested limit; therefore, the results were reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Chain of Custody Record



Environment Testing
TestAmerica

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input checked="" type="checkbox"/> Other:		Project Manager: Dan Ours Email: d.ours@fpm-remediations.com Tel/Fax: (315) 336-7721 ext. 218		Site Contact: Doug Beard Lab Contact: Ivan Vania		Date: 08-20-21 Carrier: Fed Ex		COC No: 1 of 2 COCs TALS Project #:																													
Client Contact Address 181 Kenwood Avenue Oneida, NY 13421 (315) 336-7721 ext. 218 Phone Fax (315) 336-7722 FAX Project Name: BNL 705 Stack Demo Site: BNL P O # 1085-20-01-01		Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below 30 Days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Sample Date 19-Aug 19-Aug 19-Aug 19-Aug 19-Aug 20-Aug 20-Aug 20-Aug 20-Aug 20-Aug 20-Aug 20-Aug		Sample Time 13:00 13:00 13:00 13:00 13:00 8:45 8:45 8:45 8:45 8:30 8:30 8:30		Sample Type (C=Comp, G=Grab) C C C C C C C C C C C		Matrix S S S S S S S S S S S		# of Cont. 3 3 3 3 3 3 3 3 3 3 3		Filtered Sample (Y/N) N N N N N N N N N N N N		Perform MS/MSD (Y/N) N N N N N N N N N N N N		Gamma Spec: Ra-226+detectors N N N N N N N N N N N N		Asbestos - EPA600 R-93 N N N N N N N N N N N N		Lead (ICP/MS) - 6020B N N N N N N N N N N N N		Mercury - EPA 7470A N N N N N N N N N N N N		Ni-63 N N N N N N N N N N N N		C-14 N N N N N N N N N N N N		Alpha Spec Pu 238,239,240 N N N N N N N N N N N N		Alpha Spec U 234,235,238 N N N N N N N N N N N N		Pu 241 by LSC N N N N N N N N N N N N		Sample Specific Notes: SU 7C - SS007 0"-6" SU 7C - SS007 6"-12" SU 7C - SS007 18"-24" SU 7C - SS006 0"-6" SU 7C - SS006 0"-6" Dup SU 7C - SS006 6"-12" SU 7C - SS006 6"-12" Dup SU 7C - SS006 18"-24" SU 7C - SS006 18"-24" Dup SU 7C - SS005 0"-6" SU 7C - SS005 6"-12" SU 7C - SS005 18"-24" SU 7C - SS005 18"-24"	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other															Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.																						
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown															<input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for Months																						
Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu154, Eu155															Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)																						
Custody Seals Intact: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Relinquished by: Douglas Beard		Company: Cabrera Services, Inc.		Date/Time: 8-20-21/17:00		Received by: Fed Ex		Company:		Date/Time:		Therm ID No.:																							
Relinquished by: FFO EX		Company:		Date/Time:		Received by:		Company:		Date/Time: 8/21/21		Date/Time:		Date/Time:																							
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:		Date/Time:		Date/Time:		Date/Time:																							

Chain of Custody Record

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Client Contact FPM Address 181 Kenwood Avenue Oneida, NY 13421 (315) 336-7721 ext. 218 Phone Fax (315) 336-7722 FAX Project Name: BNL 705 Stack Demo Site: BNL P O # 1085-20-01-01		Project Manager: Dan Ours Email: d.ours@tpr-remediations.com Tel/Fax: (315) 336-7721 ext. 218 Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below .30 Days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: Doug Beard Lab Contact: Ivan Vania		Date: 08-20-21 Carrier: Fed Ex Sampler: B. Gaudette For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:		COC No: 2 of 2 COCs TALS Project #:											
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Gamma Spec: Ra-226+detects	Strontium-90 (GFPC)	Asbestos - EPA600 R-93	Lead (ICP/MS) - 6020B	Mercury - EPA 7470A	Ni-63	Tritium	C-14	Alpha Spec Pu 238,239,240	Alpha Spec U 234,235,238	Pu 241 by LSC	Sample Specific Notes:
FSS-103-082021	20-Aug	9:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS004 0"-6"
FSS-104-082021	20-Aug	9:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS004 6"-12"
FSS-105-082021	20-Aug	9:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS004 18"-24"
FSS-106-082021	20-Aug	9:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS004 18"-24"
FSS-107-082021	20-Aug	9:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS003 0"-6"
FSS-108-082021	20-Aug	9:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS003 6"-12"
FSS-109-082021	20-Aug	9:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS003 18"-24"
FSS-110-082021	20-Aug	9:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS002 0"-6"
FSS-111-082021	20-Aug	9:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS002 6"-12"
FSS-112-082021	20-Aug	10:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS002 18"-24"
FSS-113-082021	20-Aug	10:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS001 0"-6"
FSS-114-082021	20-Aug	10:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS001 6"-12"
FSS-114-082021	20-Aug	10:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7C - SS001 18"-24"

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Return to Client Disposal by Lab Archive for Months

Custody Seal No.: Relinquished by: Douglas Beard Relinquished by: FED EX Relinquished by:	Date/Time: 8-20-21/17:00 Date/Time: Date/Time:	Cooler Temp. (°C): Received by: Fed Ex Received by: <i>[Signature]</i> Received in Laboratory by:	Therm ID No.: Date/Time: Date/Time: 8/21/21 Date/Time: 0842
---	--	--	--

Client Contact
FPM
Address 181 Kenwood Avenue
Oneida, NY 13421
(315) 336-7721 ext. 218 Phone
Fax (315) 336-7722 FAX
Project Name: BNL 705 Stack Demo
Site: BNL
P O # 1085-20-01-01

Regulatory Program: DW NPDES RCRA Other:

Project Manager: Dan Ours
Email: d.ours@pjm-remediations.com
Tel/Fax: (315) 336-7721 ext. 218
Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below 30 Days
 2 weeks
 1 week
 2 days
 1 day

Site Contact: Doug Beard
Lab Contact: Ivan Vania
Date: 08-20-21
Carrier: Fed Ex
COC No: 1 of 1 COCs
TALS Project #: J. Gollhofer
Sampler: J. Gollhofer

Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Gamma Spec: Ra-226+detects	Strontium-90 (GFPC)	Asbestos - EPA600 R-93	Lead (ICP/MS) - 6020B	Mercury - EPA 7470A	Ni-63	Tritium	C-14	Alpha Spec Pu 238,239,240	Alpha Spec U 234,235,238	Pu 241 by LSC
19-Aug	13:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1
19-Aug	13:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1
19-Aug	13:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1
19-Aug	13:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1
19-Aug	13:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1
20-Aug	8:45	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1
20-Aug	8:45	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1
20-Aug	8:45	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1
20-Aug	8:45	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1
20-Aug	8:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1
20-Aug	8:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1
20-Aug	8:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazardous Flammable Skin Irritant Poison B Unknown
 Return to Client Disposal by Lab Archive for _____ Months

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu154, Eu155

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:

Custody Seal No.: _____
Company: Cabrera Services, Inc.
Company: _____
Company: _____

Relinquished by: Douglas Beard
Date/Time: 21/17-00

Relinquished by: *AB*
Date/Time: _____

Relinquished by: *ADVA Remediating*
Date/Time: 8/25/21 08:33

Relinquished by: *ADVA Remediating*
Date/Time: _____

Received by: Fed Ex
Date/Time: _____

Received in Laboratory by: _____
Date/Time: _____

Company: _____
Company: _____
Company: _____

Therm ID No.: _____
Corrd.: _____



Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler:	Lab PM	Carrier Tracking No(s):	COC No.									
Client Contact		Vania, Ivan H	Vania, Ivan H		280-585185.2									
Shipping/Receiving		E-Mail:	Ivan.Vania@Eurofins.com	State of Origin:	Page:									
Company		TestAmerica Laboratories, Inc.		New York	Page 2 of 3									
Address:		13715 Rider Trail North,		Job #	160-43157-1									
City:		Earth City		Preservation Codes:										
State, Zip		MO, 63045		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:										
Phone:		314-298-8566(Tel) 314-298-8757(Fax)		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4.5 Z - other (specify)										
Email:														
Project Name:		BNL Decommissioning Project												
Site:														
Due Date Requested:		8/25/2021												
TAT Requested (days):														
PO #														
WO #														
Project #		16009147												
SSOW#:														
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=water/oil)	Field Filtered Sample (Yes or No)	Form MS/MSD (Yes or No)	ICP Carriers/ (MOD) Local Method	ICP Native/Dry_Grind (MOD) Local Method	ICP Native/ICP_Native_Prep (MOD) Local Method	RAD SCREEN/RAD_SCREEN_PREP Radiological Screen	Analysis Requested	Total Number of Containers	Special Instructions/Note:
FSS-103-082021 (160-43157-13)	8/20/21	09:00 Eastern	Solid	Preservation Code:		X	X	X	X	X	X	1	.196 Sigma, DER<3, Log ICP_Carriers and ICP_Native, 1.96 Sigma, DER<3	
FSS-104-082021 (160-43157-14)	8/20/21	09:00 Eastern	Solid			X	X	X	X	X	X	1	.196 Sigma, DER<3, Log ICP_Carriers and ICP_Native, 1.96 Sigma, DER<3	
FSS-105-082021 (160-43157-15)	8/20/21	09:00 Eastern	Solid			X	X	X	X	X	X	1	.196 Sigma, DER<3, Log ICP_Carriers and ICP_Native, 1.96 Sigma, DER<3	
FSS-106-082021 (160-43157-16)	8/20/21	09:15 Eastern	Solid			X	X	X	X	X	X	1	.196 Sigma, DER<3, Log ICP_Carriers and ICP_Native, 1.96 Sigma, DER<3	
FSS-107-082021 (160-43157-17)	8/20/21	09:15 Eastern	Solid			X	X	X	X	X	X	1	.196 Sigma, DER<3, Log ICP_Carriers and ICP_Native, 1.96 Sigma, DER<3	
FSS-108-082021 (160-43157-18)	8/20/21	09:15 Eastern	Solid			X	X	X	X	X	X	1	.196 Sigma, DER<3, Log ICP_Carriers and ICP_Native, 1.96 Sigma, DER<3	
FSS-109-082021 (160-43157-19)	8/20/21	09:30 Eastern	Solid			X	X	X	X	X	X	1	.196 Sigma, DER<3, Log ICP_Carriers and ICP_Native, 1.96 Sigma, DER<3	
FSS-110-082021 (160-43157-20)	8/20/21	09:30 Eastern	Solid			X	X	X	X	X	X	1	.196 Sigma, DER<3, Log ICP_Carriers and ICP_Native, 1.96 Sigma, DER<3	
FSS-111-082021 (160-43157-21)	8/20/21	09:30 Eastern	Solid			X	X	X	X	X	X	1	.196 Sigma, DER<3, Log ICP_Carriers and ICP_Native, 1.96 Sigma, DER<3	
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State or Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica														
Possible Hazard Identification														
Level 1 radioactive														
Deliverable Requested: I, II, III, IV, Other (specify)														
Primary Deliverable Rank: 2														
Empty Kit Relinquished by:														
Relinquished by: <i>[Signature]</i> Date: 8/16/21 Time: 13:50														
Relinquished by: <i>[Signature]</i> Date: 8/17/2021 Time: 09:28														
Relinquished by: <i>[Signature]</i> Date: 8/17/2021 Time: 09:28														
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No														
Custody Seal No.:														
Cooler Temperature(s) °C and Other Remarks:														

Chain of Custody Record

Client Information (Sub Contract Lab)			Sampler:		Lab PM		Carrier Tracking No(s)		COC No.	
Client Contact Shipping/Receiving			Phone:		Vania, Ivan H		280-585185.3		280-585185.3	
Company TestAmerica Laboratories, Inc.			E-Mail: ivan.vania@eurofinsnet.com		State of Origin: New York		Page Page 3 of 3		Job #	
Address: 13715 Rider Trail North,			Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Job #		Job #		160-43157-1	
City Earth City			Due Date Requested: 8/25/2021		TAT Requested (days):		Analysis Requested		Preservation Codes:	
State, Zip MO, 63045			PO #		WO #		GA_01_R_RadDry_Grind (MOD) Custom per COC (NORM type list)		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)			Project #: 16009147		SSOW#:		GA_01_R_RadDry_Grind (MOD) Custom per COC (NORM type list)		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4.5 Z - other (specify)	
Email:			Project Name BNL Decommissioning Project		Site:		905_Sr90Dry_Grind Strontium-90 (GFC)		Special Instructions/Note:	
Sample Identification - Client ID (Lab ID)			Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (Newer, Sealed, On-water, Oil, BT-Tissue, Air/)	
FSS-112-082021 (160-43157-22)			8/20/21		10:00 Eastern		Solid		1.96 Sigma, DER<3, Log ICP, Carriers and ICP, Native, 1.96 Sigma, DER<3	
FSS-113-082021 (160-43157-23)			8/20/21		10:00 Eastern		Solid		1.96 Sigma, DER<3, Log ICP, Carriers and ICP, Native, 1.96 Sigma, DER<3	
FSS-114-082021 (160-43157-24)			8/20/21		10:00 Eastern		Solid		1.96 Sigma, DER<3, Log ICP, Carriers and ICP, Native, 1.96 Sigma, DER<3	
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>										
Possible Hazard Identification										
Level 1 radioactive										
Deliverable Requested: I, II, III, IV, Other (specify)										
Primary Deliverable Rank: 2 <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/QC Requirements:										
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)										
Relinquished by:			Date:		Time:		Method of Shipment:		Cooler Temperature(s) °C and Other Remarks:	
Relinquished by: <i>[Signature]</i>			Date: 8/20/21		Time: 13:00		Method of Shipment:		Cooler Temperature(s) °C and Other Remarks:	
Relinquished by: <i>[Signature]</i>			Date: 8/20/21		Time: 13:00		Method of Shipment:		Cooler Temperature(s) °C and Other Remarks:	
Relinquished by: <i>[Signature]</i>			Date: 8/20/21		Time: 13:00		Method of Shipment:		Cooler Temperature(s) °C and Other Remarks:	

Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler:	Lab PM	Carrier Tracking No(s)	COC No.
Client Contact: Shipping/Receiving		Phone:	Vania, Ivan H	State of Origin: New York	280-5851854
Company: TestAmerica Laboratories, Inc.		E-Mail:	Ivan.Vania@Eurofins.com	Page: Page 4 of 3	Job # 160-43157-1
Address: 13715 Rider Trail North, Earth City State, Zip MO, 63045 Phone: 314-298-8566(Tel) 314-298-8757(Fax) Email:		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Due Date Requested: 8/25/2021 TAT Requested (days):		Analysis Requested			
PO #	WO #	Project #	SSOW#	Form MS/MSD (Yes or No)	Field Filtered Sample (Yes or No)
16009147		BNL Decommissioning Project			
Sample ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=soil, BT=Tissue, A=Air)	Preservation Code:
FSS-112-082021 (160-43157-22)	8/20/21	10:00 Eastern	Solid		
FSS-113-082021 (160-43157-23)	8/20/21	10:00 Eastern	Solid		
FSS-114-082021 (160-43157-24)	8/20/21	10:00 Eastern	Solid		
Special Instructions/Note:		Total Number of containers			
1.96 Sigma, DER<3, Log ICP_Carriers and ICP_Native, 1.96 Sigma, DER<3		1			
1.96 Sigma, DER<3, Log ICP_Carriers and ICP_Native, 1.96 Sigma, DER<3		1			
1.96 Sigma, DER<3, Log ICP_Carriers and ICP_Native, 1.96 Sigma, DER<3		1			

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica

Possible Hazard Identification
 Level 1 radioactive
 Deliverable Requested: I, II, III, IV, Other (specify) _____

Primary Deliverable Rank: 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements: _____

Empty Kit Relinquished by:	Date:	Method of Shipment:
Relinquished by:	8/16/21 13:00	
Relinquished by: FE	Date/Time: SEP 17 2021 9:35	Company: EFA SW
Relinquished by:	Date/Time:	Company:

Custody Seals Intact:
 Δ Yes Δ No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Eurofins TestAmerica, St. Louis
 13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8566 Fax: 314-298-8757

Chain of Custody Record



Environment Testing
 America

Client Information (Sub Contract Lab)		Sampler	State of Origin	Carrier Tracking Note(s)								
Contact: Ivan, Ivan H Company: Ivan.Viana@Eurofins.com TestAmerica Laboratories, Inc. 4955 Yarrow Street, City: Anvada State, Zip: CO, 80002 Phone: 303-736-0100(Tel) 303-431-7171(Fax) Email: Project Name: BINL Decommissioning Project S/N:		Viana, Ivan H Ivan.Viana@Eurofins.com DoD - A2LA; DoD - ANAB; NELAP - New York	New York	160-2179331 Page 1 of 3 160-43157-1								
Date Data Requested: 9/20/2021 YAT Requested (days): TO #: WO #: Project # 16009147 SOW#												
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Inorganic, Organic, Suspended, Dissolved, Other)	Preservation Code	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Molature	Accreditations Required (See notes)	Analysis Requested	Total Number of Containers	Special Instructions/Note:
FSS-094-081921 (160-43157-1)	8/19/21	13:00 Eastern	Solid	Solid		X	X	X	74718_D0D574718_Prep Mercury		1	
FSS-095-081921 (160-43157-2)	8/19/21	13:00 Eastern	Solid	Solid		X	X	X			1	
FSS-096-081921 (160-43157-3)	8/19/21	13:00 Eastern	Solid	Solid		X	X	X			1	
FSS-097-081921 (160-43157-4)	8/19/21	13:00 Eastern	Solid	Solid		X	X	X			1	
FSS-297-081921 (160-43157-5)	8/19/21	13:00 Eastern	Solid	Solid		X	X	X			1	
FSS-098-082021 (160-43157-6)	8/20/21	08:45 Eastern	Solid	Solid		X	X	X			1	
FSS-298-082021 (160-43157-7)	8/20/21	08:45 Eastern	Solid	Solid		X	X	X			1	
FSS-099-082021 (160-43157-8)	8/20/21	08:45 Eastern	Solid	Solid		X	X	X			1	
FSS-299-082021 (160-43157-9)	8/20/21	08:45 Eastern	Solid	Solid		X	X	X			1	
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently hold accreditation in the State of Origin listed above for analyte/method being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.												
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify) _____ Primary Deliverable Rank: 2 Empty Kit Relinquished by: _____ Date: _____ Method of Shipment: _____ Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Dispose By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/OC Requirements: _____												
Relinquished by: <i>Michaela Kehlring</i>		Date/Time: 8/23/2021 17:00	Company: <i>EASA</i>	Received by: <i>gfk</i>	Date/Time: 8/25/2021 14:00	Company: <i>EPA/DEL</i>						
Relinquished by: _____		Date/Time: _____	Company: _____	Received by: _____	Date/Time: _____	Company: _____						
Custody Seal No.: _____		Cooler Temperature(s) °C and Other Remarks: <i>72 IR 117 1.0</i>										

Eurofins TestAmerica, St. Louis
 13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-288-8566 Fax: 314-288-8757

Chain of Custody Record



Document Title
 Form 100

Client Information (Sub Contract Lab)		Client Contact	PII PAK	Carrier Tracking Note	COC No.							
Shipping/Receiving		Name: Ivan H			160-217993.2							
Company: TestAmerica Laboratories, Inc.		E-Mail: Ivan.Yama@Eurofins.com		State of Origin: New York	Page 2 of 3							
Address: 4955 Yarrow Street, Arveda, CO, 80002		Due Date Requested: 9/20/2021		Job #	160-43157-1							
Phone: 303-736-0100(Tel) 303-431-7171(Fax)		TAT Requested (days):		Preservation Codes:	A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - HNO3OM F - MeOH G - Ammonia H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:							
Project Name: BNL Decommissioning Project		PO #		Analysis Requested								
Site:		WO #		M - Hexane N - None O - Acetone P - H2O2/MS Q - H2SO4 R - H2SO3 S - H2SO4 T - TSP Dioxin/Thyral U - Acetone V - MCAA W - pH 4.5 X - other (specify,)								
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix (Inorganic, Organic, Metals, etc)	Preservation Code	Field Filtered Sample (Yes or No)	Perform MSMSD (Yes or No)	Mottle	60208_PDS/30568 (MDI) ICPMS Metals Pb Only	7471B_PDS/471B_Prep Mercury	Total Number of Containers	Special Instructions/Note:
FSS-100-082021 (160-43157-10)	8/20/21	08:30	Solid	Solid		X	X	X	X		1	
FSS-101-082021 (160-43157-11)	8/20/21	08:30	Solid	Solid		X	X	X	X		1	
FSS-102-082021 (160-43157-12)	8/20/21	08:30	Solid	Solid		X	X	X	X		1	
FSS-103-082021 (160-43157-13)	8/20/21	09:00	Solid	Solid		X	X	X	X		1	
FSS-104-082021 (160-43157-14)	8/20/21	09:00	Solid	Solid		X	X	X	X		1	
FSS-105-082021 (160-43157-15)	8/20/21	09:00	Solid	Solid		X	X	X	X		1	
FSS-106-082021 (160-43157-16)	8/20/21	09:15	Solid	Solid		X	X	X	X		1	
FSS-107-082021 (160-43157-17)	8/20/21	09:15	Solid	Solid		X	X	X	X		1	
FSS-108-082021 (160-43157-18)	8/20/21	09:15	Solid	Solid		X	X	X	X		1	

Note: Since laboratory accreditation is subject to change, Eurofins TestAmerica places the ownership of method, analysis & accreditation compliance upon our subcontracted laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/elements being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If requested accreditation are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification

Unclassified

Deliverable Requested: I, II, III, IV, Other (specify) _____

Empty Kit Relinquished by: _____

Primary Deliverable Rank 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/OC Requirements:

Received by: _____ Date: 8/23/2021 17:00
 Company: _____

Received by: _____ Date: 8/25/2021 14:30
 Company: Eurofins

Received by: _____ Date: _____
 Company: _____

Custody Seal No.: _____
 Yes No

Cover Temperature(s) °C and Other Remarks

Eurofins TestAmerica, St. Louis

13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8566 Fax: 314-298-8757

A01106 3242-0

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler:	Lab PM: Vania, Ivan H	Carrier Tracking No(s):	COC No: 160-217994.1	
Client Contact: Shipping/Receiving		Phone:	E-Mail: Ivan.Vania@Eurofinset.com	State of Origin: New York	Page: Page 1 of 2	
Company: RJ Lee Group, Inc		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York			Job #: 160-43157-1	
Address: 350 Hochberg Rd, City: Monroeville State, Zip: PA, 15146 Phone: Email:		Due Date Requested: 9/21/2021	Analysis Requested		Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify) Other:	
Project Name: BNL Decommissioning Project		TAT Requested (days):				
Site:		PO #:	Field Filtered Sample (Yes or No)		Total Number of containers	
Project #: 16009147		WO #:	Perform MS/MSD (Yes or No)			
SSOW#:		SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03) Asbestos - PLM-EPA600-R-93/LAP-080.03				
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Special Instructions/Note:
				Preservation Code:		
FSS-103-082021 (160-43157-13)		8/20/21	09:00 Eastern		Solid	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-104-082021 (160-43157-14)		8/20/21	09:00 Eastern		Solid	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-105-082021 (160-43157-15)		8/20/21	09:00 Eastern		Solid	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-106-082021 (160-43157-16)		8/20/21	09:15 Eastern		Solid	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-107-082021 (160-43157-17)		8/20/21	09:15 Eastern		Solid	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-108-082021 (160-43157-18)		8/20/21	09:15 Eastern		Solid	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-109-082021 (160-43157-19)		8/20/21	09:30 Eastern		Solid	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-110-082021 (160-43157-20)		8/20/21	09:30 Eastern		Solid	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-111-082021 (160-43157-21)		8/20/21	09:30 Eastern		Solid	Asbestos - PLM-EPA600-R-93/LAP-080.03
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>						
Possible Hazard Identification			Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
Unconfirmed			<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2	Special Instructions/QC Requirements:			
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:	
<i>[Signature]</i>	8/23/21 17:00	ETA	<i>[Signature]</i>	08/25/2021 1:00pm	RJ Lee Group	
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:	
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:	
Custody Seals Intact: △ Yes △ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:				

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Eurofins TestAmerica, St. Louis

13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8566 Fax: 314-298-8757

Chain of Custody Record



A011063242-0

Client Information (Sub Contract Lab)		Sampler:	Lab PM:		Carrier Tracking No(s):	COC No:			
Client Contact: Shipping/Receiving		Phone:	Vania, Ivan H			160-217994.2			
Company: RJ Lee Group, Inc		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York			State of Origin:	Page:			
Address: 350 Hochberg Rd, City: Monroeville State, Zip: PA, 15146 Phone: Email:		Due Date Requested: 9/21/2021	Analysis Requested			Job #: 160-43157-1			
Project Name: BNL Decommissioning Project		TAT Requested (days):	SUB (Asbestos - PLM-EPA600-R-93/LAP-080.03) Asbestos - PLM-EPA600-R-93/LAP-080.03			Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify)			
Site:		PO #:					Total Number of containers		
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oli, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Special Instructions/Note:	
FSS-112-082021 (160-43157-22)		8/20/21	10:00 Eastern		Solid		X	1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-113-082021 (160-43157-23)		8/20/21	10:00 Eastern		Solid		X	1	Asbestos - PLM-EPA600-R-93/LAP-080.03
FSS-114-082021 (160-43157-24)		8/20/21	10:00 Eastern		Solid		X	1	Asbestos - PLM-EPA600-R-93/LAP-080.03
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.									
Possible Hazard Identification					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
Unconfirmed					<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
Deliverable Requested: I, II, III, IV, Other (specify)			Primary Deliverable Rank: 2		Special Instructions/QC Requirements:				
Empty Kit Relinquished by:			Date:	Time:	Method of Shipment:				
Relinquished by: <i>Michael Kennington</i>			Date/Time: <i>8/23/2021 17:00</i>	Company: <i>ETA SL</i>	Received by: <i>Indi Mauger</i>		Date/Time: <i>08252021 1:00pm</i>	Company: <i>RJLee Group</i>	
Relinquished by:			Date/Time:	Company:	Received by:		Date/Time:	Company:	
Relinquished by:			Date/Time:	Company:	Received by:		Date/Time:	Company:	
Custody Seals Intact: △ Yes △ No		Custody Seal No.:			Cooler Temperature(s) °C and Other Remarks:				

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Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-094-081921

Lab Sample ID: 160-43157-1

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0253	U	0.159	0.159	3.00	0.294	pCi/g	09/08/21 10:20	10/01/21 14:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.4		40 - 110					09/08/21 10:20	10/01/21 14:04	1
Y Carrier	97.9		40 - 110					09/08/21 10:20	10/01/21 14:04	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.146	U	0.216	0.216	1.00	0.367	pCi/g	09/14/21 15:23	09/17/21 13:13	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0200	U	0.0367	0.0367	1.00	0.0699	pCi/g	09/05/21 18:15	09/14/21 17:39	1
Plutonium-239/240	0.00667	U	0.0180	0.0180	1.00	0.0430	pCi/g	09/05/21 18:15	09/14/21 17:39	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.5		30 - 110					09/05/21 18:15	09/14/21 17:39	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.128		0.0689	0.0697	1.00	0.0619	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	0.0271	U	0.0375	0.0376	1.00	0.0607	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.237		0.0904	0.0925	1.00	0.0537	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	77.8		30 - 110					09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0470	U	0.730	0.730	5.00	1.31	pCi/g	09/22/21 09:02	09/23/21 06:38	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.437		0.127	0.135		0.237	pCi/g	08/27/21 16:29	09/21/21 23:23	1
Bismuth-212	0.420	U	0.791	0.792		1.36	pCi/g	08/27/21 16:29	09/21/21 23:23	1
Bismuth-214	0.355		0.0921	0.0990		0.0717	pCi/g	08/27/21 16:29	09/21/21 23:23	1
Lead-212	0.339		0.0904	0.100		0.0958	pCi/g	08/27/21 16:29	09/21/21 23:23	1
Lead-214	0.342		0.0787	0.0861		0.0422	pCi/g	08/27/21 16:29	09/21/21 23:23	1
Potassium-40	4.54		0.940	1.04		0.696	pCi/g	08/27/21 16:29	09/21/21 23:23	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-094-081921

Lab Sample ID: 160-43157-1

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Radium-226	0.355		0.0921	0.0990	1.00	0.0717	pCi/g	08/27/21 16:29	09/21/21 23:23	1
Thorium-232	0.437		0.127	0.135		0.237	pCi/g	08/27/21 16:29	09/21/21 23:23	1
Cesium-137	0.0159	U	0.0400	0.0401		0.0714	pCi/g	08/27/21 16:29	09/21/21 23:23	1
Europium-152	0.0355	U	0.0709	0.0710		0.122	pCi/g	08/27/21 16:29	09/21/21 23:23	1
Europium-154	0.0588	U	0.0880	0.0882		0.0992	pCi/g	08/27/21 16:29	09/21/21 23:23	1
Europium-155	-0.0699	U	0.159	0.159		0.271	pCi/g	08/27/21 16:29	09/21/21 23:23	1
Sodium-22	-0.00978	U	0.0411	0.0411		0.0771	pCi/g	08/27/21 16:29	09/21/21 23:23	1
Zinc-65	0.0000000	U	0.122	0.122		0.226	pCi/g	08/27/21 16:29	09/21/21 23:23	1
	0712									

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.0506	U	0.873	0.873	5.00	1.52	pCi/g	09/16/21 12:04	09/22/21 22:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	90.0		40 - 110					09/16/21 12:04	09/22/21 22:46	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-0.888	U	1.10	1.11	5.00	1.86	pCi/g	09/05/21 20:20	09/25/21 13:07	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.5		30 - 110					09/05/21 20:20	09/25/21 13:07	1

Client Sample ID: FSS-094-081921

Lab Sample ID: 160-43157-1

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 96.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.4		0.30	0.018	mg/Kg	☼	09/15/21 07:52	09/16/21 03:36	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	20	6.4	ug/Kg	☼	09/15/21 15:00	09/15/21 18:06	1

Client Sample ID: FSS-095-081921

Lab Sample ID: 160-43157-2

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Strontium-90	0.0484	U	0.135	0.135	3.00	0.242	pCi/g	09/08/21 10:20	10/01/21 14:04	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-095-081921

Lab Sample ID: 160-43157-2

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	83.1		40 - 110	09/08/21 10:20	10/01/21 14:04	1
Y Carrier	96.8		40 - 110	09/08/21 10:20	10/01/21 14:04	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0993	U	0.214	0.215	1.00	0.374	pCi/g	09/14/21 15:23	09/17/21 13:35	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0136	U	0.0133	0.0134	1.00	0.0910	pCi/g	09/05/21 18:15	09/14/21 23:37	1
Plutonium-239/240	-0.00341	U	0.00668	0.00669	1.00	0.0660	pCi/g	09/05/21 18:15	09/14/21 23:37	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	51.8		30 - 110	09/05/21 18:15	09/14/21 23:37	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0463	U	0.0823	0.0824	1.00	0.151	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	-0.0154	U	0.0151	0.0151	1.00	0.103	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.120		0.0766	0.0772	1.00	0.0596	pCi/g	09/05/21 20:32	09/14/21 17:54	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	56.0		30 - 110	09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.223	U	0.768	0.768	5.00	1.39	pCi/g	09/22/21 09:02	09/23/21 07:46	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.478		0.199	0.205		0.365	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Bismuth-212	0.246	U	0.442	0.443		0.780	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Bismuth-214	0.404		0.124	0.131		0.115	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Lead-212	0.380		0.0876	0.0958		0.0924	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Lead-214	0.358		0.106	0.112		0.131	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Potassium-40	4.52		1.16	1.24		0.769	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Radium-226	0.404		0.124	0.131	1.00	0.115	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Thorium-232	0.478		0.199	0.205		0.365	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Cesium-137	-0.0439	U	0.0708	0.0710		0.122	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Europium-152	0.0000080	U	0.0000150	0.0000150		0.209	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Europium-154	0.0925	U	0.128	0.128		0.143	pCi/g	08/27/21 16:29	09/21/21 23:22	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-095-081921

Lab Sample ID: 160-43157-2

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-155	0.0937	U	0.323	0.323		0.552	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Sodium-22	-0.00174	U	0.0491	0.0491		0.0961	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Zinc-65	0.000	U	0.0183	0.0183		0.327	pCi/g	08/27/21 16:29	09/21/21 23:22	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.302	U	0.921	0.921	5.00	1.64	pCi/g	09/16/21 12:04	09/22/21 23:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	85.2		40 - 110					09/16/21 12:04	09/22/21 23:52	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.39	U	1.65	1.66	5.00	2.78	pCi/g	09/05/21 20:20	09/25/21 14:13	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	51.8		30 - 110					09/05/21 20:20	09/25/21 14:13	1

Client Sample ID: FSS-095-081921

Lab Sample ID: 160-43157-2

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 95.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	12		0.28	0.017	mg/Kg	☼	09/15/21 07:52	09/16/21 03:40	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	21	6.7	ug/Kg	☼	09/15/21 15:00	09/15/21 18:18	1

Client Sample ID: FSS-096-081921

Lab Sample ID: 160-43157-3

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.106	U	0.164	0.164	3.00	0.282	pCi/g	09/08/21 10:20	10/01/21 14:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.6		40 - 110					09/08/21 10:20	10/01/21 14:04	1
Y Carrier	98.3		40 - 110					09/08/21 10:20	10/01/21 14:04	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-096-081921

Lab Sample ID: 160-43157-3

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0380	U	0.217	0.217	1.00	0.393	pCi/g	09/14/21 15:23	09/17/21 13:58	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0253	U	0.0465	0.0466	1.00	0.0886	pCi/g	09/05/21 18:15	09/14/21 23:37	1
Plutonium-239/240	0.00846	U	0.0228	0.0228	1.00	0.0546	pCi/g	09/05/21 18:15	09/14/21 23:37	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	62.1		30 - 110					09/05/21 18:15	09/14/21 23:37	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.230		0.110	0.112	1.00	0.0854	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-235/236	0.0119	U	0.0474	0.0474	1.00	0.113	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Uranium-238	0.255		0.115	0.117	1.00	0.0852	pCi/g	09/05/21 20:32	09/14/21 17:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	53.8		30 - 110					09/05/21 20:32	09/14/21 17:54	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0686	U	0.798	0.798	5.00	1.43	pCi/g	09/22/21 09:02	09/23/21 08:08	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.487		0.158	0.165		0.121	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Bismuth-212	0.290	U	0.463	0.464		0.797	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Bismuth-214	0.231		0.0994	0.102		0.0993	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Lead-212	0.378		0.0656	0.0813		0.0578	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Lead-214	0.348		0.0854	0.0924		0.0734	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Potassium-40	4.64		0.804	0.929		0.267	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Radium-226	0.231		0.0994	0.102	1.00	0.0993	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Thorium-232	0.487		0.158	0.165		0.121	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Cesium-137	0.0180	U	0.0335	0.0335		0.0585	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Europium-152	0.0871	U	0.127	0.128		0.129	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Europium-154	0.0381	U	0.0704	0.0705		0.0880	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Europium-155	0.0516	U	0.111	0.111		0.281	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Sodium-22	0.00231	U	0.0328	0.0328		0.0638	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Zinc-65	-0.0815	U	0.138	0.138		0.236	pCi/g	08/27/21 16:29	09/21/21 22:38	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-096-081921

Lab Sample ID: 160-43157-3

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.237	U	0.780	0.780	5.00	1.39	pCi/g	09/16/21 12:04	09/23/21 00:58	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	96.4		40 - 110					09/16/21 12:04	09/23/21 00:58	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.08	U	1.44	1.44	5.00	2.44	pCi/g	09/05/21 20:20	09/25/21 15:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	62.1		30 - 110					09/05/21 20:20	09/25/21 15:20	1

Client Sample ID: FSS-096-081921

Lab Sample ID: 160-43157-3

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 97.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.1		0.29	0.018	mg/Kg	☼	09/15/21 07:52	09/16/21 03:44	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.8	ug/Kg	☼	09/15/21 15:00	09/15/21 18:21	1

Client Sample ID: FSS-097-081921

Lab Sample ID: 160-43157-4

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.173	U	0.141	0.142	3.00	0.289	pCi/g	09/08/21 10:20	10/01/21 14:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.4		40 - 110					09/08/21 10:20	10/01/21 14:09	1
Y Carrier	98.7		40 - 110					09/08/21 10:20	10/01/21 14:09	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.00714	U	0.203	0.203	1.00	0.372	pCi/g	09/14/21 15:23	09/17/21 14:21	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-097-081921

Lab Sample ID: 160-43157-4

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	-0.00797	U	0.0191	0.0191	1.00	0.0653	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	-0.00199	U	0.00391	0.00391	1.00	0.0386	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110					09/07/21 14:07	09/21/21 23:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.285		0.0928	0.0957	1.00	0.0585	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	0.00695	U	0.0187	0.0187	1.00	0.0448	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.282		0.0912	0.0941	1.00	0.0496	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	94.1		30 - 110					09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.517	U	0.790	0.792	5.00	1.47	pCi/g	09/22/21 09:02	09/23/21 08:31	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.554		0.124	0.136		0.0668	pCi/g	08/27/21 16:29	09/21/21 21:59	1
Bismuth-212	0.461	U	0.798	0.799		1.36	pCi/g	08/27/21 16:29	09/21/21 21:59	1
Bismuth-214	0.467		0.119	0.128		0.103	pCi/g	08/27/21 16:29	09/21/21 21:59	1
Lead-212	0.432		0.0749	0.0928		0.0773	pCi/g	08/27/21 16:29	09/21/21 21:59	1
Lead-214	0.562		0.0898	0.106		0.0915	pCi/g	08/27/21 16:29	09/21/21 21:59	1
Potassium-40	9.99		1.21	1.57		0.575	pCi/g	08/27/21 16:29	09/21/21 21:59	1
Radium-226	0.467		0.119	0.128	1.00	0.103	pCi/g	08/27/21 16:29	09/21/21 21:59	1
Thorium-232	0.554		0.124	0.136		0.0668	pCi/g	08/27/21 16:29	09/21/21 21:59	1
Cesium-137	0.0224	U	0.0415	0.0415		0.0719	pCi/g	08/27/21 16:29	09/21/21 21:59	1
Europium-152	0.109	U	0.175	0.175		0.125	pCi/g	08/27/21 16:29	09/21/21 21:59	1
Europium-154	0.0471	U	0.0795	0.0796		0.0916	pCi/g	08/27/21 16:29	09/21/21 21:59	1
Europium-155	-0.0745	U	0.139	0.139		0.428	pCi/g	08/27/21 16:29	09/21/21 21:59	1
Sodium-22	0.0239	U	0.0287	0.0288		0.0473	pCi/g	08/27/21 16:29	09/21/21 21:59	1
Zinc-65	-0.0803	U	0.140	0.140		0.241	pCi/g	08/27/21 16:29	09/21/21 21:59	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	-0.0442	U	0.877	0.877	5.00	1.54	pCi/g	09/16/21 12:04	09/23/21 02:04	1

Client Sample Results

Client: FPM Remediations Inc
 Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-097-081921

Lab Sample ID: 160-43157-4

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	91.6		40 - 110					09/16/21 12:04	09/23/21 02:04	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.119	U	1.26	1.26	5.00	2.25	pCi/g	09/07/21 14:41	09/29/21 00:19	1

Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110					09/07/21 14:41	09/29/21 00:19	1

Client Sample ID: FSS-097-081921

Lab Sample ID: 160-43157-4

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 97.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	28	J	0.29	0.018	mg/Kg	*	09/15/21 07:52	09/16/21 03:48	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	21		19	6.1	ug/Kg	*	09/15/21 15:00	09/15/21 18:23	1

Client Sample ID: FSS-297-081921

Lab Sample ID: 160-43157-5

Date Collected: 08/19/21 13:00

Date Received: 08/21/21 08:42

Matrix: Solid

*cut
10/21/21*

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0244	U	0.128	0.128	3.00	0.243	pCi/g	09/08/21 10:20	10/01/21 14:09	1

Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	85.3		40 - 110					09/08/21 10:20	10/01/21 14:09	1
Y Carrier	95.0		40 - 110					09/08/21 10:20	10/01/21 14:09	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.00790	U	0.205	0.205	1.00	0.376	pCi/g	09/14/21 15:23	09/17/21 14:43	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0156	U	0.0266	0.0266	1.00	0.0810	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	-0.00783	U	0.0255	0.0255	1.00	0.0734	pCi/g	09/07/21 14:07	09/21/21 23:50	1

Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	102		30 - 110					09/07/21 14:07	09/21/21 23:50	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-297-081921

Lab Sample ID: 160-43157-5

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.161		0.0917	0.0926	1.00	0.122	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	-0.00752	U	0.0322	0.0322	1.00	0.0912	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.197		0.0828	0.0844	1.00	0.0709	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	81.9		30 - 110					09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.330	U	0.679	0.680	5.00	1.25	pCi/g	09/22/21 09:02	09/23/21 08:54	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.485		0.164	0.171		0.228	pCi/g	08/27/21 16:29	09/21/21 21:55	1
Bismuth-212	-0.287	U	0.750	0.751		1.32	pCi/g	08/27/21 16:29	09/21/21 21:55	1
Bismuth-214	0.513		0.130	0.140		0.107	pCi/g	08/27/21 16:29	09/21/21 21:55	1
Lead-212	0.465		0.0958	0.112		0.105	pCi/g	08/27/21 16:29	09/21/21 21:55	1
Lead-214	0.382		0.117	0.123		0.150	pCi/g	08/27/21 16:29	09/21/21 21:55	1
Potassium-40	4.36		0.993	1.09		0.790	pCi/g	08/27/21 16:29	09/21/21 21:55	1
Radium-226	0.513		0.130	0.140	1.00	0.107	pCi/g	08/27/21 16:29	09/21/21 21:55	1
Thorium-232	0.485		0.164	0.171		0.228	pCi/g	08/27/21 16:29	09/21/21 21:55	1
Cesium-137	0.147		0.0651	0.0668		0.0654	pCi/g	08/27/21 16:29	09/21/21 21:55	1
Europium-152	0.0849	U	0.137	0.137		0.155	pCi/g	08/27/21 16:29	09/21/21 21:55	1
Europium-154	0.0514	U	0.0857	0.0859		0.124	pCi/g	08/27/21 16:29	09/21/21 21:55	1
Europium-155	0.0334	U	0.102	0.102		0.368	pCi/g	08/27/21 16:29	09/21/21 21:55	1
Sodium-22	-0.0190	U	0.0575	0.0575		0.104	pCi/g	08/27/21 16:29	09/21/21 21:55	1
Zinc-65	0.000	U	0.0525	0.0525		0.349	pCi/g	08/27/21 16:29	09/21/21 21:55	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	-0.173	U	0.845	0.846	5.00	1.50	pCi/g	09/16/21 12:04	09/23/21 03:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	95.9		40 - 110					09/16/21 12:04	09/23/21 03:10	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.126	U	1.20	1.20	5.00	2.16	pCi/g	09/07/21 14:41	09/29/21 01:26	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	102		30 - 110					09/07/21 14:41	09/29/21 01:26	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
 Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-297-081921

Lab Sample ID: 160-43157-5

Date Collected: 08/19/21 13:00

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 95.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	51	J1	0.24	0.014	mg/Kg	☆	09/15/21 07:52	09/15/21 19:49	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	32		19	6.1	ug/Kg	☆	09/15/21 15:00	09/15/21 18:26	1

Client Sample ID: FSS-098-082021

Lab Sample ID: 160-43157-6

Date Collected: 08/20/21 08:45

Matrix: Solid

Date Received: 08/21/21 08:42

cut 10/21/21

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.192	U	0.167	0.167	3.00	0.272	pCi/g	09/08/21 10:20	10/01/21 14:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	81.8		40 - 110					09/08/21 10:20	10/01/21 14:09	1
Y Carrier	96.8		40 - 110					09/08/21 10:20	10/01/21 14:09	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0455	U	0.210	0.210	1.00	0.375	pCi/g	09/14/21 15:23	09/17/21 15:06	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00370	U	0.00513	0.00514	1.00	0.0415	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	-0.00185	U	0.00363	0.00364	1.00	0.0359	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	100		30 - 110					09/07/21 14:07	09/21/21 23:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.228		0.0861	0.0882	1.00	0.0464	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	0.0180	U	0.0290	0.0291	1.00	0.0499	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.279		0.0946	0.0974	1.00	0.0400	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	86.3		30 - 110					09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.571	U	0.827	0.829	5.00	1.41	pCi/g	09/22/21 09:02	09/23/21 09:16	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-098-082021

Lab Sample ID: 160-43157-6

Date Collected: 08/20/21 08:45

Matrix: Solid

Date Received: 08/21/21 08:42

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Actinium 228	0.436		0.110	0.118		0.160	pCi/g	08/27/21 16:29	09/21/21 23:20	1
Bismuth-212	-0.0396	U	0.740	0.740		1.32	pCi/g	08/27/21 16:29	09/21/21 23:20	1
Bismuth-214	0.0658	U	0.107	0.107		0.214	pCi/g	08/27/21 16:29	09/21/21 23:20	1
Lead-212	0.434		0.0707	0.0895		0.0627	pCi/g	08/27/21 16:29	09/21/21 23:20	1
Lead-214	0.342		0.0784	0.0858		0.105	pCi/g	08/27/21 16:29	09/21/21 23:20	1
Potassium-40	3.92		0.739	0.837		0.268	pCi/g	08/27/21 16:29	09/21/21 23:20	1
Radium-226	0.0658	U	0.107	0.107	1.00	0.214	pCi/g	08/27/21 16:29	09/21/21 23:20	1
Thorium-232	0.436		0.110	0.118		0.160	pCi/g	08/27/21 16:29	09/21/21 23:20	1
Cesium-137	0.118		0.0333	0.0354		0.0181	pCi/g	08/27/21 16:29	09/21/21 23:20	1
Europium-152	0.0224	U	0.0935	0.0935		0.152	pCi/g	08/27/21 16:29	09/21/21 23:20	1
Europium-154	0.0561	U	0.0680	0.0682		0.0822	pCi/g	08/27/21 16:29	09/21/21 23:20	1
Europium-155	-0.00520	U	0.0114	0.0114		0.387	pCi/g	08/27/21 16:29	09/21/21 23:20	1
Sodium-22	-0.0658	U	0.0675	0.0678		0.111	pCi/g	08/27/21 16:29	09/21/21 23:20	1
Zinc-65	0.000	U	0.0453	0.0453		0.203	pCi/g	08/27/21 16:29	09/21/21 23:20	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	-0.265	U	1.88	1.89	5.00	3.36	pCi/g	09/16/21 12:04	09/23/21 04:17	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ni	43.9		40 - 110					09/16/21 12:04	09/23/21 04:17	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	0.184	U	1.32	1.32	5.00	2.35	pCi/g	09/07/21 14:41	09/29/21 01:59	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Pu-242 (T)	100		30 - 110					09/07/21 14:41	09/29/21 01:59	1

Client Sample ID: FSS-098-082021

Lab Sample ID: 160-43157-6

Date Collected: 08/20/21 08:45

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 80.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	44	J	0.28	0.017	mg/Kg	⊛	09/15/21 07:52	09/15/21 20:06	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	82	J	22	7.1	ug/Kg	⊛	09/15/21 15:00	09/15/21 18:28	1

cut 10/21/21

Euromins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-298-082021

Lab Sample ID: 160-43157-7

Date Collected: 08/20/21 08:45

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.144	U	0.149	0.150	3.00	0.248	pCi/g	09/08/21 10:20	10/01/21 14:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.0		40 - 110					09/08/21 10:20	10/01/21 14:09	1
Y Carrier	98.3		40 - 110					09/08/21 10:20	10/01/21 14:09	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.00120	U	0.202	0.202	1.00	0.367	pCi/g	09/14/21 15:23	09/17/21 15:29	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0209	U	0.0289	0.0290	1.00	0.0468	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	-0.00836	U	0.00819	0.00822	1.00	0.0558	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	90.9		30 - 110					09/07/21 14:07	09/21/21 23:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.331		0.110	0.113	1.00	0.0823	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	0.0266	U	0.0368	0.0369	1.00	0.0595	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.309		0.104	0.107	1.00	0.0671	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.0		30 - 110					09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.327	U	0.680	0.681	5.00	1.25	pCi/g	09/22/21 09:02	09/23/21 09:39	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.511		0.0939	0.107		0.0661	pCi/g	08/27/21 16:29	09/21/21 21:56	1
Bismuth-212	0.000	U	0.409	0.409		0.953	pCi/g	08/27/21 16:29	09/21/21 21:56	1
Bismuth-214	0.276		0.0960	0.100		0.0969	pCi/g	08/27/21 16:29	09/21/21 21:56	1
Lead-212	0.383		0.0682	0.0837		0.0671	pCi/g	08/27/21 16:29	09/21/21 21:56	1
Lead-214	0.335		0.0697	0.0776		0.0857	pCi/g	08/27/21 16:29	09/21/21 21:56	1
Potassium-40	3.96		0.734	0.835		0.261	pCi/g	08/27/21 16:29	09/21/21 21:56	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-298-082021

Lab Sample ID: 160-43157-7

Date Collected: 08/20/21 08:45

Matrix: Solid

Date Received: 08/21/21 08:42

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Radium-226	0.276		0.0960	0.100	1.00	0.0969	pCi/g	08/27/21 16:29	09/21/21 21:56	1
Thorium-232	0.511		0.0939	0.107		0.0661	pCi/g	08/27/21 16:29	09/21/21 21:56	1
Cesium-137	0.0345	U	0.0602	0.0603		0.0709	pCi/g	08/27/21 16:29	09/21/21 21:56	1
Europium-152	0.154	U	0.0633	0.0652		0.308	pCi/g	08/27/21 16:29	09/21/21 21:56	1
Europium-154	0.0484	U	0.0760	0.0762		0.0885	pCi/g	08/27/21 16:29	09/21/21 21:56	1
Europium-155	0.000	U	0.0639	0.0639		0.446	pCi/g	08/27/21 16:29	09/21/21 21:56	1
Sodium-22	-0.0214	U	0.0425	0.0425		0.0749	pCi/g	08/27/21 16:29	09/21/21 21:56	1
Zinc-65	0.000	U	0.0167	0.0167		0.159	pCi/g	08/27/21 16:29	09/21/21 21:56	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.797	U	0.925	0.929	5.00	1.59	pCi/g	09/16/21 12:04	09/23/21 05:23	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	92.4		40 - 110					09/16/21 12:04	09/23/21 05:23	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	0.326	U	1.40	1.40	5.00	2.48	pCi/g	09/07/21 14:41	09/29/21 02:33	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	90.9		30 - 110					09/07/21 14:41	09/29/21 02:33	1

Client Sample ID: FSS-298-082021

Lab Sample ID: 160-43157-7

Date Collected: 08/20/21 08:45

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 95.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	23	J	0.24	0.015	mg/Kg	*	09/15/21 07:52	09/15/21 20:17	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	J	19	6.1	ug/Kg	*	09/15/21 15:00	09/16/21 11:24	1

Client Sample ID: FSS-099-082021

Lab Sample ID: 160-43157-8

Date Collected: 08/20/21 08:45

Matrix: Solid

Date Received: 08/21/21 08:42

cut 10/21/21

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Strontium-90	-0.112	U	0.135	0.135	3.00	0.272	pCi/g	09/08/21 10:20	10/01/21 14:10	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-099-082021

Lab Sample ID: 160-43157-8

Date Collected: 08/20/21 08:45

Matrix: Solid

Date Received: 08/21/21 08:42

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	80.8		40 - 110	09/08/21 10:20	10/01/21 14:10	1
Y Carrier	98.3		40 - 110	09/08/21 10:20	10/01/21 14:10	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0653	U	0.195	0.195	1.00	0.364	pCi/g	09/14/21 15:23	09/17/21 15:52	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00189	U	0.0170	0.0170	1.00	0.0538	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	0.00758	U	0.0149	0.0149	1.00	0.0227	pCi/g	09/07/21 14:07	09/21/21 23:50	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	96.4		30 - 110	09/07/21 14:07	09/21/21 23:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.225		0.0860	0.0880	1.00	0.0511	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	0.000	U	0.00504	0.00504	1.00	0.0309	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.295		0.0971	0.100	1.00	0.0399	pCi/g	09/07/21 14:40	09/20/21 14:32	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	82.3		30 - 110	09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.688	U	0.736	0.740	5.00	1.39	pCi/g	09/22/21 09:02	09/23/21 10:02	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.472		0.232	0.237		0.228	pCi/g	08/27/21 16:29	09/21/21 22:39	1
Bismuth-212	0.000	U	0.522	0.522		1.28	pCi/g	08/27/21 16:29	09/21/21 22:39	1
Bismuth-214	0.466		0.125	0.134		0.104	pCi/g	08/27/21 16:29	09/21/21 22:39	1
Lead-212	0.492		0.0973	0.116		0.105	pCi/g	08/27/21 16:29	09/21/21 22:39	1
Lead-214	0.413		0.0937	0.103		0.0971	pCi/g	08/27/21 16:29	09/21/21 22:39	1
Potassium-40	8.19		1.31	1.55		0.791	pCi/g	08/27/21 16:29	09/21/21 22:39	1
Radium-226	0.466		0.125	0.134	1.00	0.104	pCi/g	08/27/21 16:29	09/21/21 22:39	1
Thorium-232	0.472		0.232	0.237		0.228	pCi/g	08/27/21 16:29	09/21/21 22:39	1
Cesium-137	0.146		0.0437	0.0461		0.0250	pCi/g	08/27/21 16:29	09/21/21 22:39	1
Europium-152	0.0924	U	0.148	0.148		0.177	pCi/g	08/27/21 16:29	09/21/21 22:39	1
Europium-154	0.0162	U	0.0234	0.0234		0.135	pCi/g	08/27/21 16:29	09/21/21 22:39	1
Europium-155	0.000	U	0.0940	0.0940		0.326	pCi/g	08/27/21 16:29	09/21/21 22:39	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-099-082021

Lab Sample ID: 160-43157-8

Date Collected: 08/20/21 08:45

Matrix: Solid

Date Received: 08/21/21 08:42

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Sodium-22	0.0413	U	0.0523	0.0524		0.0876	pCi/g	08/27/21 16:29	09/21/21 22:39	1
Zinc-65	0.000	U	0.0166	0.0166		0.221	pCi/g	08/27/21 16:29	09/21/21 22:39	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.385	U	1.02	1.02	5.00	1.76	pCi/g	09/16/21 12:04	09/23/21 06:29	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	78.4		40 - 110					09/16/21 12:04	09/23/21 06:29	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.172	U	1.55	1.55	5.00	2.88	pCi/g	09/07/21 14:41	09/29/21 03:06	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	96.4		30 - 110					09/07/21 14:41	09/29/21 03:06	1

Client Sample ID: FSS-099-082021

Lab Sample ID: 160-43157-8

Date Collected: 08/20/21 08:45

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 82.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	38		0.26	0.016	mg/Kg	☼	09/15/21 07:52	09/15/21 20:20	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	91		23	7.3	ug/Kg	☼	09/15/21 15:00	09/16/21 11:27	1

Client Sample ID: FSS-299-082021

Lab Sample ID: 160-43157-9

Date Collected: 08/20/21 08:45

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0287	U	0.179	0.179	3.00	0.330	pCi/g	09/08/21 10:20	10/01/21 14:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.6		40 - 110					09/08/21 10:20	10/01/21 14:10	1
Y Carrier	96.1		40 - 110					09/08/21 10:20	10/01/21 14:10	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-299-082021

Lab Sample ID: 160-43157-9

Date Collected: 08/20/21 08:45

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0138	U	0.207	0.207	1.00	0.382	pCi/g	09/14/21 15:23	09/17/21 16:15	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0204	U	0.0380	0.0381	1.00	0.0721	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	0.00409	U	0.0247	0.0247	1.00	0.0614	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	93.9		30 - 110					09/07/21 14:07	09/21/21 23:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.345		0.103	0.107	1.00	0.0524	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	0.0171	U	0.0275	0.0275	1.00	0.0472	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.358		0.104	0.108	1.00	0.0379	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	90.0		30 - 110					09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.114	U	0.813	0.813	5.00	1.46	pCi/g	09/22/21 09:02	09/23/21 10:24	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.647		0.162	0.174		0.133	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Bismuth-212	0.292	U	0.525	0.525		0.916	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Bismuth-214	0.434		0.126	0.134		0.103	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Lead-212	0.506		0.0953	0.115		0.0973	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Lead-214	0.491		0.112	0.122		0.0757	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Potassium-40	4.27		0.978	1.07		0.761	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Radium-226	0.434		0.126	0.134	1.00	0.103	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Thorium-232	0.647		0.162	0.174		0.133	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Cesium-137	0.124		0.0470	0.0487		0.0376	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Europium-152	0.0938	U	0.123	0.124		0.168	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Europium-154	0.0570	U	0.105	0.105		0.124	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Europium-155	0.0288	U	0.0907	0.0908		0.369	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Sodium-22	0.00158	U	0.0432	0.0432		0.0849	pCi/g	08/27/21 16:29	09/21/21 22:38	1
Zinc-65	-0.00470	U	0.105	0.105		0.303	pCi/g	08/27/21 16:29	09/21/21 22:38	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-299-082021

Lab Sample ID: 160-43157-9

Date Collected: 08/20/21 08:45

Matrix: Solid

Date Received: 08/21/21 08:42

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.484	U	0.927	0.928	5.00	1.60	pCi/g	09/16/21 12:04	09/23/21 07:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	88.7		40 - 110					09/16/21 12:04	09/23/21 07:36	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.116	U	1.35	1.35	5.00	2.41	pCi/g	09/07/21 14:41	09/29/21 03:40	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	93.9		30 - 110					09/07/21 14:41	09/29/21 03:40	1

Client Sample ID: FSS-299-082021

Lab Sample ID: 160-43157-9

Date Collected: 08/20/21 08:45

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 80.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	46		0.28	0.017	mg/Kg	☼	09/15/21 07:52	09/15/21 20:24	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	50		24	7.8	ug/Kg	☼	09/15/21 15:00	09/16/21 11:29	1

Client Sample ID: FSS-100-082021

Lab Sample ID: 160-43157-10

Date Collected: 08/20/21 08:30

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.109	U	0.190	0.190	3.00	0.328	pCi/g	09/08/21 10:20	10/01/21 14:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.8		40 - 110					09/08/21 10:20	10/01/21 14:10	1
Y Carrier	97.2		40 - 110					09/08/21 10:20	10/01/21 14:10	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.166	U	0.226	0.227	1.00	0.386	pCi/g	09/14/21 15:23	09/17/21 16:37	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-100-082021

Lab Sample ID: 160-43157-10

Date Collected: 08/20/21 08:30

Matrix: Solid

Date Received: 08/21/21 08:42

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	0.00616	U	0.0435	0.0435	1.00	0.0939	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	-0.0103	U	0.0201	0.0202	1.00	0.0700	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	99.6		30 - 110					09/07/21 14:07	09/21/21 23:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.246		0.0941	0.0963	1.00	0.0795	pCi/g	09/07/21 14:40	09/21/21 10:19	1
Uranium-235/236	0.00514	U	0.0214	0.0214	1.00	0.0576	pCi/g	09/07/21 14:40	09/21/21 10:19	1
Uranium-238	0.216		0.0862	0.0880	1.00	0.0648	pCi/g	09/07/21 14:40	09/21/21 10:19	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	85.8		30 - 110					09/07/21 14:40	09/21/21 10:19	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.705	U	0.749	0.753	5.00	1.42	pCi/g	09/22/21 09:02	09/23/21 10:47	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.471		0.170	0.177		0.181	pCi/g	08/27/21 16:29	09/21/21 22:36	1
Bismuth-212	0.270	U	0.822	0.822		1.46	pCi/g	08/27/21 16:29	09/21/21 22:36	1
Bismuth-214	0.374		0.128	0.134		0.138	pCi/g	08/27/21 16:29	09/21/21 22:36	1
Lead-212	0.460		0.0969	0.108		0.105	pCi/g	08/27/21 16:29	09/21/21 22:36	1
Lead-214	0.402		0.102	0.110		0.113	pCi/g	08/27/21 16:29	09/21/21 22:36	1
Potassium-40	4.28		1.28	1.35		1.01	pCi/g	08/27/21 16:29	09/21/21 22:36	1
Radium-226	0.374		0.128	0.134	1.00	0.138	pCi/g	08/27/21 16:29	09/21/21 22:36	1
Thorium-232	0.471		0.170	0.177		0.181	pCi/g	08/27/21 16:29	09/21/21 22:36	1
Cesium-137	0.0386	U	0.0737	0.0738		0.127	pCi/g	08/27/21 16:29	09/21/21 22:36	1
Europium-152	0.0734	U	0.128	0.128		0.205	pCi/g	08/27/21 16:29	09/21/21 22:36	1
Europium-154	0.00892	U	0.0750	0.0750		0.132	pCi/g	08/27/21 16:29	09/21/21 22:36	1
Europium-155	-0.103	U	0.356	0.356		0.608	pCi/g	08/27/21 16:29	09/21/21 22:36	1
Sodium-22	-0.00856	U	0.0363	0.0363		0.0709	pCi/g	08/27/21 16:29	09/21/21 22:36	1
Zinc-65	0.0594	U	0.122	0.122		0.214	pCi/g	08/27/21 16:29	09/21/21 22:36	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.133	U	0.977	0.977	5.00	1.71	pCi/g	09/16/21 12:04	09/23/21 08:42	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-100-082021

Lab Sample ID: 160-43157-10

Date Collected: 08/20/21 08:30

Matrix: Solid

Date Received: 08/21/21 08:42

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	80.2		40 - 110	09/16/21 12:04	09/23/21 08:42	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.637	U	1.32	1.32	5.00	2.28	pCi/g	09/07/21 14:41	09/29/21 04:13	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	99.6		30 - 110	09/07/21 14:41	09/29/21 04:13	1

Client Sample ID: FSS-100-082021

Lab Sample ID: 160-43157-10

Date Collected: 08/20/21 08:30

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 90.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	24		0.30	0.018	mg/Kg	☼	09/15/21 07:52	09/15/21 20:27	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	21	6.8	ug/Kg	☼	09/15/21 15:00	09/16/21 11:32	1

Client Sample ID: FSS-101-082021

Lab Sample ID: 160-43157-11

Date Collected: 08/20/21 08:30

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0137	U	0.159	0.159	3.00	0.295	pCi/g	09/08/21 10:20	10/01/21 14:10	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	80.4		40 - 110	09/08/21 10:20	10/01/21 14:10	1
Y Carrier	95.3		40 - 110	09/08/21 10:20	10/01/21 14:10	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.132	U	0.222	0.222	1.00	0.382	pCi/g	09/14/21 15:23	09/17/21 17:00	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0314	U	0.0407	0.0408	1.00	0.0672	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	-0.00224	U	0.00439	0.00440	1.00	0.0434	pCi/g	09/07/21 14:07	09/21/21 23:50	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.5		30 - 110	09/07/21 14:07	09/21/21 23:50	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-101-082021

Lab Sample ID: 160-43157-11

Date Collected: 08/20/21 08:30

Matrix: Solid

Date Received: 08/21/21 08:42

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.202		0.0789	0.0807	1.00	0.0620	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	0.0159	U	0.0323	0.0324	1.00	0.0645	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.142		0.0639	0.0650	1.00	0.0407	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	86.4		30 - 110					09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.0308	U	0.720	0.720	5.00	1.29	pCi/g	09/22/21 09:02	09/23/21 11:10	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.350		0.214	0.217		0.223	pCi/g	08/27/21 16:29	09/21/21 23:21	1
Bismuth-212	0.000	U	0.440	0.440		0.776	pCi/g	08/27/21 16:29	09/21/21 23:21	1
Bismuth-214	0.268		0.105	0.108		0.110	pCi/g	08/27/21 16:29	09/21/21 23:21	1
Lead-212	0.385		0.0718	0.0868		0.0736	pCi/g	08/27/21 16:29	09/21/21 23:21	1
Lead-214	0.240		0.0843	0.0877		0.105	pCi/g	08/27/21 16:29	09/21/21 23:21	1
Potassium-40	4.03		0.821	0.915		0.600	pCi/g	08/27/21 16:29	09/21/21 23:21	1
Radium-226	0.268		0.105	0.108	1.00	0.110	pCi/g	08/27/21 16:29	09/21/21 23:21	1
Thorium-232	0.350		0.214	0.217		0.223	pCi/g	08/27/21 16:29	09/21/21 23:21	1
Cesium-137	0.00420	U	0.0420	0.0420		0.0767	pCi/g	08/27/21 16:29	09/21/21 23:21	1
Europium-152	0.0641	U	0.131	0.131		0.127	pCi/g	08/27/21 16:29	09/21/21 23:21	1
Europium-154	0.0278	U	0.0450	0.0450		0.0913	pCi/g	08/27/21 16:29	09/21/21 23:21	1
Europium-155	0.0391	U	0.0638	0.0639		0.109	pCi/g	08/27/21 16:29	09/21/21 23:21	1
Sodium-22	-0.00477	U	0.0343	0.0343		0.0658	pCi/g	08/27/21 16:29	09/21/21 23:21	1
Zinc-65	0.000	U	0.0352	0.0352		0.190	pCi/g	08/27/21 16:29	09/21/21 23:21	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	-0.101	U	0.903	0.903	5.00	1.61	pCi/g	09/16/21 12:04	09/23/21 09:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	87.1		40 - 110					09/16/21 12:04	09/23/21 09:48	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	0.537	U	1.39	1.40	5.00	2.43	pCi/g	09/07/21 14:41	09/29/21 04:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.5		30 - 110					09/07/21 14:41	09/29/21 04:47	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-101-082021

Lab Sample ID: 160-43157-11

Date Collected: 08/20/21 08:30

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 80.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	8.3		0.30	0.018	mg/Kg	☼	09/15/21 07:52	09/15/21 20:31	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	18	U	23	7.4	ug/Kg	☼	09/15/21 15:00	09/16/21 11:34	1

Client Sample ID: FSS-102-082021

Lab Sample ID: 160-43157-12

Date Collected: 08/20/21 08:30

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0967	U	0.147	0.147	3.00	0.286	pCi/g	09/08/21 10:20	10/01/21 14:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.0		40 - 110					09/08/21 10:20	10/01/21 14:10	1
Y Carrier	99.4		40 - 110					09/08/21 10:20	10/01/21 14:10	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0212	U	0.207	0.207	1.00	0.372	pCi/g	09/14/21 15:23	09/17/21 17:23	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0100	U	0.00877	0.00881	1.00	0.0569	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	-0.00601	U	0.00680	0.00682	1.00	0.0496	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.5		30 - 110					09/07/21 14:07	09/21/21 23:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.210		0.0907	0.0923	1.00	0.0930	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	0.0177	U	0.0285	0.0286	1.00	0.0490	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.160		0.0735	0.0747	1.00	0.0578	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	84.1		30 - 110					09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.120	U	0.737	0.737	5.00	1.33	pCi/g	09/22/21 09:02	09/23/21 11:32	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-102-082021

Lab Sample ID: 160-43157-12

Date Collected: 08/20/21 08:30

Matrix: Solid

Date Received: 08/21/21 08:42

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.508		0.176	0.183		0.164	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Bismuth-212	0.469	U	0.814	0.816		1.40	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Bismuth-214	0.303		0.121	0.125		0.121	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Lead-212	0.359		0.0831	0.0948		0.0903	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Lead-214	0.443		0.0915	0.102		0.0363	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Potassium-40	3.88		0.948	1.02		0.773	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Radium-226	0.303		0.121	0.125	1.00	0.121	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Thorium-232	0.508		0.176	0.183		0.164	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Cesium-137	-0.0179	U	0.0697	0.0697		0.127	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Europium-152	-0.00165	U	0.00289	0.00290		0.200	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Europium-154	0.0714	U	0.0884	0.0888		0.127	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Europium-155	0.0265	U	0.0834	0.0835		0.333	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Sodium-22	-0.0240	U	0.0573	0.0574		0.103	pCi/g	08/27/21 16:29	09/21/21 23:22	1
Zinc-65	-0.00477	U	0.121	0.121		0.248	pCi/g	08/27/21 16:29	09/21/21 23:22	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.956	U	1.14	1.14	5.00	1.94	pCi/g	09/16/21 12:04	09/23/21 10:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	76.8		40 - 110					09/16/21 12:04	09/23/21 10:55	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.0441	U	1.39	1.39	5.00	2.48	pCi/g	09/07/21 14:41	09/29/21 05:21	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.5		30 - 110					09/07/21 14:41	09/29/21 05:21	1

Client Sample ID: FSS-102-082021

Lab Sample ID: 160-43157-12

Date Collected: 08/20/21 08:30

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 94.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.6		0.26	0.016	mg/Kg	☼	09/15/21 07:52	09/15/21 20:34	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/15/21 15:00	09/16/21 11:37	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-103-082021

Lab Sample ID: 160-43157-13

Date Collected: 08/20/21 09:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.103	U	0.163	0.163	3.00	0.280	pCi/g	09/08/21 10:20	10/01/21 14:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.4		40 - 110					09/08/21 10:20	10/01/21 14:10	1
Y Carrier	96.1		40 - 110					09/08/21 10:20	10/01/21 14:10	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.134	U	0.220	0.220	1.00	0.387	pCi/g	09/19/21 15:37	09/21/21 01:41	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0201	U	0.0279	0.0279	1.00	0.0450	pCi/g	09/07/21 14:07	09/22/21 10:24	1
Plutonium-239/240	-0.0101	U	0.00882	0.00886	1.00	0.0572	pCi/g	09/07/21 14:07	09/22/21 10:24	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	84.4		30 - 110					09/07/21 14:07	09/22/21 10:24	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.270		0.0956	0.0981	1.00	0.0624	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	0.0181	U	0.0291	0.0292	1.00	0.0501	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.255		0.0925	0.0948	1.00	0.0590	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	85.3		30 - 110					09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.290	U	0.448	0.449	5.00	0.831	pCi/g	09/22/21 10:41	09/23/21 11:55	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.386		0.114	0.120		0.0631	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Bismuth-212	0.156	U	0.429	0.430		0.763	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Bismuth-214	0.341		0.0933	0.0995		0.0818	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Lead-212	0.471		0.0693	0.0914		0.0560	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Lead-214	0.276		0.0689	0.0744		0.0797	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Potassium-40	3.69		0.692	0.784		0.249	pCi/g	08/26/21 13:50	09/22/21 15:03	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-103-082021

Lab Sample ID: 160-43157-13

Date Collected: 08/20/21 09:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.341		0.0933	0.0995	1.00	0.0818	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Thorium-232	0.386		0.114	0.120		0.0631	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Cesium-137	0.0251	U	0.0450	0.0450		0.0776	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Europium-152	0.145	U	0.0946	0.0958		0.280	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Europium-154	0.0313	U	0.0509	0.0510		0.0788	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Europium-155	0.0622	U	0.166	0.166		0.284	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Sodium-22	0.0231	U	0.0393	0.0393		0.0447	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Zinc-65	0.000	U	0.0159	0.0159		0.176	pCi/g	08/26/21 13:50	09/22/21 15:03	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.374	U	0.861	0.862	5.00	1.49	pCi/g	09/16/21 12:04	09/23/21 12:01	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	92.4		40 - 110					09/16/21 12:04	09/23/21 12:01	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.0318	U	1.54	1.54	5.00	2.78	pCi/g	09/07/21 14:41	09/29/21 05:54	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	84.4		30 - 110					09/07/21 14:41	09/29/21 05:54	1

Client Sample ID: FSS-103-082021

Lab Sample ID: 160-43157-13

Date Collected: 08/20/21 09:00

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 78.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	11		0.33	0.020	mg/Kg	☼	09/15/21 07:52	09/15/21 20:38	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	18	J	22	7.3	ug/Kg	☼	09/15/21 15:00	09/16/21 11:40	1

Client Sample ID: FSS-104-082021

Lab Sample ID: 160-43157-14

Date Collected: 08/20/21 09:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.147	U	0.144	0.145	3.00	0.292	pCi/g	09/08/21 10:20	10/01/21 14:11	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-104-082021

Lab Sample ID: 160-43157-14

Date Collected: 08/20/21 09:00

Matrix: Solid

Date Received: 08/21/21 08:42

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	80.3		40 - 110	09/08/21 10:20	10/01/21 14:11	1
Y Carrier	99.4		40 - 110	09/08/21 10:20	10/01/21 14:11	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.106	U	0.183	0.183	1.00	0.357	pCi/g	09/19/21 15:37	09/21/21 02:04	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.000	U	0.00356	0.00356	1.00	0.0218	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	0.00727	U	0.0142	0.0143	1.00	0.0218	pCi/g	09/07/21 14:07	09/21/21 23:50	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.2		30 - 110	09/07/21 14:07	09/21/21 23:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.269		0.0927	0.0953	1.00	0.0566	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	-0.00248	U	0.00485	0.00486	1.00	0.0479	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.195		0.0800	0.0816	1.00	0.0596	pCi/g	09/07/21 14:40	09/20/21 14:32	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	88.3		30 - 110	09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.00952	U	0.594	0.594	5.00	1.06	pCi/g	09/22/21 10:41	09/23/21 12:18	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.510		0.208	0.214		0.193	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Bismuth-212	0.264	U	0.443	0.444		0.770	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Bismuth-214	0.136	U	0.0900	0.0911		0.256	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Lead-212	0.400		0.0801	0.0948		0.0811	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Lead-214	0.392		0.115	0.122		0.135	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Potassium-40	3.77		0.876	0.954		0.688	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Radium-226	0.136	U	0.0900	0.0911	1.00	0.256	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Thorium-232	0.510		0.208	0.214		0.193	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Cesium-137	0.0670		0.0283	0.0291		0.0225	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Europium-152	0.0519	U	0.148	0.148		0.165	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Europium-154	-0.0381	U	0.0699	0.0700		0.119	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Europium-155	-0.00433	U	0.120	0.120		0.317	pCi/g	08/26/21 13:50	09/22/21 15:03	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-104-082021

Lab Sample ID: 160-43157-14

Date Collected: 08/20/21 09:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Sodium-22	0.0157	U	0.0318	0.0318		0.0577	pCi/g	08/26/21 13:50	09/22/21 15:03	1
Zinc-65	-0.107	U	0.0844	0.0851		0.315	pCi/g	08/26/21 13:50	09/22/21 15:03	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.523	U	0.963	0.964	5.00	1.67	pCi/g	09/16/21 12:04	09/23/21 13:07	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ni	87.7		40 - 110					09/16/21 12:04	09/23/21 13:07	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.0190	U	1.38	1.38	5.00	2.48	pCi/g	09/07/21 14:41	09/29/21 06:28	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Pu-242 (T)	89.2		30 - 110					09/07/21 14:41	09/29/21 06:28	1

Client Sample ID: FSS-104-082021

Lab Sample ID: 160-43157-14

Date Collected: 08/20/21 09:00

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 81.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	8.8		0.27	0.017	mg/Kg	☼	09/15/21 07:52	09/15/21 20:42	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	19	J	24	7.8	ug/Kg	☼	09/15/21 15:00	09/16/21 11:42	1

Client Sample ID: FSS-105-082021

Lab Sample ID: 160-43157-15

Date Collected: 08/20/21 09:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0433	U	0.154	0.154	3.00	0.290	pCi/g	09/08/21 10:20	10/01/21 14:11	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Sr Carrier	82.2		40 - 110					09/08/21 10:20	10/01/21 14:11	1
Y Carrier	97.6		40 - 110					09/08/21 10:20	10/01/21 14:11	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-105-082021

Lab Sample ID: 160-43157-15

Date Collected: 08/20/21 09:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0975	U	0.217	0.217	1.00	0.389	pCi/g	09/19/21 15:37	09/21/21 02:26	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00550	U	0.0148	0.0148	1.00	0.0355	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	0.000	U	0.00360	0.00360	1.00	0.0220	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.6		30 - 110					09/07/21 14:07	09/21/21 23:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.315		0.100	0.103	1.00	0.0755	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	0.0186	U	0.0257	0.0258	1.00	0.0278	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.354		0.101	0.105	1.00	0.0417	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	84.6		30 - 110					09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.690	U	0.603	0.608	5.00	1.15	pCi/g	09/22/21 10:41	09/23/21 12:40	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.167	U	0.0689	0.0709		0.227	pCi/g	08/26/21 13:50	09/23/21 10:00	1
Bismuth-212	0.0208	U	0.508	0.508		0.935	pCi/g	08/26/21 13:50	09/23/21 10:00	1
Bismuth-214	0.0928	U	0.0738	0.0744		0.296	pCi/g	08/26/21 13:50	09/23/21 10:00	1
Lead-212	0.314		0.0700	0.0805		0.0807	pCi/g	08/26/21 13:50	09/23/21 10:00	1
Lead-214	0.415		0.0918	0.101		0.0773	pCi/g	08/26/21 13:50	09/23/21 10:00	1
Potassium-40	2.85		0.718	0.773		0.612	pCi/g	08/26/21 13:50	09/23/21 10:00	1
Radium-226	0.0928	U	0.0738	0.0744	1.00	0.296	pCi/g	08/26/21 13:50	09/23/21 10:00	1
Thorium-232	0.167	U	0.0689	0.0709		0.227	pCi/g	08/26/21 13:50	09/23/21 10:00	1
Cesium-137	0.0188	U	0.0452	0.0453		0.0795	pCi/g	08/26/21 13:50	09/23/21 10:00	1
Europium-152	0.0590	U	0.132	0.132		0.133	pCi/g	08/26/21 13:50	09/23/21 10:00	1
Europium-154	0.0557	U	0.0911	0.0913		0.0866	pCi/g	08/26/21 13:50	09/23/21 10:00	1
Europium-155	-0.0792	U	0.136	0.136		0.378	pCi/g	08/26/21 13:50	09/23/21 10:00	1
Sodium-22	0.0219	U	0.0175	0.0176		0.0269	pCi/g	08/26/21 13:50	09/23/21 10:00	1
Zinc-65	0.000	U	0.0440	0.0440		0.206	pCi/g	08/26/21 13:50	09/23/21 10:00	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-105-082021

Lab Sample ID: 160-43157-15

Date Collected: 08/20/21 09:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.0215	U	0.910	0.910	5.00	1.62	pCi/g	09/16/21 12:04	09/23/21 14:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	88.0		40 - 110					09/16/21 12:04	09/23/21 14:13	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.40	U	1.51	1.52	5.00	2.55	pCi/g	09/07/21 14:41	09/29/21 07:01	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.6		30 - 110					09/07/21 14:41	09/29/21 07:01	1

Client Sample ID: FSS-105-082021

Lab Sample ID: 160-43157-15

Date Collected: 08/20/21 09:00

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 83.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.3		0.27	0.017	mg/Kg	☼	09/15/21 07:52	09/15/21 20:45	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	18	U	23	7.3	ug/Kg	☼	09/15/21 15:00	09/16/21 11:45	1

Client Sample ID: FSS-106-082021

Lab Sample ID: 160-43157-16

Date Collected: 08/20/21 09:15

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0831	U	0.139	0.139	3.00	0.274	pCi/g	09/08/21 10:20	10/01/21 14:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.7		40 - 110					09/08/21 10:20	10/01/21 14:11	1
Y Carrier	98.3		40 - 110					09/08/21 10:20	10/01/21 14:11	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.180	U	0.220	0.221	1.00	0.378	pCi/g	09/19/21 15:37	09/21/21 02:49	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-106-082021

Lab Sample ID: 160-43157-16

Date Collected: 08/20/21 09:15

Matrix: Solid

Date Received: 08/21/21 08:42

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	-0.00191	U	0.00375	0.00375	1.00	0.0370	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	-0.00575	U	0.00650	0.00652	1.00	0.0474	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	84.1		30 - 110					09/07/21 14:07	09/21/21 23:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.136		0.0662	0.0671	1.00	0.0546	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	-0.00478	U	0.00662	0.00663	1.00	0.0535	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.148		0.0675	0.0686	1.00	0.0474	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Uranium-232</i>	84.8		30 - 110					09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.212	U	0.796	0.796	5.00	1.44	pCi/g	09/22/21 10:41	09/23/21 13:03	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.526		0.134	0.144		0.104	pCi/g	08/26/21 13:50	09/23/21 10:01	1
Bismuth-212	0.0306	U	0.592	0.592		1.11	pCi/g	08/26/21 13:50	09/23/21 10:01	1
Bismuth-214	0.243	U	0.106	0.109		0.292	pCi/g	08/26/21 13:50	09/23/21 10:01	1
Lead-212	0.309		0.0821	0.0879		0.0925	pCi/g	08/26/21 13:50	09/23/21 10:01	1
Lead-214	0.351		0.103	0.108		0.131	pCi/g	08/26/21 13:50	09/23/21 10:01	1
Potassium-40	4.58		1.17	1.25		0.771	pCi/g	08/26/21 13:50	09/23/21 10:01	1
Radium-226	0.243	U	0.106	0.109	1.00	0.292	pCi/g	08/26/21 13:50	09/23/21 10:01	1
Thorium-232	0.526		0.134	0.144		0.104	pCi/g	08/26/21 13:50	09/23/21 10:01	1
Cesium-137	0.0266	U	0.0542	0.0543		0.0952	pCi/g	08/26/21 13:50	09/23/21 10:01	1
Europium-152	0.123	U	0.0765	0.0775		0.162	pCi/g	08/26/21 13:50	09/23/21 10:01	1
Europium-154	0.0610	U	0.0436	0.0440		0.119	pCi/g	08/26/21 13:50	09/23/21 10:01	1
Europium-155	-0.000994	U	0.00248	0.00248		0.543	pCi/g	08/26/21 13:50	09/23/21 10:01	1
Sodium-22	-0.0314	U	0.0649	0.0650		0.115	pCi/g	08/26/21 13:50	09/23/21 10:01	1
Zinc-65	0.000	U	0.0183	0.0183		0.311	pCi/g	08/26/21 13:50	09/23/21 10:01	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	-0.124	U	0.932	0.932	5.00	1.66	pCi/g	09/16/21 12:04	09/23/21 15:19	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-106-082021

Lab Sample ID: 160-43157-16

Date Collected: 08/20/21 09:15

Matrix: Solid

Date Received: 08/21/21 08:42

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	86.7		40 - 110	09/16/21 12:04	09/23/21 15:19	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.257	U	1.52	1.52	5.00	2.71	pCi/g	09/07/21 14:41	09/29/21 07:35	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	84.1		30 - 110	09/07/21 14:41	09/29/21 07:35	1

Client Sample ID: FSS-106-082021

Lab Sample ID: 160-43157-16

Date Collected: 08/20/21 09:15

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 94.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.9		0.24	0.015	mg/Kg	☼	09/15/21 07:52	09/15/21 20:56	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/15/21 15:00	09/16/21 11:47	1

Client Sample ID: FSS-107-082021

Lab Sample ID: 160-43157-17

Date Collected: 08/20/21 09:15

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0305	U	0.165	0.165	3.00	0.297	pCi/g	09/08/21 10:20	10/01/21 14:11	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	79.1		40 - 110	09/08/21 10:20	10/01/21 14:11	1
Y Carrier	97.2		40 - 110	09/08/21 10:20	10/01/21 14:11	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0796	U	0.194	0.194	1.00	0.377	pCi/g	09/19/21 15:37	09/21/21 03:12	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00590	U	0.00667	0.00669	1.00	0.0486	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	0.00393	U	0.0164	0.0164	1.00	0.0441	pCi/g	09/07/21 14:07	09/21/21 23:50	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.0		30 - 110	09/07/21 14:07	09/21/21 23:50	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-107-082021

Lab Sample ID: 160-43157-17

Date Collected: 08/20/21 09:15

Matrix: Solid

Date Received: 08/21/21 08:42

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.181		0.0864	0.0877	1.00	0.0973	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	0.000	U	0.0218	0.0218	1.00	0.0663	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.173		0.0733	0.0747	1.00	0.0385	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.2		30 - 110					09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.279	U	0.849	0.850	5.00	1.48	pCi/g	09/23/21 08:54	09/27/21 10:35	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.257		0.192	0.194		0.208	pCi/g	08/26/21 13:50	09/22/21 15:40	1
Bismuth-212	0.274	U	0.468	0.469		0.813	pCi/g	08/26/21 13:50	09/22/21 15:40	1
Bismuth-214	0.251		0.114	0.117		0.113	pCi/g	08/26/21 13:50	09/22/21 15:40	1
Lead-212	0.262		0.0721	0.0793		0.0859	pCi/g	08/26/21 13:50	09/22/21 15:40	1
Lead-214	0.282		0.0842	0.0889		0.0898	pCi/g	08/26/21 13:50	09/22/21 15:40	1
Potassium-40	3.75		0.884	0.960		0.720	pCi/g	08/26/21 13:50	09/22/21 15:40	1
Radium-226	0.251		0.114	0.117	1.00	0.113	pCi/g	08/26/21 13:50	09/22/21 15:40	1
Thorium-232	0.257		0.192	0.194		0.208	pCi/g	08/26/21 13:50	09/22/21 15:40	1
Cesium-137	0.0191	U	0.0479	0.0479		0.0848	pCi/g	08/26/21 13:50	09/22/21 15:40	1
Europium-152	0.135	U	0.0749	0.0762		0.152	pCi/g	08/26/21 13:50	09/22/21 15:40	1
Europium-154	0.0718	U	0.116	0.116		0.0994	pCi/g	08/26/21 13:50	09/22/21 15:40	1
Europium-155	0.00130	U	0.00288	0.00288		0.265	pCi/g	08/26/21 13:50	09/22/21 15:40	1
Sodium-22	-0.0347	U	0.0551	0.0552		0.0950	pCi/g	08/26/21 13:50	09/22/21 15:40	1
Zinc-65	0.000	U	0.0214	0.0214		0.190	pCi/g	08/26/21 13:50	09/22/21 15:40	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	-0.336	U	0.947	0.947	5.00	1.69	pCi/g	09/16/21 12:04	09/23/21 16:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	83.1		40 - 110					09/16/21 12:04	09/23/21 16:26	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	0.117	U	1.39	1.39	5.00	2.48	pCi/g	09/07/21 14:41	09/29/21 08:09	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.0		30 - 110					09/07/21 14:41	09/29/21 08:09	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-107-082021

Lab Sample ID: 160-43157-17

Date Collected: 08/20/21 09:15

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 78.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7		0.33	0.020	mg/Kg	☼	09/15/21 07:52	09/15/21 20:59	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	18	U	23	7.6	ug/Kg	☼	09/15/21 15:00	09/16/21 11:55	1

Client Sample ID: FSS-108-082021

Lab Sample ID: 160-43157-18

Date Collected: 08/20/21 09:15

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0886	U	0.154	0.154	3.00	0.299	pCi/g	09/08/21 10:20	10/01/21 14:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.8		40 - 110					09/08/21 10:20	10/01/21 14:11	1
Y Carrier	99.1		40 - 110					09/08/21 10:20	10/01/21 14:11	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.106	U	0.208	0.208	1.00	0.363	pCi/g	09/19/21 15:37	09/21/21 03:34	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00175	U	0.00343	0.00344	1.00	0.0339	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	-0.00175	U	0.00344	0.00344	1.00	0.0339	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	92.6		30 - 110					09/07/21 14:07	09/21/21 23:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.296		0.111	0.114	1.00	0.0927	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	0.0569	U	0.0590	0.0592	1.00	0.0852	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.238		0.0988	0.101	1.00	0.0818	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.4		30 - 110					09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.631	U	0.796	0.798	5.00	1.49	pCi/g	09/23/21 08:54	09/27/21 11:43	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-108-082021

Lab Sample ID: 160-43157-18

Date Collected: 08/20/21 09:15

Matrix: Solid

Date Received: 08/21/21 08:42

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.186	U	0.183	0.184		0.212	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Bismuth-212	0.0110	U	0.532	0.532		0.982	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Bismuth-214	0.204		0.0772	0.0800		0.0910	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Lead-212	0.290		0.0642	0.0739		0.0659	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Lead-214	0.299		0.0853	0.0906		0.0875	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Potassium-40	3.30		0.790	0.856		0.649	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Radium-226	0.204		0.0772	0.0800	1.00	0.0910	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Thorium-232	0.186	U	0.183	0.184		0.212	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Cesium-137	-0.000908	U	0.0424	0.0424		0.0784	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Europium-152	-0.00384	U	0.00531	0.00532		0.157	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Europium-154	0.0480	U	0.0786	0.0787		0.107	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Europium-155	-0.000927	U	0.0909	0.0909		0.391	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Sodium-22	-0.00901	U	0.0379	0.0379		0.0711	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Zinc-65	-0.101	U	0.158	0.158		0.269	pCi/g	08/26/21 13:50	09/22/21 15:37	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.245	U	0.849	0.849	5.00	1.49	pCi/g	09/16/21 17:56	09/24/21 15:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	96.4		40 - 110					09/16/21 17:56	09/24/21 15:51	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.0627	U	1.29	1.29	5.00	2.30	pCi/g	09/07/21 14:41	09/29/21 08:42	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	92.6		30 - 110					09/07/21 14:41	09/29/21 08:42	1

Client Sample ID: FSS-108-082021

Lab Sample ID: 160-43157-18

Date Collected: 08/20/21 09:15

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 96.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.1		0.26	0.016	mg/Kg	☼	09/15/21 07:52	09/15/21 21:03	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/15/21 15:00	09/16/21 11:57	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-109-082021

Lab Sample ID: 160-43157-19

Date Collected: 08/20/21 09:30

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.274		0.159	0.161	3.00	0.242	pCi/g	09/08/21 10:20	10/01/21 14:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.8		40 - 110					09/08/21 10:20	10/01/21 14:12	1
Y Carrier	97.6		40 - 110					09/08/21 10:20	10/01/21 14:12	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0221	U	0.203	0.203	1.00	0.373	pCi/g	09/19/21 15:37	09/21/21 03:57	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00812	U	0.00796	0.00798	1.00	0.0542	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	0.00609	U	0.0164	0.0164	1.00	0.0393	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	86.9		30 - 110					09/07/21 14:07	09/21/21 23:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.306		0.0977	0.101	1.00	0.0582	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	0.00964	U	0.0284	0.0284	1.00	0.0644	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.333		0.0994	0.103	1.00	0.0232	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	87.2		30 - 110					09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.365	U	0.808	0.809	5.00	1.47	pCi/g	09/23/21 08:54	09/27/21 12:06	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.373		0.161	0.165		0.324	pCi/g	08/26/21 13:50	09/22/21 15:36	1
Bismuth-212	0.000	U	0.113	0.113		0.404	pCi/g	08/26/21 13:50	09/22/21 15:36	1
Bismuth-214	0.340		0.104	0.109		0.102	pCi/g	08/26/21 13:50	09/22/21 15:36	1
Lead-212	0.304		0.0805	0.0863		0.0966	pCi/g	08/26/21 13:50	09/22/21 15:36	1
Lead-214	0.345		0.102	0.107		0.105	pCi/g	08/26/21 13:50	09/22/21 15:36	1
Potassium-40	3.38		0.793	0.861		0.356	pCi/g	08/26/21 13:50	09/22/21 15:36	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-109-082021

Lab Sample ID: 160-43157-19

Date Collected: 08/20/21 09:30

Matrix: Solid

Date Received: 08/21/21 08:42

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.340		0.104	0.109	1.00	0.102	pCi/g	08/26/21 13:50	09/22/21 15:36	1
Thorium-232	0.373		0.161	0.165		0.324	pCi/g	08/26/21 13:50	09/22/21 15:36	1
Cesium-137	0.0174	U	0.0351	0.0351		0.0624	pCi/g	08/26/21 13:50	09/22/21 15:36	1
Europium-152	0.0872	U	0.163	0.163		0.178	pCi/g	08/26/21 13:50	09/22/21 15:36	1
Europium-154	0.140		0.0587	0.0603		0.139	pCi/g	08/26/21 13:50	09/22/21 15:36	1
Europium-155	0.000	U	0.0693	0.0693		0.506	pCi/g	08/26/21 13:50	09/22/21 15:36	1
Sodium-22	0.0232	U	0.0203	0.0205		0.0342	pCi/g	08/26/21 13:50	09/22/21 15:36	1
Zinc-65	0.000	U	0.0398	0.0398		0.273	pCi/g	08/26/21 13:50	09/22/21 15:36	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.298	U	0.748	0.748	5.00	1.30	pCi/g	09/16/21 17:56	09/24/21 16:57	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	<i>102</i>		<i>40 - 110</i>					<i>09/16/21 17:56</i>	<i>09/24/21 16:57</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.378	U	1.50	1.51	5.00	2.65	pCi/g	09/07/21 14:41	09/29/21 09:16	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	<i>86.9</i>		<i>30 - 110</i>					<i>09/07/21 14:41</i>	<i>09/29/21 09:16</i>	<i>1</i>

Client Sample ID: FSS-109-082021

Lab Sample ID: 160-43157-19

Date Collected: 08/20/21 09:30

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 97.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	10		0.23	0.014	mg/Kg	☼	09/15/21 07:52	09/15/21 21:06	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	27		19	6.1	ug/Kg	☼	09/15/21 15:00	09/16/21 12:00	1

Client Sample ID: FSS-110-082021

Lab Sample ID: 160-43157-20

Date Collected: 08/20/21 09:30

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.132	U	0.159	0.160	3.00	0.269	pCi/g	09/08/21 10:20	10/01/21 14:13	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-110-082021

Lab Sample ID: 160-43157-20

Date Collected: 08/20/21 09:30

Matrix: Solid

Date Received: 08/21/21 08:42

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	82.1		40 - 110	09/08/21 10:20	10/01/21 14:13	1
Y Carrier	98.7		40 - 110	09/08/21 10:20	10/01/21 14:13	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0636	U	0.207	0.207	1.00	0.371	pCi/g	09/19/21 15:37	09/21/21 04:20	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00379	U	0.00526	0.00527	1.00	0.0425	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	-0.00190	U	0.0170	0.0171	1.00	0.0540	pCi/g	09/07/21 14:07	09/21/21 23:50	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	86.5		30 - 110	09/07/21 14:07	09/21/21 23:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.263		0.0946	0.0971	1.00	0.0568	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-235/236	0.00529	U	0.0220	0.0220	1.00	0.0592	pCi/g	09/07/21 14:40	09/20/21 14:32	1
Uranium-238	0.373		0.110	0.114	1.00	0.0254	pCi/g	09/07/21 14:40	09/20/21 14:32	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	80.6		30 - 110	09/07/21 14:40	09/20/21 14:32	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.115	U	0.765	0.765	5.00	1.35	pCi/g	09/23/21 08:54	09/27/21 12:29	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.351		0.136	0.141		0.176	pCi/g	08/26/21 13:50	09/22/21 15:35	1
Bismuth-212	0.268	U	0.451	0.452		0.778	pCi/g	08/26/21 13:50	09/22/21 15:35	1
Bismuth-214	0.247		0.0817	0.0855		0.0822	pCi/g	08/26/21 13:50	09/22/21 15:35	1
Lead-212	0.319		0.0592	0.0717		0.0557	pCi/g	08/26/21 13:50	09/22/21 15:35	1
Lead-214	0.256		0.0598	0.0653		0.0746	pCi/g	08/26/21 13:50	09/22/21 15:35	1
Potassium-40	3.22		0.644	0.720		0.247	pCi/g	08/26/21 13:50	09/22/21 15:35	1
Radium-226	0.247		0.0817	0.0855	1.00	0.0822	pCi/g	08/26/21 13:50	09/22/21 15:35	1
Thorium-232	0.351		0.136	0.141		0.176	pCi/g	08/26/21 13:50	09/22/21 15:35	1
Cesium-137	0.000	U	0.0140	0.0140		0.0430	pCi/g	08/26/21 13:50	09/22/21 15:35	1
Europium-152	0.0537	U	0.0378	0.0383		0.127	pCi/g	08/26/21 13:50	09/22/21 15:35	1
Europium-154	0.0567	U	0.0746	0.0749		0.0738	pCi/g	08/26/21 13:50	09/22/21 15:35	1
Europium-155	0.000	U	0.0307	0.0307		0.410	pCi/g	08/26/21 13:50	09/22/21 15:35	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-110-082021

Lab Sample ID: 160-43157-20

Date Collected: 08/20/21 09:30

Matrix: Solid

Date Received: 08/21/21 08:42

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Sodium-22	-0.0139	U	0.0327	0.0327		0.0590	pCi/g	08/26/21 13:50	09/22/21 15:35	1
Zinc-65	0.000	U	0.0524	0.0524		0.175	pCi/g	08/26/21 13:50	09/22/21 15:35	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.187	U	0.798	0.798	5.00	1.42	pCi/g	09/16/21 17:56	09/24/21 18:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	101		40 - 110					09/16/21 17:56	09/24/21 18:03	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.621	U	1.55	1.56	5.00	2.75	pCi/g	09/07/21 14:41	09/29/21 09:49	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	86.5		30 - 110					09/07/21 14:41	09/29/21 09:49	1

Client Sample ID: FSS-110-082021

Lab Sample ID: 160-43157-20

Date Collected: 08/20/21 09:30

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 97.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	4.5		0.23	0.014	mg/Kg	☼	09/15/21 07:52	09/15/21 21:10	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg	☼	09/15/21 15:00	09/16/21 12:02	1

Client Sample ID: FSS-111-082021

Lab Sample ID: 160-43157-21

Date Collected: 08/20/21 09:30

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0892	U	0.192	0.192	3.00	0.360	pCi/g	09/08/21 11:40	10/01/21 17:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.6		40 - 110					09/08/21 11:40	10/01/21 17:48	1
Y Carrier	94.6		40 - 110					09/08/21 11:40	10/01/21 17:48	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-111-082021

Lab Sample ID: 160-43157-21

Date Collected: 08/20/21 09:30

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0171	U	0.194	0.194	1.00	0.361	pCi/g	09/19/21 15:37	09/21/21 04:42	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00381	U	0.0284	0.0284	1.00	0.0671	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	-0.00571	U	0.00647	0.00648	1.00	0.0471	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	88.6		30 - 110					09/07/21 14:07	09/21/21 23:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.178		0.0755	0.0769	1.00	0.0495	pCi/g	09/07/21 14:40	09/22/21 22:33	1
Uranium-235/236	0.0398		0.0390	0.0392	1.00	0.0299	pCi/g	09/07/21 14:40	09/22/21 22:33	1
Uranium-238	0.265		0.0915	0.0940	1.00	0.0494	pCi/g	09/07/21 14:40	09/22/21 22:33	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	81.5		30 - 110					09/07/21 14:40	09/22/21 22:33	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.352	U	0.741	0.742	5.00	1.36	pCi/g	09/23/21 08:54	09/27/21 12:51	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.109	U	0.0670	0.0679		0.344	pCi/g	08/26/21 13:50	09/22/21 16:24	1
Bismuth-212	0.876		0.350	0.361		0.269	pCi/g	08/26/21 13:50	09/22/21 16:24	1
Bismuth-214	0.301		0.0979	0.103		0.0901	pCi/g	08/26/21 13:50	09/22/21 16:24	1
Lead-212	0.342		0.0750	0.0866		0.0786	pCi/g	08/26/21 13:50	09/22/21 16:24	1
Lead-214	0.268		0.0785	0.0832		0.0952	pCi/g	08/26/21 13:50	09/22/21 16:24	1
Potassium-40	2.60		0.908	0.945		0.889	pCi/g	08/26/21 13:50	09/22/21 16:24	1
Radium-226	0.301		0.0979	0.103	1.00	0.0901	pCi/g	08/26/21 13:50	09/22/21 16:24	1
Thorium-232	0.109	U	0.0670	0.0679		0.344	pCi/g	08/26/21 13:50	09/22/21 16:24	1
Cesium-137	0.0166	U	0.0420	0.0420		0.0748	pCi/g	08/26/21 13:50	09/22/21 16:24	1
Europium-152	0.135		0.0764	0.0776		0.123	pCi/g	08/26/21 13:50	09/22/21 16:24	1
Europium-154	0.0552	U	0.0937	0.0939		0.0927	pCi/g	08/26/21 13:50	09/22/21 16:24	1
Europium-155	0.000	U	0.0841	0.0841		0.274	pCi/g	08/26/21 13:50	09/22/21 16:24	1
Sodium-22	0.00564	U	0.0295	0.0295		0.0583	pCi/g	08/26/21 13:50	09/22/21 16:24	1
Zinc-65	0.000	U	0.0295	0.0295		0.192	pCi/g	08/26/21 13:50	09/22/21 16:24	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-111-082021

Lab Sample ID: 160-43157-21

Date Collected: 08/20/21 09:30

Matrix: Solid

Date Received: 08/21/21 08:42

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.979	U	0.889	0.895	5.00	1.52	pCi/g	09/16/21 17:56	09/24/21 19:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	98.5		40 - 110					09/16/21 17:56	09/24/21 19:09	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.541	U	1.32	1.32	5.00	2.41	pCi/g	09/07/21 14:41	09/29/21 10:23	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	88.6		30 - 110					09/07/21 14:41	09/29/21 10:23	1

Client Sample ID: FSS-111-082021

Lab Sample ID: 160-43157-21

Date Collected: 08/20/21 09:30

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 83.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.6		0.28	0.017	mg/Kg	☼	09/15/21 07:52	09/15/21 21:13	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	18	U	24	7.6	ug/Kg	☼	09/15/21 15:00	09/15/21 20:28	1

Client Sample ID: FSS-112-082021

Lab Sample ID: 160-43157-22

Date Collected: 08/20/21 10:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0346	U	0.171	0.171	3.00	0.307	pCi/g	09/08/21 11:40	10/01/21 17:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.5		40 - 110					09/08/21 11:40	10/01/21 17:49	1
Y Carrier	94.2		40 - 110					09/08/21 11:40	10/01/21 17:49	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0346	U	0.194	0.194	1.00	0.364	pCi/g	09/19/21 15:37	09/21/21 05:05	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-112-082021

Lab Sample ID: 160-43157-22

Date Collected: 08/20/21 10:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-238	0.00200	U	0.0245	0.0245	1.00	0.0629	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	0.00601	U	0.0162	0.0162	1.00	0.0388	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	84.1		30 - 110					09/07/21 14:07	09/21/21 23:50	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Uranium-233/234	0.264		0.0910	0.0935	1.00	0.0391	pCi/g	09/07/21 14:40	09/22/21 22:33	1
Uranium-235/236	-0.00251	U	0.00492	0.00493	1.00	0.0486	pCi/g	09/07/21 14:40	09/22/21 22:33	1
Uranium-238	0.240		0.0866	0.0888	1.00	0.0390	pCi/g	09/07/21 14:40	09/22/21 22:33	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Uranium-232</i>	86.0		30 - 110					09/07/21 14:40	09/22/21 22:33	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Carbon-14	-0.745	U	0.711	0.716	5.00	1.35	pCi/g	09/23/21 08:54	09/27/21 13:14	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Actinium 228	0.311		0.112	0.117		0.183	pCi/g	08/26/21 13:50	09/22/21 16:20	1
Bismuth-212	0.159	U	0.284	0.285		0.500	pCi/g	08/26/21 13:50	09/22/21 16:20	1
Bismuth-214	0.382		0.100	0.107		0.0928	pCi/g	08/26/21 13:50	09/22/21 16:20	1
Lead-212	0.370		0.0667	0.0816		0.0659	pCi/g	08/26/21 13:50	09/22/21 16:20	1
Lead-214	0.404		0.0756	0.0861		0.0765	pCi/g	08/26/21 13:50	09/22/21 16:20	1
Potassium-40	4.00		0.786	0.883		0.560	pCi/g	08/26/21 13:50	09/22/21 16:20	1
Radium-226	0.382		0.100	0.107	1.00	0.0928	pCi/g	08/26/21 13:50	09/22/21 16:20	1
Thorium-232	0.311		0.112	0.117		0.183	pCi/g	08/26/21 13:50	09/22/21 16:20	1
Cesium-137	0.0157	U	0.0384	0.0384		0.0677	pCi/g	08/26/21 13:50	09/22/21 16:20	1
Europium-152	0.0992	U	0.133	0.133		0.106	pCi/g	08/26/21 13:50	09/22/21 16:20	1
Europium-154	-0.00956	U	0.0176	0.0177		0.0945	pCi/g	08/26/21 13:50	09/22/21 16:20	1
Europium-155	-0.000800	U	0.0801	0.0801		0.341	pCi/g	08/26/21 13:50	09/22/21 16:20	1
Sodium-22	0.00222	U	0.0316	0.0316		0.0613	pCi/g	08/26/21 13:50	09/22/21 16:20	1
Zinc-65	0.000	U	0.0116	0.0116		0.186	pCi/g	08/26/21 13:50	09/22/21 16:20	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.0748	U	0.811	0.811	5.00	1.45	pCi/g	09/16/21 17:56	09/24/21 20:15	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-112-082021

Lab Sample ID: 160-43157-22

Date Collected: 08/20/21 10:00

Matrix: Solid

Date Received: 08/21/21 08:42

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	97.0		40 - 110	09/16/21 17:56	09/24/21 20:15	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.224	U	1.45	1.45	5.00	2.62	pCi/g	09/07/21 14:41	09/29/21 10:56	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	84.1		30 - 110	09/07/21 14:41	09/29/21 10:56	1

Client Sample ID: FSS-112-082021

Lab Sample ID: 160-43157-22

Date Collected: 08/20/21 10:00

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 98.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	10		0.24	0.015	mg/Kg	☼	09/15/21 07:52	09/15/21 21:17	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	J	18	5.8	ug/Kg	☼	09/15/21 15:00	09/15/21 20:41	1

Client Sample ID: FSS-113-082021

Lab Sample ID: 160-43157-23

Date Collected: 08/20/21 10:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0865	U	0.176	0.176	3.00	0.307	pCi/g	09/08/21 11:40	10/01/21 17:49	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	83.0		40 - 110	09/08/21 11:40	10/01/21 17:49	1
Y Carrier	97.6		40 - 110	09/08/21 11:40	10/01/21 17:49	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0640	U	0.200	0.200	1.00	0.388	pCi/g	09/19/21 15:37	09/21/21 05:28	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0272	U	0.0367	0.0367	1.00	0.0606	pCi/g	09/07/21 14:07	09/21/21 23:50	1
Plutonium-239/240	-0.00227	U	0.00445	0.00445	1.00	0.0439	pCi/g	09/07/21 14:07	09/21/21 23:50	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	78.5		30 - 110	09/07/21 14:07	09/21/21 23:50	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-113-082021

Lab Sample ID: 160-43157-23

Date Collected: 08/20/21 10:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.267		0.0977	0.100	1.00	0.0595	pCi/g	09/07/21 14:40	09/21/21 23:55	1
Uranium-235/236	0.0111	U	0.0217	0.0218	1.00	0.0333	pCi/g	09/07/21 14:40	09/21/21 23:55	1
Uranium-238	0.151		0.0719	0.0730	1.00	0.0267	pCi/g	09/07/21 14:40	09/21/21 23:55	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	80.5		30 - 110					09/07/21 14:40	09/21/21 23:55	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.0270	U	0.830	0.830	5.00	1.47	pCi/g	09/23/21 08:54	09/27/21 13:36	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.468		0.145	0.152		0.0922	pCi/g	08/26/21 13:50	09/22/21 16:23	1
Bismuth-212	0.220	U	0.570	0.570		1.02	pCi/g	08/26/21 13:50	09/22/21 16:23	1
Bismuth-214	0.0799	U	0.157	0.157		0.355	pCi/g	08/26/21 13:50	09/22/21 16:23	1
Lead-212	0.406		0.0868	0.0962		0.0938	pCi/g	08/26/21 13:50	09/22/21 16:23	1
Lead-214	0.294		0.122	0.126		0.135	pCi/g	08/26/21 13:50	09/22/21 16:23	1
Potassium-40	4.51		0.917	1.02		0.357	pCi/g	08/26/21 13:50	09/22/21 16:23	1
Radium-226	0.0799	U	0.157	0.157	1.00	0.355	pCi/g	08/26/21 13:50	09/22/21 16:23	1
Thorium-232	0.468		0.145	0.152		0.0922	pCi/g	08/26/21 13:50	09/22/21 16:23	1
Cesium-137	-0.0349	U	0.0758	0.0759		0.131	pCi/g	08/26/21 13:50	09/22/21 16:23	1
Europium-152	0.0919	U	0.163	0.164		0.202	pCi/g	08/26/21 13:50	09/22/21 16:23	1
Europium-154	-0.0392	U	0.0887	0.0888		0.152	pCi/g	08/26/21 13:50	09/22/21 16:23	1
Europium-155	-0.0878	U	0.326	0.326		0.557	pCi/g	08/26/21 13:50	09/22/21 16:23	1
Sodium-22	-0.00621	U	0.0447	0.0447		0.0856	pCi/g	08/26/21 13:50	09/22/21 16:23	1
Zinc-65	-0.0432	U	0.154	0.154		0.274	pCi/g	08/26/21 13:50	09/22/21 16:23	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	-0.172	U	0.806	0.807	5.00	1.45	pCi/g	09/16/21 17:56	09/24/21 21:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	96.8		40 - 110					09/16/21 17:56	09/24/21 21:22	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.206	U	1.64	1.64	5.00	2.99	pCi/g	09/07/21 14:41	09/29/21 11:30	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	78.5		30 - 110					09/07/21 14:41	09/29/21 11:30	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-113-082021

Lab Sample ID: 160-43157-23

Date Collected: 08/20/21 10:00

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 96.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.8		0.25	0.015	mg/Kg	☼	09/15/21 07:52	09/15/21 21:20	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	20	6.3	ug/Kg	☼	09/15/21 15:00	09/15/21 20:43	1

Client Sample ID: FSS-114-082021

Lab Sample ID: 160-43157-24

Date Collected: 08/20/21 10:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0197	U	0.180	0.180	3.00	0.333	pCi/g	09/08/21 11:40	10/01/21 17:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.6		40 - 110					09/08/21 11:40	10/01/21 17:49	1
Y Carrier	96.1		40 - 110					09/08/21 11:40	10/01/21 17:49	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0635	U	0.207	0.208	1.00	0.375	pCi/g	09/19/21 15:37	09/21/21 05:50	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0227	U	0.0315	0.0316	1.00	0.0510	pCi/g	09/11/21 11:55	09/20/21 13:14	1
Plutonium-239/240	-0.00228	U	0.0204	0.0204	1.00	0.0648	pCi/g	09/11/21 11:55	09/20/21 13:14	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.2		30 - 110					09/11/21 11:55	09/20/21 13:14	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.152		0.0725	0.0735	1.00	0.0563	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-235/236	0.0393	U	0.0414	0.0415	1.00	0.0507	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-238	0.149		0.0701	0.0711	1.00	0.0407	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	83.1		30 - 110					09/12/21 17:44	09/20/21 11:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.511	U	0.662	0.664	5.00	1.23	pCi/g	09/23/21 08:54	09/27/21 13:59	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43157-1

Client Sample ID: FSS-114-082021

Lab Sample ID: 160-43157-24

Date Collected: 08/20/21 10:00

Matrix: Solid

Date Received: 08/21/21 08:42

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.318		0.212	0.215		0.229	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Bismuth-212	-0.252	U	0.614	0.615		1.08	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Bismuth-214	0.0850	U	0.109	0.109		0.338	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Lead-212	0.349		0.0790	0.0906		0.0888	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Lead-214	0.272		0.0784	0.0831		0.0602	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Potassium-40	2.55		0.745	0.787		0.685	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Radium-226	0.0850	U	0.109	0.109	1.00	0.338	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Thorium-232	0.318		0.212	0.215		0.229	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Cesium-137	-0.0210	U	0.112	0.112		0.117	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Europium-152	0.0447	U	0.0878	0.0879		0.151	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Europium-154	-0.0358	U	0.0707	0.0707		0.121	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Europium-155	-0.00431	U	0.134	0.134		0.361	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Sodium-22	-0.00284	U	0.0392	0.0392		0.0764	pCi/g	08/26/21 13:50	09/22/21 15:37	1
Zinc-65	-0.106	U	0.0867	0.0873		0.288	pCi/g	08/26/21 13:50	09/22/21 15:37	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.114	U	0.825	0.825	5.00	1.47	pCi/g	09/16/21 17:56	09/24/21 22:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	97.0		40 - 110					09/16/21 17:56	09/24/21 22:28	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.0180	U	1.63	1.63	5.00	2.52	pCi/g	09/12/21 17:46	09/27/21 15:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.2		30 - 110					09/12/21 17:46	09/27/21 15:45	1

Client Sample ID: FSS-114-082021

Lab Sample ID: 160-43157-24

Date Collected: 08/20/21 10:00

Matrix: Solid

Date Received: 08/21/21 08:42

Percent Solids: 96.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.8		0.23	0.014	mg/Kg	☼	09/15/21 07:52	09/15/21 21:24	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/15/21 15:00	09/15/21 20:46	1

Laboratory Report

Eurofins TestAmerica, St. Louis
 13715 Rider Trail North
 Earth City, MO 63045
 United States
 Attention: Ivan H Vania
 Telephone: 314-298-8566

Report Date 09/27/2021
 Sample Receipt Date 08/26/2021
 RJ Lee Group Job No. AOH1063266-0
 Authorization/P.O. No.
 Client Job No./Name 160-43157-1

Analysis: Asbestos in Bulk Samples by Point Count

Method: NYELAP Method 198.1

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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546660.HPL	FSS-094-081921 (160-43157-1)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546661.HPL	FSS-095-081921 (160-43157-2)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546662.HPL	FSS-096-081921 (160-43157-3)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43157-1

RJ Lee Group Job No: AOH1063266-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546663.HPL	FSS-097-081921 (160-43157-4)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546664.HPL	FSS-297-081921 (160-43157-5)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546665.HPL	FSS-098-082021 (160-43157-6)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546666.HPL	FSS-298-082021 (160-43157-7)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546667.HPL	FSS-099-082021 (160-43157-8)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43157-1

RJ Lee Group Job No: AOH1063266-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546668.HPL	FSS-299-082021 (160-43157-9)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546669.HPL	FSS-100-082021 (160-43157-10)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546670.HPL	FSS-101-082021 (160-43157-11)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546671.HPL	FSS-102-082021 (160-43157-12)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43157-1

RJ Lee Group Job No: AOH1063266-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
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Authorized Signature: _____

Elizabeth Fischer, Microscopist

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ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- AM = Amphibole
- B = Binder
- CA = Carbonates
- CL = Clay
- F = Feldspar
- G = Gypsum
- HY = Hydromagnesite
- M = Miscellaneous
- MI = Mica
- OP = Opaque
- OR = Organic
- P = Perlite
- Q = Quartz
- T = Tar
- V = Vermiculite

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

Laboratory Report

Eurofins TestAmerica, St. Louis
13715 Rider Trail North
Earth City, MO 63045
United States
Attention: Ivan H Vania
Telephone: 314-298-8566

Report Date 09/27/2021
Sample Receipt Date 08/25/2021
RJ Lee Group Job No. AOH1063242-0
Authorization/P.O. No.
Client Job No./Name 160-43157-1

Analysis: Asbestos in Bulk Samples by Point Count

Method: NYELAP Method 198.1

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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546526.HPL	FSS-103-082021 (160-43157-13)	Yes	1	ND		100.00	Q, CA, AM, OP, MI, M	EAF-09/23/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546527.HPL	FSS-104-082021 (160-43157-14)	Yes	1	ND		100.00	Q, CA, AM, OP, MI, M	EAF-09/23/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546528.HPL	FSS-105-082021 (160-43157-15)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/23/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43157-1

RJ Lee Group Job No: AOH1063242-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546529.HPL	FSS-106-082021 (160-43157-16)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/23/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546530.HPL	FSS-107-082021 (160-43157-17)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/23/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546531.HPL	FSS-108-082021 (160-43157-18)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546532.HPL	FSS-109-082021 (160-43157-19)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/27/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546533.HPL	FSS-110-082021 (160-43157-20)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43157-1

RJ Lee Group Job No: AOH1063242-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546534.HPL	FSS-111-082021 (160-43157-21)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546535.HPL	FSS-112-082021 (160-43157-22)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546536.HPL	FSS-113-082021 (160-43157-23)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546537.HPL	FSS-114-082021 (160-43157-24)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-09/25/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43157-1

RJ Lee Group Job No: AOH1063242-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
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Authorized Signature: _____

Elizabeth Fischer, Microscopist

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ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- | | | |
|-----------------|---------------------|-----------------|
| AM = Amphibole | HY = Hydromagnesite | Q = Quartz |
| B = Binder | M = Miscellaneous | T = Tar |
| CA = Carbonates | MI = Mica | V = Vermiculite |
| CL = Clay | OP = Opaque | |
| F = Feldspar | OR = Organic | |
| G = Gypsum | P = Perlite | |

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43195-1	FSS-115-082421	Solid	08/24/21 08:15	08/25/21 13:20
160-43195-2	FSS-116-082421	Solid	08/24/21 08:15	08/25/21 13:20
160-43195-3	FSS-117-082421	Solid	08/24/21 08:15	08/25/21 13:20
160-43195-4	FSS-118-082421	Solid	08/24/21 09:00	08/25/21 13:20
160-43195-5	FSS-119-082421	Solid	08/24/21 09:00	08/25/21 13:20
160-43195-6	FSS-120-082421	Solid	08/24/21 09:00	08/25/21 13:20
160-43195-7	FSS-121-082421	Solid	08/24/21 09:00	08/25/21 13:20
160-43195-8	FSS-122-082421	Solid	08/24/21 09:00	08/25/21 13:20
160-43195-9	FSS-123-082421	Solid	08/24/21 09:00	08/25/21 13:20
160-43195-10	FSS-124-082421	Solid	08/24/21 09:30	08/25/21 13:20
160-43195-11	FSS-125-082421	Solid	08/24/21 09:30	08/25/21 13:20
160-43195-12	FSS-126-082421	Solid	08/24/21 09:30	08/25/21 13:20
160-43195-13	FSS-127-082421	Solid	08/24/21 08:15	08/25/21 13:20
160-43195-14	FSS-128-082421	Solid	08/24/21 08:15	08/25/21 13:20
160-43195-15	FSS-129-082421	Solid	08/24/21 08:15	08/25/21 13:20
160-43195-16	FSS-130-082421	Solid	08/24/21 11:15	08/25/21 13:20
160-43195-17	FSS-131-082421	Solid	08/24/21 11:15	08/25/21 13:20
160-43195-18	FSS-132-082421	Solid	08/24/21 11:15	08/25/21 13:20
160-43195-22	FSS-133-082421	Solid	08/24/21 14:15	08/25/21 13:20
160-43195-23	FSS-134-082421	Solid	08/24/21 14:15	08/25/21 13:20
160-43195-24	FSS-135-082421	Solid	08/24/21 14:15	08/25/21 13:20
160-43195-25	FSS-139-082421	Solid	08/24/21 13:45	08/25/21 13:20
160-43195-26	FSS-140-082421	Solid	08/24/21 13:45	08/25/21 13:20
160-43195-27	FSS-141-082421	Solid	08/24/21 13:45	08/25/21 13:20
160-43195-28	FSS-339-082421	Solid	08/24/21 13:45	08/25/21 13:20
160-43195-29	FSS-340-082421	Solid	08/24/21 13:45	08/25/21 13:20
160-43195-30	FSS-341-082421	Solid	08/24/21 13:45	08/25/21 13:20
160-43195-31	FSS-142-082421	Solid	08/24/21 13:15	08/25/21 13:20
160-43195-32	FSS-143-082421	Solid	08/24/21 13:15	08/25/21 13:20
160-43195-33	FSS-144-082421	Solid	08/24/21 13:15	08/25/21 13:20

Chain of Custody Record



Environment Testing
 America

Client Information (Sub Contract Lab)		Lab PM	Carrier Tracking No(s)	COC No							
Client Contact: Vania, Ivan H Shipping/Receiving: Ivan.Vania@Eurofins.com Company: TestAmerica Laboratories, Inc. Address: 4955 Yarrow Street, Avada, CO 80002 Phone: 303-736-0100(Tel) 303-431-7171(Fax) Email: [Blank]		Vania, Ivan H	New York	160-218247-1							
Due Date Requested: 10/6/2021 TAT Requested (days): [Blank]		State of Origin: New York Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York	Page 1 of 4 Job # 160-43195-1	Job # 160-43195-1 Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: [Blank]							
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Weigher, 5-solids, Omnisorb)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Moisture	60208_D005/30508 (MOD) (CPMS Metals Pb Only)	74718_D005/4718_Prep Mercury	Total Number of Containers	Special Instructions/Note:
FSS-115-082421 (160-43195-1)	8/24/21	08:15 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-116-082421 (160-43195-2)	8/24/21	08:15 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-117-082421 (160-43195-3)	8/24/21	08:15 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-118-082421 (160-43195-4)	8/24/21	09:00 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-119-082421 (160-43195-5)	8/24/21	09:00 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-120-082421 (160-43195-6)	8/24/21	09:00 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-121-082421 (160-43195-7)	8/24/21	09:00 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-122-082421 (160-43195-8)	8/24/21	09:00 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-123-082421 (160-43195-9)	8/24/21	09:00 Eastern	Solid	Solid	X	X	X	X	X	1	
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.											
Possible Hazard Identification Level 1 radioactive Deliverable Requested I, II, III, IV, Other (specify) [Blank]											
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For [Blank] Months											
Special Instructions/QC Requirements: [Blank]											
Primary Deliverable Rank: 2											
Empty Kit Relinquished by: [Blank] Date: [Blank] Time: [Blank]											
Relinquished by: <i>Yvonne Keminings</i> Date: AUG 25 2021 Time: 19:00 Company: ETA SP											
Relinquished by: [Blank] Date/Time: [Blank] Company: [Blank]											
Custody Seal No.: [Blank] Cooler Temperature(s) °C and Other Remarks: 1-7, 3, 0, IR 1141-0											

Chain of Custody Record



Client Information (Sub Contract Lab)			Sampler	Lab PM:	Carrier Tracking No(s)	COC No					
Shipping/Receiving			Phone	Vania, Ivan H		160-218247.2					
Company			E-Mail	Ivan Vania@Eurofinsel.com	State of Origin	Page					
TestAmerica Laboratories, Inc.					New York	Page 2 of 4					
Address			Due Date Requested	Accreditations Required (See note)							
4955 Yarrow Street			10/6/2021	DoD - A2LA; DoD - ANAB; NELAP - New York							
City			TAT Requested (days)	Preservation Codes:							
Anvada				A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - Di Water K - EDTA L - EDA Z - other (specify)							
State, Zip			PO #	Other:							
CO, 80002			WO #								
Phone			Project #	Total Number of Containers							
303-736-0100(Tel) 303-431-7171(Fax)			16009147	1							
Email			SSOW#	Special Instructions/Note:							
BNL Decommissioning Project											
Site											
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=solid, O=Other)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Moisture	60208_PODS/30508 (MOD) ICPMS Metals Pb Only	74718_PODS/4718 Prep Mercury	Analysis Requested	Special Instructions/Note:
FSS-124-082421 (160-43195-10)	8/24/21	09:30 Eastern	Solid	Solid	X	X	X	X	X		
FSS-125-082421 (160-43195-11)	8/24/21	09:30 Eastern	Solid	Solid	X	X	X	X	X		
FSS-126-082421 (160-43195-12)	8/24/21	09:30 Eastern	Solid	Solid	X	X	X	X	X		
FSS-127-082421 (160-43195-13)	8/24/21	08:15 Eastern	Solid	Solid	X	X	X	X	X		
FSS-128-082421 (160-43195-14)	8/24/21	08:15 Eastern	Solid	Solid	X	X	X	X	X		
FSS-129-082421 (160-43195-15)	8/24/21	08:15 Eastern	Solid	Solid	X	X	X	X	X		
FSS-130-082421 (160-43195-16)	8/24/21	11:15 Eastern	Solid	Solid	X	X	X	X	X		
FSS-131-082421 (160-43195-17)	8/24/21	11:15 Eastern	Solid	Solid	X	X	X	X	X		
FSS-132-082421 (160-43195-18)	8/24/21	11:15 Eastern	Solid	Solid	X	X	X	X	X		

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
 Level: 1 radioactive
 Deliverable Requested I, II, III, IV, Other (specify) _____
 Primary Deliverable Rank: 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements:

Empty Kit Relinquished by	Date	Time	Method of Shipment
Relinquished by <i>MICHA KENNING</i>	AUG 26 2021	17:00	Company
Relinquished by			Company
Relinquished by			Company

Received by	Date/Time	Company
<i>SPR</i>	08/27/2021 09:35	ETA DEN
Received by		Company
Received by		Company

Cooler Temperature(s) °C and Other Remarks

Custody Seals Intact: Yes No Custody Seal No.

Client Information (Sub Contract Lab)		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:							
Client Contact:		Vania, Ivan H	Vania, Ivan H		160-218247.3							
Shipping/Receiving:		Phone:	E-Mail:	State of Origin:	Page							
Company:		Ivan Vania@Eurofinsel.com	Ivan Vania@Eurofinsel.com	New York	Page 3 of 4							
Address:		Accreditations Required (See note):		Job #:	160-43195-1							
4955 Yarrow Street,		DoD - AZLA; DoD - ANAB; NELAP - New York		Preservation Codes:								
City:	Arvada	Due Date Requested:	10/6/2021	A - HCL M - Hexane N - None O - AsHxO2 P - Na2OxS Q - Na2SO3 R - H2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA Y - EDA Z - other (specify)								
State, Zip:	CO, 80002	TAT Requested (days):		Other:								
Phone:	303-736-0100(Tel) 303-431-7171(Fax)	PO #:										
Email:		WO #:										
Project Name:	BNL Decommissioning Project	Project #:	16009147									
Site:		SSOW#:										
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Weather, Solid, Overhead, Distillate, Aqueous)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Moisture	6020B_DDS/3050B (MOD) (CPMS Metals Pb Only)	7471B_DDS/471B_Prep Mercury	Total Number of Containers	Special Instructions/Note:
FSS-133-082421 (160-43195-19)	8/24/21	14:15 Eastern	Solid			X	X	X			1	
FSS-134-082421 (160-43195-20)	8/24/21	14:15 Eastern	Solid			X	X	X			1	
FSS-135-082421 (160-43195-21)	8/24/21	14:15 Eastern	Solid			X	X	X			1	
FSS-136-082421 (160-43195-22)	8/24/21	14:15 Eastern	Solid			X	X	X			1	
FSS-137-082421 (160-43195-23)	8/24/21	14:15 Eastern	Solid			X	X	X			1	
FSS-138-082421 (160-43195-24)	8/24/21	14:15 Eastern	Solid			X	X	X			1	
FSS-139-082421 (160-43195-25)	8/24/21	13:45 Eastern	Solid			X	X	X			1	
FSS-140-082421 (160-43195-26)	8/24/21	13:45 Eastern	Solid			X	X	X			1	
FSS-141-082421 (160-43195-27)	8/24/21	13:45 Eastern	Solid			X	X	X			1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/testing/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
Level 1 radioactive

Deliverable Requested: I, II, III, IV, Other (specify) _____
Primary Deliverable Rank: 2

Empty Kit Relinquished by: _____
Relinquished by: _____
Relinquished by: _____

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client
 Disposal By Lab
 Archive For _____ Months

Special Instructions/QC Requirements: _____

Time: _____
Method of Shipment: _____

Received by: _____
Date/Time: _____
Company: _____

Received by: _____
Date/Time: 08/27/2021 09:35
Company: ENADEK

Received by: _____
Date/Time: _____
Company: _____

Cooler Temperature(s) °C and Other Remarks: _____

Custody Seal No.: _____
 Yes No

Chain of Custody Record



Client Information (Sub Contract Lab)		Lab PM: Vania, Ivan H		Carrier (Tracking No(s)): 160-218247 4	
Client Contact: Shipping/Receiving		E-Mail: Ivan.Vania@Eurofins.com		Page: Page 4 of 4	
Company: TestAmerica Laboratories, Inc.		State of Origin: New York		Job #: 160-43195-1	
Address: 4955 Yarrow Street.		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		Preservation Codes:	
City: Arveda		Due Date Requested: 10/6/2021		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
State Zip: CO, 80002		TAT Requested (days):		M - Hexane N - None O - ASNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Phone: 303-736-0100(Tel) 303-431-7171(Fax)		PO #:		Total Number of Containers: 1	
Email:		WO #:		Special Instructions/Note:	
Project Name: BNL Decommissioning Project		Project #: 16009147			
Site:		SSOW#:			

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Nuclear, Stable, Other)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Moisture	Analysis Requested	Total Number of Containers	Special Instructions/Note
FSS-339-082421 (160-43195-28)	8/24/21	13:45 Eastern	Solid	Solid	X	X	X	74718_000574718_Prep Mercury	1	
FSS-340-082421 (160-43195-29)	8/24/21	13:45 Eastern	Solid	Solid	X	X	X		1	
FSS-341-082421 (160-43195-30)	8/24/21	13:45 Eastern	Solid	Solid	X	X	X		1	
FSS-142-082421 (160-43195-31)	8/24/21	13:15 Eastern	Solid	Solid	X	X	X		1	
FSS-143-082421 (160-43195-32)	8/24/21	13:15 Eastern	Solid	Solid	X	X	X		1	
FSS-144-082421 (160-43195-33)	8/24/21	13:15 Eastern	Solid	Solid	X	X	X		1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
 Level 1 radioactive
 Deliverable Requested I, II, III, IV, Other (specify): Primary Deliverable Rank: 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/QC Requirements:

Regulatory Program: DW NPDES RCRA Other:

Client Contact		Project Manager: Dan Ours	
Email: d.ours@fpm-remediations.com		Site Contact: Doug Beard	
Tel/Fax: (315) 336-7721 ext. 218		Date: 08-24-21	
Address: 181 Kenwood Avenue		Carrier: Fed Ex	
Oneida, NY 13421		Lab Contact: Ivan Vania	
(315) 336-7721 ext. 218 Phone		Sampler: B. Gaudette	
Fax (315) 336-7722 FAX		For Lab Use Only:	
Project Name: BNL 705 Stack Demo		Walk-in Client:	
Site: BNL		Lab Sampling:	
P O # 1085-20-01-01		Job / SDG No.:	
COC No: 1 of 3 COCs		TALS Project #:	

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sample Specific Notes:													
						Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Gamma Spec: Ra-226+detects	Strontium-90 (GFPC)	Asbestos - EPA600 R-93	Lead (ICP/MS) - 6020B	Mercury - EPA 7470A	Ni-63	Tritium	C-14	Alpha Spec Pu 238,239,240	Alpha Spec U 234,235,238	Pu 241 by LSC	
FSS-115-082421	24-Aug	8:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7D - SS001 0"-6"
FSS-116-082421	24-Aug	8:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7D - SS001 6"-12"
FSS-117-082421	24-Aug	8:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7D - SS001 18"-24"
FSS-118-082421	24-Aug	9:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7D - SS002 0"-6"
FSS-119-082421	24-Aug	9:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7D - SS002 6"-12"
FSS-120-082421	24-Aug	9:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7D - SS002 18"-24"
FSS-121-082421	24-Aug	9:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7D - Bias North TB 0"-6"
FSS-122-082421	24-Aug	9:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7D - Bias North TB 6"-12"
FSS-123-082421	24-Aug	9:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7D - Bias North TB 18"-24"
FSS-124-082421	24-Aug	9:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7D - SS003 0"-6"
FSS-125-082421	24-Aug	9:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7D - SS003 6"-12"
FSS-126-082421	24-Aug	9:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SU 7D - SS003 18"-24"

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Please List any EPA Hazardous Waste? Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-212, Pb-212, Ac-228, Bi-214, Pb-214, Pb-210, Bi-210, Po-210, and K-40, Am241,Co60,Na22,Zn65,Th 232, Eu152,Eu154,Eu155

Return to Client Disposal by Lab Archive for _____ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Custody Seal No.:	Company: Cabrera Services, Inc.
Relinquished by: DOUGLAS BEARD	Company: ETA SR
Relinquished by: FED EX	Company: ETA SR
Relinquished by:	Company:

Cooler Temp. (°C): Obs'd: _____ Corrid: _____ Therm ID No.: _____

Received by: Fed Ex Date/Time: 21/17:00

Received in Laboratory by: **Pritha Keningy** Date/Time: **AUG 25 2021**



Chain of Custody Record



Environment Testing
TestAmerica

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Client Contact		Project Manager: Dan Ours		Site Contact: Doug Beard		Date: 08-24-21		COC No: 2 of 3 COCs												
FPM		Email: d.ours@fpm-remediations.com		Lab Contact: Ivan Vania		Carrier: Fed Ex		TALS Project #:												
Address 181 Kenwood Avenue		Tel/Fax: (315) 336-7721 ext. 218		Mercury - EPA 7470A		Alpha Spec U 234,235,238		Sampler: B. Gaudette												
Oneida, NY 13421		Analysis Turnaround Time		Lead (ICPMS) - 6020B		Alpha Spec Pu 238,239,240		For Lab Use Only:												
(315) 336-7721 ext. 218		<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS		Asbestos - EPA600 R-93		C-14		Walk-in Client:												
Fax (315) 336-7722		TAT if different from Below: 30 Days		Strontium-90 (GFPC)		Tritium		Lab Sampling:												
Project Name: BNL 705 Stack Demo		2 weeks		Gamma Spec: Ra-226+detectors		NI-63		Job / SDG No.:												
Site: BNL		1 week		Perform MS / MSD (Y / N)		C-14														
P O # 1085-20-01-01		2 days		Filtered Sample (Y / N)		C-14														
		1 day				C-14														
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Gamma Spec: Ra-226+detectors	Strontium-90 (GFPC)	Asbestos - EPA600 R-93	Lead (ICPMS) - 6020B	Mercury - EPA 7470A	NI-63	Tritium	Alpha Spec Pu 238,239,240	Alpha Spec U 234,235,238	Carrier: Fed Ex	Date: 08-24-21	COC No: 2 of 3 COCs	
FSS-127-082421	24-Aug	8:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1			
FSS-128-082421	24-Aug	8:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1			
FSS-129-082421	24-Aug	8:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1			
FSS-130-082421	24-Aug	11:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1			
FSS-131-082421	24-Aug	11:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1			
FSS-132-082421	24-Aug	11:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1			
FSS-133-082421	24-Aug	14:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1			
FSS-134-082421	24-Aug	14:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1			
FSS-135-082421	24-Aug	14:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1			
FSS-136-082421	24-Aug	14:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1			
FSS-137-082421	24-Aug	14:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1			
FSS-138-082421	24-Aug	14:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1			

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am-241, Co-60, Na-22, Zn-65, Th-232, Eu-152, Eu-154, Eu-155

Return to Client Disposal by Lab Archive for _____ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

SU 7D - SS004 0"-6"	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
SU 7D - SS004 6"-12"	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
SU 7D - SS004 18"-24"	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
SU 7D - SS006 0"-6"	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
SU 7D - SS006 6"-12"	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
SU 7D - SS006 18"-24"	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
SU 7D - SS007 0"-6"	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
SU 7D - SS007 6"-12"	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
SU 7D - SS007 18"-24"	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
SU 7D - SS007 0"-6" Dup	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
SU 7D - SS007 6"-12" Dup	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
SU 7D - SS007 18"-24" Dup	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			

Received by: *Michelle Karamitanga* **Company:** ETA SN **Date/Time:** AUG 25 2021

Relinquished by: *DOUGLAS BEARD* **Company:** FEDEX **Date/Time:** 21/17-00

Relinquished by: **Company:** **Date/Time:**

Custody Seal No.: **Company:** Cabrera Services, Inc. **Date/Time:** 21/17-00

Relinquished by: **Company:** **Date/Time:**

Relinquished by: **Company:** **Date/Time:**



Environment Testing
TestAmerica

Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input checked="" type="checkbox"/> Other:		Project Manager: Dan Ours Email: d.ours@pjm-remediations.com Tel/Fax: (315) 336-7721 ext. 218		Site Contact: Doug Beard Lab Contact: Ivan Vania		Date: 08-24-21 Carrier: Fed Ex		COC No: 3 of 3 COCs			
Client Contact Address 181 Kenwood Avenue Oneida, NY 13421 (315) 336-7721 ext. 218 Phone Fax (315) 336-7722 FAX Project Name: BNL 705 Stack Demo Site: BNL P O # 1085-20-01-01		Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below: 30 Days		<input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Filtered Sample (Y/N) Perform MS / MSD (Y/N) Gamma Spec: Ra-226+detects Strontium-90 (GFPC) Asbestos - EPA600 R-93 Lead (ICP/MS) - 60208 Mercury - EPA 7470A NI-63 Tritium C-14		Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC		TALS Project #: Sampler: B. Gaudette For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:	
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sample Specific Notes:					
FSS-139-082421	24-Aug	13:45	C	S	3	SU 7D - SS009 0"-6"					
FSS-140-082421	24-Aug	13:45	C	S	3	SU 7D - SS009 6"-12"					
FSS-141-082421	24-Aug	13:45	C	S	3	SU 7D - SS009 18"-24"					
FSS-339-082421	24-Aug	13:45	C	S	3	SU 7D - SS009 0"-6" Dup					
FSS-340-082421	24-Aug	13:45	C	S	3	SU 7D - SS009 6"-12" Dup					
FSS-341-082421	24-Aug	13:45	C	S	3	SU 7D - SS009 18"-24" Dup					
FSS-142-082421	24-Aug	13:15	C	S	3	SU 7D - SS008 0"-6"					
FSS-143-082421	24-Aug	13:15	C	S	3	SU 7D - SS008 6"-12"					
FSS-144-082421	24-Aug	13:15	C	S	3	SU 7D - SS008 18"-24"					

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Please list any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown
 Return to Client Disposal by Lab Archive for _____ Months

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu154, Eu155

Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Relinquished by: Douglas Beard Relinquished by: FEDEx Relinquished by:	Custody Seal No.: Company: Cabrera Services, Inc. Company: Company:	Received by: MICHA KERVINKING Received in Laboratory by: Company: ETA Company:	Received by: ETA Received in Laboratory by: Company:	Date/Time: 8-24-21/17:00 Date/Time: Date/Time:	Therm ID No.: Date/Time: Date/Time:
--	---	--	---	---	--

Eurofins TestAmerica, St. Louis
 13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-288-8566 Fax: 314-288-4737

Chain of Custody Record

eurofins
 Environment Testing
 America

Client Information (Sub Contract Lab)
 Client Contact: Shipping/Receiving
 Company: RJ Lee Group, Inc
 Address: 350 Hochberg Rd.
 City: Monroeville
 State, Zip: PA, 15146
 Phone: (610) 406-3247-0
 Email: E-Mail: Ivan.Vanila@Eurofins.com
 State at Origin: New York

Lab Info: Vanila, Ivan H
 E-Mail: Ivan.Vanila@Eurofins.com

Current Tracking Info: CCC No: 180-218248.1
 Page: Page 1 of 4
 Job #: 160-09195-1

Accreditation Request (See web): DoD - AELA; DoD - ANAB; NELAP - New York

Analysis Requested:

Sample ID (Lab ID)	Sample Date	Sample Time	Sample Type (Containers, Grab)	Matrix (Aspirate, Precipitate, etc.)	Preservation Code:	Field Filtered Sample (Yes or No)	Performance Number (Yes or No)	Sub Address - PLM-EPAB00-R-93LAP-080.03	Total Number of Containers	Special Instructions/Notes:
FSS-115-082421 (160-43195-1)	8/24/21	08:15 Eastern	Solid	Solid	X	X	X	Asbestos - PLM-EPAB00-R-93LAP-080.03	1	Asbestos - PLM-EPAB00-R-93LAP-080.03
FSS-116-082421 (160-43195-2)	8/24/21	08:15 Eastern	Solid	Solid	X	X	X	Asbestos - PLM-EPAB00-R-93LAP-080.03	1	Asbestos - PLM-EPAB00-R-93LAP-080.03
FSS-117-082421 (160-43195-3)	8/24/21	08:15 Eastern	Solid	Solid	X	X	X	Asbestos - PLM-EPAB00-R-93LAP-080.03	1	Asbestos - PLM-EPAB00-R-93LAP-080.03
FSS-118-082421 (160-43195-4)	8/24/21	09:00 Eastern	Solid	Solid	X	X	X	Asbestos - PLM-EPAB00-R-93LAP-080.03	1	Asbestos - PLM-EPAB00-R-93LAP-080.03
FSS-119-082421 (160-43195-5)	8/24/21	09:00 Eastern	Solid	Solid	X	X	X	Asbestos - PLM-EPAB00-R-93LAP-080.03	1	Asbestos - PLM-EPAB00-R-93LAP-080.03
FSS-120-082421 (160-43195-6)	8/24/21	09:00 Eastern	Solid	Solid	X	X	X	Asbestos - PLM-EPAB00-R-93LAP-080.03	1	Asbestos - PLM-EPAB00-R-93LAP-080.03
FSS-121-082421 (160-43195-7)	8/24/21	09:00 Eastern	Solid	Solid	X	X	X	Asbestos - PLM-EPAB00-R-93LAP-080.03	1	Asbestos - PLM-EPAB00-R-93LAP-080.03
FSS-122-082421 (160-43195-8)	8/24/21	09:00 Eastern	Solid	Solid	X	X	X	Asbestos - PLM-EPAB00-R-93LAP-080.03	1	Asbestos - PLM-EPAB00-R-93LAP-080.03
FSS-123-082421 (160-43195-9)	8/24/21	09:00 Eastern	Solid	Solid	X	X	X	Asbestos - PLM-EPAB00-R-93LAP-080.03	1	Asbestos - PLM-EPAB00-R-93LAP-080.03

Preservation Codes:
 A - HCL
 B - HNO3
 C - Zn Acetate
 D - Nitric Acid
 E - HNO3
 F - HNO3
 G - Amchlor
 H - Ascorbic Acid
 I - Ice
 J - DI Water
 K - EDTA
 L - EDTA
 M - Heptane
 N - None
 O - Acetic Acid
 P - HClO4
 Q - HClO4
 R - HClO4
 S - H2SO4
 T - 10% Dithionite
 U - Acetic
 V - MeTA
 W - PH 4.5
 Z - other (specify)

Special Instructions/Notes:

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements:

Primary Deliverable Rank: 2

Deliverable Requested: I, II, III, IV, Other (specify)

Level: 1 redoxactive

Possible Hazard Identification

Since laboratory accreditation are subject to change, Eurofins TestAmerica places the onus of method, matrix & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analytical/analytical being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody slip to said compliance to Eurofins TestAmerica.

Received by: MICHA KERVINKA
 Date/Time: AUG 26 2021 17:00
 Company: ETA SL
 Received by: Anna Malgora
 Date/Time: 08-27-2021 9:14 AM
 Company: Eurofins
 Received by: _____
 Date/Time: _____
 Company: _____

Custody Seal Intact: Custody Seal No.: _____
 Δ Yes Δ No

Color Temperature(s) °C and Other Remarks:

Eurofins TestAmerica, St. Louis
 13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8606 Fax: 314-298-8757



Chain of Custody Record

Environment
 Air-As-3

A07-10632-170

Client Information (Sub Contract Lab) RU Lee Group, Inc. 100 Hochberg Rd. Morrisville State: 26 PA, 15146 Phone: _____ Email: _____		Lab Ref: Vanis, Ivan H State of Origin: New York Ivan.Vanis@Eurofins.com Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York		COC No.: 160-218246.2 Page: Page 2 of 4 Job #: 160-43195-1 Preservation Codes:	
Shipping/Receiving Date Requested: 10/7/2021 YAT Requested (days): _____ PO #: _____ SMO #: _____ Project #: 16009147 SMO#: 5500W		Analysis Requested Perform Method (Yes or No) <input checked="" type="checkbox"/> Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> Total Number of Containers: _____		M - HCL N - None O - AsHClO ₄ P - H ₂ SO ₄ Q - HNO ₃ R - NaOH S - H ₂ SO ₄ T - TSP Dosecalphate U - Acetone V - MCAA W - pH 4.5 X - EDTA L - EDA Other: _____	
Sample ID	Sample Date	Sample Time	Sample Type (C-Cont., G-Grab)	Matrix (S-Soil, S-Stream, S-Sediment, S-Air)	Preservation Code:
FSS-124-082421 (160-43195-10)	8/24/21	08:30 Eastern	Solid	Solid	Asbestos - PLM-EPA600-R-931L-AP-080.03
FSS-125-082421 (160-43195-11)	8/24/21	08:30 Eastern	Solid	Solid	Asbestos - PLM-EPA600-R-931L-AP-080.03
FSS-126-082421 (160-43195-12)	8/24/21	09:30 Eastern	Solid	Solid	Asbestos - PLM-EPA600-R-931L-AP-080.03
FSS-127-082421 (160-43195-13)	8/24/21	08:15 Eastern	Solid	Solid	Asbestos - PLM-EPA600-R-931L-AP-080.03
FSS-128-082421 (160-43195-14)	8/24/21	08:15 Eastern	Solid	Solid	Asbestos - PLM-EPA600-R-931L-AP-080.03
FSS-129-082421 (160-43195-15)	8/24/21	11:15 Eastern	Solid	Solid	Asbestos - PLM-EPA600-R-931L-AP-080.03
FSS-130-082421 (160-43195-16)	8/24/21	11:15 Eastern	Solid	Solid	Asbestos - PLM-EPA600-R-931L-AP-080.03
FSS-131-082421 (160-43195-17)	8/24/21	11:15 Eastern	Solid	Solid	Asbestos - PLM-EPA600-R-931L-AP-080.03
FSS-132-082421 (160-43195-18)	8/24/21	11:15 Eastern	Solid	Solid	Asbestos - PLM-EPA600-R-931L-AP-080.03

Note: Some laboratory accreditation are subject to change. Eurofins TestAmerica places the ownership of method, analysis & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analyte(s) being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
 Level 1 radioactive
 Deliverable Requested: I, II, III, IV, Other (specify) _____

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Dispose By Lab Archive For _____ Months

Special Instructions/OC Requirements: _____

Method of Shipment: _____

Date: AUG 26 2021
Time: 17:00
Company: Eurofins Company
Received by: [Signature]
Date/Time: _____
Company: _____

Primary Deliverable Rank: 2

Empty Kit Requisitioned by: _____

Level 1 radioactive

Deliverable Requested: I, II, III, IV, Other (specify)

Returned by: [Signature]
Date/Time: _____
Company: _____

Returned by: _____
Date/Time: _____
Company: _____

Custody Seals Intact: Custody Seal No.: _____
 A Yes A No

Ver: 05/06/2021

Eurofins TestAmerica, St. Louis
 13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-288-6566 Fax: 314-288-8757

Chain of Custody Record



Environmental Testing
 America

Client Information (Sub Contract Lab)		Shipping/Receiving		Company		Lab P/N		Custody Tracking Note(s)		GOC No	
R.J. Lee Group, Inc		350 Hochberg Rd.		Monroeville		PA, 15146		16009147		160-218246.3	
Address:		City:		State, Zip:		Phone:		Project Name:		Page	
350 Hochberg Rd.		Monroeville		PA, 15146				BNL Decommissioning Project		Page 3 of 4	
City:		State, Zip:		Phone:		E-Mail:		Preservation Codes:		Lab P/N	
Monroeville		PA, 15146						A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - H2SO4 F - HNO3 G - Ammonia H - Acetic Acid I - Ice J - DI Water K - EDTA L - EDA Other:		160-43195-1	
Project Name:		Sample Date:		Sample Time:		Sample Type (C-Comp, Grab)		Matrix (S-Soil, G-Groundwater, A-Air)		Special Instructions/Notes:	
BNL Decommissioning Project		8/24/21		14:15 Eastern		Solid		Solid		Asbestos - PLM-EPA600-R-931AP-080.03	
Site:		8/24/21		14:15 Eastern		Solid		Solid		Asbestos - PLM-EPA600-R-931AP-080.03	
8/24/21		8/24/21		14:15 Eastern		Solid		Solid		Asbestos - PLM-EPA600-R-931AP-080.03	
8/24/21		8/24/21		14:15 Eastern		Solid		Solid		Asbestos - PLM-EPA600-R-931AP-080.03	
8/24/21		8/24/21		14:15 Eastern		Solid		Solid		Asbestos - PLM-EPA600-R-931AP-080.03	
8/24/21		8/24/21		14:15 Eastern		Solid		Solid		Asbestos - PLM-EPA600-R-931AP-080.03	
8/24/21		8/24/21		13:45 Eastern		Solid		Solid		Asbestos - PLM-EPA600-R-931AP-080.03	
8/24/21		8/24/21		13:45 Eastern		Solid		Solid		Asbestos - PLM-EPA600-R-931AP-080.03	
8/24/21		8/24/21		13:45 Eastern		Solid		Solid		Asbestos - PLM-EPA600-R-931AP-080.03	
8/24/21		8/24/21		13:45 Eastern		Solid		Solid		Asbestos - PLM-EPA600-R-931AP-080.03	

NOTE: Some laboratory accreditation are subject to change. Eurofins TestAmerica places the onus of method, sample & accreditation compliance upon our subcontracted laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analytes/parameters being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
 Level: 1 radioactive
 Deliverable Requested: I, II, III, IV, Other (specify)
 Empty KG Relinquished by: Primary Deliverable Rank: 2
 Date: 8/26/2021 17:00
 Received by: MICHA KERVINGAYA
 Date/Time: 8/26/2021 9:40 AM
 Company: [Signature]
 Date/Time: [Signature]
 Company: [Signature]

Custody Seal Intact: Yes No
 Custody Seal No.:
 A Yes No

Eurofins TestAmerica, St. Louis
 13716 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8566 Fax: 314-298-8757

Chain of Custody Record



Eurofins TestAmerica

Client Information (Sub Contract Lab)
 Client Contact: R/L Lee Group, Inc. Shipping/Receiving: Ivan.Vernig@eurofins.com
 Address: 3300 Hochberg Rd., Monroeville, PA 15146
 City: Monroeville, State: Pa, Zip: 15146
 Project Name: BNL Decommissioning Project
 Project #: 16009147

Lab Ref: Vanita, Mont H
Lab ID: PHON
State of Origin: New York
Analysis Requested: Analysis Requested
Accreditation: DoD - A2LA; DoD - ANAB; NELAP - New York
Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - NaOH, G - H2SO4, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, Other:

Special Instructions/Notes: Asbestos - PLM-EPA600-R-931AP-080.03
 Asbestos - PLM-EPA600-R-931AP-080.03
 Asbestos - PLM-EPA600-R-931AP-080.03
 Asbestos - PLM-EPA600-R-931AP-080.03
 Asbestos - PLM-EPA600-R-931AP-080.03
 Asbestos - PLM-EPA600-R-931AP-080.03

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (G-grab) or (Grab)	Matrix (Asbestos, Lead, Uranium, PCB)	Field Filtered Sample (Yes or No)	Perform Method (Yes or No)	Test Number of containers	Special Instructions/Notes
FSS-339-082421 (160-43195-28)	8/24/21	13:45 Eastern	Solid	Asbestos	X	X	1	Asbestos - PLM-EPA600-R-931AP-080.03
FSS-340-082421 (160-43195-29)	8/24/21	13:45 Eastern	Solid	Asbestos	X	X	1	Asbestos - PLM-EPA600-R-931AP-080.03
FSS-341-082421 (160-43195-30)	8/24/21	13:45 Eastern	Solid	Asbestos	X	X	1	Asbestos - PLM-EPA600-R-931AP-080.03
FSS-142-082421 (160-43195-31)	8/24/21	13:15 Eastern	Solid	Asbestos	X	X	1	Asbestos - PLM-EPA600-R-931AP-080.03
FSS-143-082421 (160-43195-32)	8/24/21	13:15 Eastern	Solid	Asbestos	X	X	1	Asbestos - PLM-EPA600-R-931AP-080.03
FSS-144-082421 (160-43195-33)	8/24/21	13:15 Eastern	Solid	Asbestos	X	X	1	Asbestos - PLM-EPA600-R-931AP-080.03

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify) _____
 Primary Deliverable Rank: 2
 Date: AUG 26 2021 13:00
 Requisitioned by: MICHA KEMALINGA
 Received by: [Signature]
 Date/Time: 8/27/21 9:10 AM
 Company: [Signature]
 Date/Time: [Signature]
 Company: [Signature]

Custody Seal No.: _____
 A Yes A No
 V-01 08-2021

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43195-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/25/2021 1:20 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 4.5° C, 17.5° C, 18.5° C and 27.4° C.

Receipt Exceptions

Samples are logged in for MS and/or MSD analysis using the client sample ID as a parent sample ID, and the same ID with MS or MSD on the end is used for the spikes. This allows the system to calculate the QC statistics for sample duplicates. This was unknown to the client at the time the revised COC was delivered. The result was that three samples for three project points (one for each point) were analyzed in duplicate. One of each sample had an MS/MSD analyzed with it. The duplicate sample only results were reported in job 160-43195-2. Refer to Table 1 (Job 160-43195-1 - Updated Sample IDs) after the case narrative for a summary of this information.

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis. The report supplied by RJ LEE was annotated by the lab to account for the sample ID updates listed in the receipt exceptions section of the narrative.

METALS (ICP/MS)

Samples FSS-115-082421 (160-43195-1), FSS-116-082421 (160-43195-2), FSS-117-082421 (160-43195-3), FSS-118-082421 (160-43195-4), FSS-119-082421 (160-43195-5), FSS-120-082421 (160-43195-6), FSS-121-082421 (160-43195-7), FSS-122-082421 (160-43195-8), FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), FSS-125-082421 (160-43195-11), FSS-126-082421 (160-43195-12), FSS-127-082421 (160-43195-13), FSS-128-082421 (160-43195-14), FSS-129-082421 (160-43195-15), FSS-130-082421 (160-43195-16), FSS-131-082421 (160-43195-17), FSS-132-082421 (160-43195-18), FSS-133-082421 (160-43195-22), FSS-134-082421 (160-43195-23), FSS-135-082421 (160-43195-24), FSS-139-082421 (160-43195-25), FSS-140-082421 (160-43195-26), FSS-141-082421 (160-43195-27), FSS-339-082421 (160-43195-28), FSS-340-082421 (160-43195-29), FSS-341-082421 (160-43195-30), FSS-142-082421 (160-43195-31), FSS-143-082421 (160-43195-32) and FSS-144-082421 (160-43195-33) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 09/16/2021, 09/17/2021 and 10/14/2021 and analyzed on 09/16/2021, 09/20/2021 and 10/14/2021.

Preparation Batch 280-550205, Analytical Batch 280-550511:

The matrix spike / matrix spike duplicate (MS/MSD) recoveries were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Lead was detected in method blank MB 280-553378/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-115-082421 (160-43195-1), FSS-116-082421 (160-43195-2), FSS-117-082421 (160-43195-3), FSS-118-082421 (160-43195-4), FSS-119-082421 (160-43195-5), FSS-120-082421 (160-43195-6), FSS-121-082421 (160-43195-7), FSS-122-082421 (160-43195-8), FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), FSS-125-082421 (160-43195-11), FSS-126-082421 (160-43195-12), FSS-127-082421 (160-43195-13), FSS-128-082421 (160-43195-14), FSS-129-082421 (160-43195-15), FSS-130-082421 (160-43195-16), FSS-131-082421 (160-43195-17), FSS-132-082421 (160-43195-18), FSS-133-082421 (160-43195-22), FSS-134-082421 (160-43195-23), FSS-135-082421 (160-43195-24), FSS-139-082421 (160-43195-25), FSS-140-082421 (160-43195-26), FSS-141-082421 (160-43195-27), FSS-339-082421 (160-43195-28), FSS-340-082421 (160-43195-29), FSS-341-082421 (160-43195-30), FSS-142-082421 (160-43195-31), FSS-143-082421 (160-43195-32) and FSS-144-082421 (160-43195-33) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B_ DoD5. The samples were prepared on 09/18/2021 and 10/13/2021 and analyzed on 09/19/2021 and 10/13/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples FSS-115-082421 (160-43195-1), FSS-116-082421 (160-43195-2), FSS-117-082421 (160-43195-3), FSS-118-082421 (160-43195-4), FSS-119-082421 (160-43195-5), FSS-120-082421 (160-43195-6), FSS-121-082421 (160-43195-7), FSS-122-082421 (160-43195-8), FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), FSS-125-082421 (160-43195-11), FSS-126-082421 (160-43195-12), FSS-127-082421 (160-43195-13), FSS-128-082421 (160-43195-14), FSS-129-082421 (160-43195-15), FSS-130-082421 (160-43195-16), FSS-131-082421 (160-43195-17), FSS-132-082421 (160-43195-18), FSS-133-082421 (160-43195-22), FSS-134-082421 (160-43195-23), FSS-135-082421 (160-43195-24), FSS-139-082421 (160-43195-25), FSS-140-082421 (160-43195-26), FSS-141-082421 (160-43195-27), FSS-339-082421 (160-43195-28), FSS-340-082421 (160-43195-29), FSS-341-082421 (160-43195-30), FSS-142-082421 (160-43195-31), FSS-143-082421 (160-43195-32) and FSS-144-082421 (160-43195-33) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 09/02/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-115-082421 (160-43195-1), FSS-116-082421 (160-43195-2), FSS-117-082421 (160-43195-3), FSS-118-082421 (160-43195-4), FSS-119-082421 (160-43195-5), FSS-120-082421 (160-43195-6), FSS-121-082421 (160-43195-7), FSS-122-082421 (160-43195-8), FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), FSS-125-082421 (160-43195-11), FSS-126-082421 (160-43195-12), FSS-127-082421 (160-43195-13), FSS-128-082421 (160-43195-14), FSS-129-082421 (160-43195-15), FSS-130-082421 (160-43195-16), FSS-131-082421 (160-43195-17), FSS-132-082421 (160-43195-18), FSS-133-082421 (160-43195-22), FSS-134-082421 (160-43195-23), FSS-135-082421 (160-43195-24), FSS-139-082421 (160-43195-25), FSS-140-082421 (160-43195-26), FSS-141-082421 (160-43195-27), FSS-339-082421 (160-43195-28), FSS-340-082421 (160-43195-29), FSS-341-082421 (160-43195-30), FSS-142-082421 (160-43195-31), FSS-143-082421 (160-43195-32) and FSS-144-082421 (160-43195-33) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 08/27/2021, prepared on 09/18/2021, 09/19/2021 and 09/20/2021 and analyzed on 09/30/2021, 10/04/2021 and 10/05/2021.

Preparation Batch 160-527618:

The strontium-90 LCS recovered outside the lower QC limit at 42.53% (70%). All of the sample tracer recoveries were in the upper QC range. The highest activity in the group is 0.3514pCi/g. If this result is adjusted for an LCS recovery at 100%, the value would still be at least an order of magnitude below the project action limit of 15pCi/g. To date, 92 project samples have not demonstrated any significant amount of strontium-90 activity. Therefore, given the weight of the site data, the results were reported in consultation with the client:

FSS-124-082421 (160-43195-10), FSS-125-082421 (160-43195-11), FSS-126-082421 (160-43195-12), FSS-127-082421 (160-43195-13), FSS-128-082421 (160-43195-14), FSS-129-082421 (160-43195-15), FSS-130-082421 (160-43195-16),

FSS-131-082421 (160-43195-17), FSS-132-082421 (160-43195-18), FSS-133-082421 (160-43195-22), FSS-134-082421 (160-43195-23), FSS-135-082421 (160-43195-24), FSS-139-082421 (160-43195-25), FSS-140-082421 (160-43195-26), FSS-141-082421 (160-43195-27), FSS-339-082421 (160-43195-28), FSS-340-082421 (160-43195-29), (LCS 160-527618/2-A), (MB 160-527618/1-A), and (160-43195-A-10-K DU).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-115-082421 (160-43195-1), FSS-116-082421 (160-43195-2), FSS-117-082421 (160-43195-3), FSS-118-082421 (160-43195-4), FSS-119-082421 (160-43195-5), FSS-120-082421 (160-43195-6), FSS-121-082421 (160-43195-7), FSS-122-082421 (160-43195-8), FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), FSS-125-082421 (160-43195-11), FSS-126-082421 (160-43195-12), FSS-127-082421 (160-43195-13), FSS-128-082421 (160-43195-14), FSS-129-082421 (160-43195-15), FSS-130-082421 (160-43195-16), FSS-131-082421 (160-43195-17), FSS-132-082421 (160-43195-18), FSS-133-082421 (160-43195-22), FSS-134-082421 (160-43195-23), FSS-135-082421 (160-43195-24), FSS-139-082421 (160-43195-25), FSS-140-082421 (160-43195-26), FSS-141-082421 (160-43195-27), FSS-339-082421 (160-43195-28), FSS-340-082421 (160-43195-29), FSS-341-082421 (160-43195-30), FSS-142-082421 (160-43195-31), FSS-143-082421 (160-43195-32) and FSS-144-082421 (160-43195-33) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 09/19/2021 and 09/20/2021 and analyzed on 09/20/2021, 09/21/2021, 09/27/2021 and 09/28/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-115-082421 (160-43195-1), FSS-116-082421 (160-43195-2), FSS-117-082421 (160-43195-3), FSS-118-082421 (160-43195-4), FSS-119-082421 (160-43195-5), FSS-120-082421 (160-43195-6), FSS-121-082421 (160-43195-7), FSS-122-082421 (160-43195-8), FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), FSS-125-082421 (160-43195-11), FSS-126-082421 (160-43195-12), FSS-127-082421 (160-43195-13), FSS-128-082421 (160-43195-14), FSS-129-082421 (160-43195-15), FSS-130-082421 (160-43195-16), FSS-131-082421 (160-43195-17), FSS-132-082421 (160-43195-18), FSS-133-082421 (160-43195-22), FSS-134-082421 (160-43195-23), FSS-135-082421 (160-43195-24), FSS-139-082421 (160-43195-25), FSS-140-082421 (160-43195-26), FSS-141-082421 (160-43195-27), FSS-339-082421 (160-43195-28), FSS-340-082421 (160-43195-29), FSS-341-082421 (160-43195-30), FSS-142-082421 (160-43195-31), FSS-143-082421 (160-43195-32) and FSS-144-082421 (160-43195-33) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 08/27/2021, prepared on 09/11/2021 and 09/21/2021 and analyzed on 09/19/2021, 09/20/2021 and 09/24/2021.

Preparation Batch 160-528277:

The samples were prepared at a reduced aliquot due to matrix interference. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared to demonstrate batch precision: FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), and FSS-125-082421 (160-43195-11).

Preparation Batch 160-528278:

The samples were prepared at a reduced aliquot due to matrix interference. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared to demonstrate batch precision: FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), and FSS-125-082421 (160-43195-11).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-115-082421 (160-43195-1), FSS-116-082421 (160-43195-2), FSS-117-082421 (160-43195-3), FSS-118-082421 (160-43195-4), FSS-119-082421 (160-43195-5), FSS-120-082421 (160-43195-6), FSS-121-082421 (160-43195-7), FSS-122-082421 (160-43195-8), FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), FSS-125-082421 (160-43195-11), FSS-126-082421 (160-43195-12), FSS-127-082421 (160-43195-13), FSS-128-082421 (160-43195-14), FSS-129-082421 (160-43195-15), FSS-130-082421 (160-43195-16), FSS-131-082421 (160-43195-17), FSS-132-082421 (160-43195-18), FSS-133-082421 (160-43195-22), FSS-134-082421 (160-43195-23), FSS-135-082421 (160-43195-24), FSS-139-082421 (160-43195-25), FSS-140-082421 (160-43195-26), FSS-141-082421 (160-43195-27), FSS-339-082421 (160-43195-28), FSS-340-082421 (160-43195-29), FSS-341-082421 (160-43195-30), FSS-142-082421 (160-43195-31), FSS-143-082421 (160-43195-32) and FSS-144-082421 (160-43195-33) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/27/2021, prepared on 09/12/2021 and 09/21/2021 and analyzed on 09/20/2021 and 09/24/2021.

Preparation Batch 160-528279:

The samples were prepared at a reduced aliquot due to matrix interference. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared to demonstrate batch precision: FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), and FSS-125-082421 (160-43195-11).

Preparation Batch 160-526536:

Uranium-238 was detected in method blank MB 160-526536/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate.

Preparation Batch 160-528279:

Uranium-238 was detected in method blank MB 160-528279/1-A at a level that was above the method detection limit but below the

reporting limit. The value should be considered an estimate.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-115-082421 (160-43195-1), FSS-116-082421 (160-43195-2), FSS-117-082421 (160-43195-3), FSS-118-082421 (160-43195-4), FSS-119-082421 (160-43195-5), FSS-120-082421 (160-43195-6), FSS-121-082421 (160-43195-7), FSS-122-082421 (160-43195-8), FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), FSS-125-082421 (160-43195-11), FSS-126-082421 (160-43195-12), FSS-127-082421 (160-43195-13), FSS-128-082421 (160-43195-14), FSS-129-082421 (160-43195-15), FSS-130-082421 (160-43195-16), FSS-131-082421 (160-43195-17), FSS-132-082421 (160-43195-18), FSS-133-082421 (160-43195-22), FSS-134-082421 (160-43195-23), FSS-135-082421 (160-43195-24), FSS-139-082421 (160-43195-25), FSS-140-082421 (160-43195-26), FSS-141-082421 (160-43195-27), FSS-339-082421 (160-43195-28), FSS-340-082421 (160-43195-29), FSS-341-082421 (160-43195-30), FSS-142-082421 (160-43195-31), FSS-143-082421 (160-43195-32) and FSS-144-082421 (160-43195-33) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 09/23/2021, 09/24/2021 and 09/26/2021 and analyzed on 09/27/2021 and 09/28/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-115-082421 (160-43195-1), FSS-116-082421 (160-43195-2), FSS-117-082421 (160-43195-3), FSS-118-082421 (160-43195-4), FSS-119-082421 (160-43195-5), FSS-120-082421 (160-43195-6), FSS-121-082421 (160-43195-7), FSS-122-082421 (160-43195-8), FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), FSS-125-082421 (160-43195-11), FSS-126-082421 (160-43195-12), FSS-127-082421 (160-43195-13), FSS-128-082421 (160-43195-14), FSS-129-082421 (160-43195-15), FSS-130-082421 (160-43195-16), FSS-131-082421 (160-43195-17), FSS-132-082421 (160-43195-18), FSS-133-082421 (160-43195-22), FSS-134-082421 (160-43195-23), FSS-135-082421 (160-43195-24), FSS-139-082421 (160-43195-25), FSS-140-082421 (160-43195-26), FSS-141-082421 (160-43195-27), FSS-339-082421 (160-43195-28), FSS-340-082421 (160-43195-29), FSS-341-082421 (160-43195-30), FSS-142-082421 (160-43195-31), FSS-143-082421 (160-43195-32) and FSS-144-082421 (160-43195-33) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/27/2021, prepared on 09/02/2021 and analyzed on 09/24/2021, 09/28/2021 and 09/29/2021.

Preparation Batch 160-525244:

For samples FSS-133-082421 (160-43195-22), FSS-134-082421 (160-43195-23), FSS-135-082421 (160-43195-24), FSS-139-082421 (160-43195-25), FSS-140-082421 (160-43195-26), FSS-141-082421 (160-43195-27), FSS-339-082421 (160-43195-28), FSS-340-082421 (160-43195-29), FSS-341-082421 (160-43195-30), FSS-142-082421 (160-43195-31), FSS-143-082421 (160-43195-32), FSS-144-082421 (160-43195-33), (LCS 160-525244/2-A), (MB 160-525244/1-A), (160-43230-A-7-C), and (160-43230-A-7-D DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred	Reported
From	to
Nuclide	Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

Preparation Batch 160-525240:

The replicate precision for Bi-214/Ra-226 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for these statistical exceedances: (160-43195-A-20-D DU).

For samples FSS-115-082421 (160-43195-1), FSS-116-082421 (160-43195-2), FSS-117-082421 (160-43195-3), FSS-118-082421 (160-43195-4), FSS-119-082421 (160-43195-5), FSS-120-082421 (160-43195-6), FSS-121-082421 (160-43195-7), FSS-122-082421 (160-43195-8), FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), FSS-125-082421 (160-43195-11), FSS-126-082421 (160-43195-12), FSS-127-082421 (160-43195-13), FSS-128-082421 (160-43195-14), FSS-129-082421 (160-43195-15), FSS-130-082421 (160-43195-16), FSS-131-082421 (160-43195-17), FSS-132-082421 (160-43195-18), (LCS 160-525240/2-A), (MB 160-525240/1-A), and (160-43195-A-20-D DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-115-082421 (160-43195-1), FSS-116-082421 (160-43195-2), FSS-117-082421 (160-43195-3), FSS-118-082421 (160-43195-4), FSS-119-082421 (160-43195-5), FSS-120-082421 (160-43195-6), FSS-121-082421 (160-43195-7), FSS-122-082421 (160-43195-8), FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), FSS-125-082421 (160-43195-11), FSS-126-082421 (160-43195-12), FSS-127-082421 (160-43195-13), FSS-128-082421 (160-43195-14), FSS-129-082421 (160-43195-15), FSS-130-082421 (160-43195-16), FSS-131-082421 (160-43195-17), FSS-132-082421 (160-43195-18), FSS-133-082421 (160-43195-22), FSS-134-082421 (160-43195-23), FSS-135-082421 (160-43195-24), FSS-139-082421 (160-43195-25), FSS-140-082421 (160-43195-26), FSS-141-082421 (160-43195-27), FSS-339-082421 (160-43195-28), FSS-340-082421 (160-43195-29), FSS-341-082421 (160-43195-30), FSS-142-082421 (160-43195-31), FSS-143-082421 (160-43195-32) and FSS-144-082421 (160-43195-33) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 08/27/2021, prepared on 09/16/2021 and 09/20/2021 and analyzed on 09/24/2021, 09/25/2021 and 09/26/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-115-082421 (160-43195-1), FSS-116-082421 (160-43195-2), FSS-117-082421 (160-43195-3), FSS-118-082421 (160-43195-4), FSS-119-082421 (160-43195-5), FSS-120-082421 (160-43195-6), FSS-121-082421 (160-43195-7), FSS-122-082421 (160-43195-8), FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), FSS-125-082421 (160-43195-11), FSS-126-082421 (160-43195-12), FSS-127-082421 (160-43195-13), FSS-128-082421 (160-43195-14), FSS-129-082421 (160-43195-15), FSS-130-082421 (160-43195-16), FSS-131-082421 (160-43195-17), FSS-132-082421 (160-43195-18), FSS-133-082421 (160-43195-22), FSS-134-082421 (160-43195-23), FSS-135-082421 (160-43195-24), FSS-139-082421 (160-43195-25), FSS-140-082421 (160-43195-26), FSS-141-082421 (160-43195-27), FSS-339-082421 (160-43195-28), FSS-340-082421 (160-43195-29), FSS-341-082421 (160-43195-30), FSS-142-082421 (160-43195-31), FSS-143-082421 (160-43195-32) and FSS-144-082421 (160-43195-33) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared

on 09/12/2021 and 09/21/2021 and analyzed on 09/27/2021, 09/28/2021 and 09/30/2021.

Preparation Batch 160-528278:

The laboratory control sample duplicate (LCSD) recovery was outside the upper QC limit of 125% (130%), indicating a potential positive bias for the analyte: Pu-241 was not observed above the MDC/RL in the associated samples; therefore, the results were reported: FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), FSS-125-082421 (160-43195-11), (LCS 160-528278/2-A), (LCSD 160-528278/3-A), and (MB 160-528278/1-A).

The following samples did not meet the requested limit (RL) due to a reduced sample volume, which was attributed to the presence of matrix interferences noted during the initial preparation: FSS-123-082421 (160-43195-9), FSS-124-082421 (160-43195-10), FSS-125-082421 (160-43195-11), (LCS 160-528278/2-A), (LCSD 160-528278/3-A), and (MB 160-528278/1-A).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Table 1. Job 160-43195-1 - Updated Sample IDs

Project Sample Point	Lab sample ID	Initial Client Sample ID	Revised Client Sample ID	Results Reported in Job #
SU 7D - SS007 0"-6"	160-43195-19	FSS-133-082421	FSS-136-082421	160-43195-2
SU 7D - SS007 0"-6"	160-43195-22	FSS-136-082421	FSS-133-082421	160-43195-1
SU 7D - SS007 0"-6"	160-43195-22MS	FSS-136-082421MS	FSS-133-082421MS	160-43195-1
SU 7D - SS007 0"-6"	160-43195-22MSD	FSS-136-082421MSD	FSS-133-082421MSD	160-43195-1
SU 7D - SS007 6"-12"	160-43195-20	FSS-134-082421	FSS-137-082421	160-43195-2
SU 7D - SS007 6"-12"	160-43195-23	FSS-137-082421	FSS-134-082421	160-43195-1
SU 7D - SS007 6"-12"	160-43195-23MS	FSS-137-082421MS	FSS-134-082421MS	160-43195-1
SU 7D - SS007 6"-12"	160-43195-23MSD	FSS-137-082421MSD	FSS-134-082421MSD	160-43195-1
SU 7D - SS007 18"-24"	160-43195-21	FSS-135-082421	FSS-138-082421	160-43195-2
SU 7D - SS007 18"-24"	160-43195-24	FSS-138-082421	FSS-0135-082421	160-43195-1
SU 7D - SS007 18"-24"	160-43195-24MS	FSS-138-082421MS	FSS-0135-082421MS	160-43195-1
SU 7D - SS007 18"-24"	160-43195-24MSD	FSS-138-082421MSD	FSS-0135-082421MSD	160-43195-1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-115-082421

Lab Sample ID: 160-43195-1

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0154	U	0.242	0.242	3.00	0.441	pCi/g	09/18/21 16:37	09/30/21 21:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	59.8		40 - 110					09/18/21 16:37	09/30/21 21:36	1
Y Carrier	97.2		40 - 110					09/18/21 16:37	09/30/21 21:36	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.105	U	0.189	0.189	1.00	0.371	pCi/g	09/19/21 15:37	09/21/21 06:13	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00817	U	0.0256	0.0256	1.00	0.0857	pCi/g	09/11/21 11:55	09/20/21 13:14	1
Plutonium-239/240	-0.00273	U	0.00534	0.00535	1.00	0.0528	pCi/g	09/11/21 11:55	09/20/21 13:14	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	63.6		30 - 110					09/11/21 11:55	09/20/21 13:14	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.226		0.0948	0.0966	1.00	0.0720	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-235/236	0.0328	U	0.0410	0.0411	1.00	0.0578	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-238	0.350		0.114	0.118	1.00	0.0536	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	78.9		30 - 110					09/12/21 17:44	09/20/21 11:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.311	U	0.814	0.814	5.00	1.48	pCi/g	09/23/21 08:54	09/27/21 14:22	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.233		0.100	0.103		0.176	pCi/g	09/02/21 09:49	09/28/21 20:27	1
Bismuth-212	0.268	U	0.439	0.440		0.756	pCi/g	09/02/21 09:49	09/28/21 20:27	1
Bismuth-214	0.234		0.0858	0.0890		0.0754	pCi/g	09/02/21 09:49	09/28/21 20:27	1
Lead-212	0.280		0.0568	0.0670		0.0570	pCi/g	09/02/21 09:49	09/28/21 20:27	1
Lead-214	0.347		0.0785	0.0860		0.0531	pCi/g	09/02/21 09:49	09/28/21 20:27	1
Potassium-40	4.35		0.748	0.866		0.247	pCi/g	09/02/21 09:49	09/28/21 20:27	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-115-082421

Lab Sample ID: 160-43195-1

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.234		0.0858	0.0890	1.00	0.0754	pCi/g	09/02/21 09:49	09/28/21 20:27	1
Thorium-232	0.233		0.100	0.103		0.176	pCi/g	09/02/21 09:49	09/28/21 20:27	1
Americium-241	0.0469	U	0.103	0.103		0.176	pCi/g	09/02/21 09:49	09/28/21 20:27	1
Cesium-137	0.000	U	0.0313	0.0313		0.0776	pCi/g	09/02/21 09:49	09/28/21 20:27	1
Cobalt-60	0.00621	U	0.0319	0.0319		0.0458	pCi/g	09/02/21 09:49	09/28/21 20:27	1
Europium-152	-0.0445	U	0.0790	0.0792		0.135	pCi/g	09/02/21 09:49	09/28/21 20:27	1
Europium-154	0.0438	U	0.0710	0.0711		0.0912	pCi/g	09/02/21 09:49	09/28/21 20:27	1
Europium-155	-0.00382	U	0.00897	0.00898		0.403	pCi/g	09/02/21 09:49	09/28/21 20:27	1
Sodium-22	0.0203	U	0.0264	0.0265		0.0442	pCi/g	09/02/21 09:49	09/28/21 20:27	1
Zinc-65	0.000	U	0.0158	0.0158		0.163	pCi/g	09/02/21 09:49	09/28/21 20:27	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.13	U	1.04	1.05	5.00	1.77	pCi/g	09/16/21 17:56	09/24/21 23:34	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	80.6		40 - 110					09/16/21 17:56	09/24/21 23:34	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.91	U	2.11	2.12	5.00	3.00	pCi/g	09/12/21 17:46	09/27/21 16:52	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	63.6		30 - 110					09/12/21 17:46	09/27/21 16:52	1

Client Sample ID: FSS-115-082421

Lab Sample ID: 160-43195-1

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 89.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	11		0.30	0.018	mg/Kg	☼	09/16/21 07:48	09/16/21 20:21	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	170		21	6.8	ug/Kg	☼	09/18/21 15:00	09/19/21 14:30	1

Client Sample ID: FSS-116-082421

Lab Sample ID: 160-43195-2

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0629	U	0.180	0.180	3.00	0.319	pCi/g	09/18/21 16:37	09/30/21 21:37	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-116-082421

Lab Sample ID: 160-43195-2

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	70.0		40 - 110	09/18/21 16:37	09/30/21 21:37	1
Y Carrier	98.7		40 - 110	09/18/21 16:37	09/30/21 21:37	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.152	U	0.220	0.221	1.00	0.383	pCi/g	09/19/21 15:37	09/21/21 06:36	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0109	U	0.0106	0.0107	1.00	0.0725	pCi/g	09/11/21 11:55	09/20/21 13:14	1
Plutonium-239/240	0.00815	U	0.0220	0.0220	1.00	0.0526	pCi/g	09/11/21 11:55	09/20/21 13:14	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	65.9		30 - 110	09/11/21 11:55	09/20/21 13:14	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.265		0.107	0.109	1.00	0.0883	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-235/236	0.0343	U	0.0427	0.0428	1.00	0.0603	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-238	0.315		0.111	0.114	1.00	0.0560	pCi/g	09/12/21 17:44	09/20/21 11:59	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	82.3		30 - 110	09/12/21 17:44	09/20/21 11:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.324	U	0.740	0.740	5.00	1.35	pCi/g	09/23/21 08:54	09/27/21 14:44	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.428		0.138	0.145		0.131	pCi/g	09/02/21 09:49	09/28/21 20:29	1
Bismuth-212	-0.0246	U	0.560	0.560		1.04	pCi/g	09/02/21 09:49	09/28/21 20:29	1
Bismuth-214	0.475		0.109	0.120		0.0905	pCi/g	09/02/21 09:49	09/28/21 20:29	1
Lead-212	0.298		0.0850	0.0930		0.112	pCi/g	09/02/21 09:49	09/28/21 20:29	1
Lead-214	0.379		0.114	0.121		0.128	pCi/g	09/02/21 09:49	09/28/21 20:29	1
Potassium-40	4.05		0.906	0.993		0.706	pCi/g	09/02/21 09:49	09/28/21 20:29	1
Radium-226	0.475		0.109	0.120	1.00	0.0905	pCi/g	09/02/21 09:49	09/28/21 20:29	1
Thorium-232	0.428		0.138	0.145		0.131	pCi/g	09/02/21 09:49	09/28/21 20:29	1
Americium-241	0.0306	U	0.163	0.163		0.282	pCi/g	09/02/21 09:49	09/28/21 20:29	1
Cesium-137	0.0149	U	0.0432	0.0432		0.0774	pCi/g	09/02/21 09:49	09/28/21 20:29	1
Cobalt-60	-0.0132	U	0.0921	0.0921		0.0802	pCi/g	09/02/21 09:49	09/28/21 20:29	1
Europium-152	0.0755	U	0.134	0.134		0.165	pCi/g	09/02/21 09:49	09/28/21 20:29	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-116-082421

Lab Sample ID: 160-43195-2

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0282	U	0.0432	0.0433		0.121	pCi/g	09/02/21 09:49	09/28/21 20:29	1
Europium-155	0.0257	U	0.0857	0.0857		0.332	pCi/g	09/02/21 09:49	09/28/21 20:29	1
Sodium-22	0.0242	U	0.0338	0.0339		0.0575	pCi/g	09/02/21 09:49	09/28/21 20:29	1
Zinc-65	0.000	U	0.0149	0.0149		0.239	pCi/g	09/02/21 09:49	09/28/21 20:29	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.275	U	0.757	0.757	5.00	1.32	pCi/g	09/16/21 17:56	09/25/21 00:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	100		40 - 110					09/16/21 17:56	09/25/21 00:40	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.34	U	1.83	1.83	5.00	3.10	pCi/g	09/12/21 17:46	09/27/21 17:26	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	65.9		30 - 110					09/12/21 17:46	09/27/21 17:26	1

Client Sample ID: FSS-116-082421

Lab Sample ID: 160-43195-2

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 90.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	9.6		0.24	0.014	mg/Kg	☼	09/16/21 07:48	09/16/21 20:40	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	94		21	6.9	ug/Kg	☼	09/18/21 15:00	09/19/21 14:42	1

Client Sample ID: FSS-117-082421

Lab Sample ID: 160-43195-3

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0701	U	0.206	0.206	3.00	0.366	pCi/g	09/18/21 16:37	09/30/21 21:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	63.1		40 - 110					09/18/21 16:37	09/30/21 21:37	1
Y Carrier	99.4		40 - 110					09/18/21 16:37	09/30/21 21:37	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-117-082421

Lab Sample ID: 160-43195-3

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0166	U	0.191	0.191	1.00	0.354	pCi/g	09/19/21 15:37	09/21/21 06:58	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0211	U	0.0388	0.0388	1.00	0.0739	pCi/g	09/11/21 11:55	09/20/21 13:14	1
Plutonium-239/240	0.00705	U	0.0190	0.0190	1.00	0.0455	pCi/g	09/11/21 11:55	09/20/21 13:14	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	73.2		30 - 110					09/11/21 11:55	09/20/21 13:14	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.270		0.0999	0.102	1.00	0.0289	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-235/236	0.0390	U	0.0481	0.0482	1.00	0.0742	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-238	0.262		0.100	0.102	1.00	0.0595	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	81.4		30 - 110					09/12/21 17:44	09/20/21 11:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.131	U	0.828	0.828	5.00	1.49	pCi/g	09/23/21 08:54	09/27/21 15:07	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.678		0.142	0.157		0.0759	pCi/g	09/02/21 09:49	09/28/21 21:05	1
Bismuth-212	0.393	U	0.670	0.671		1.15	pCi/g	09/02/21 09:49	09/28/21 21:05	1
Bismuth-214	0.522		0.112	0.124		0.0940	pCi/g	09/02/21 09:49	09/28/21 21:05	1
Lead-212	0.584		0.0826	0.111		0.0757	pCi/g	09/02/21 09:49	09/28/21 21:05	1
Lead-214	0.425		0.0874	0.0975		0.0873	pCi/g	09/02/21 09:49	09/28/21 21:05	1
Potassium-40	4.61		0.835	0.954		0.538	pCi/g	09/02/21 09:49	09/28/21 21:05	1
Radium-226	0.522		0.112	0.124	1.00	0.0940	pCi/g	09/02/21 09:49	09/28/21 21:05	1
Thorium-232	0.678		0.142	0.157		0.0759	pCi/g	09/02/21 09:49	09/28/21 21:05	1
Americium-241	-0.0140	U	0.139	0.139		0.241	pCi/g	09/02/21 09:49	09/28/21 21:05	1
Cesium-137	0.0831		0.0317	0.0329		0.0258	pCi/g	09/02/21 09:49	09/28/21 21:05	1
Cobalt-60	0.0192	U	0.0168	0.0169		0.0257	pCi/g	09/02/21 09:49	09/28/21 21:05	1
Europium-152	0.0781	U	0.193	0.194		0.149	pCi/g	09/02/21 09:49	09/28/21 21:05	1
Europium-154	0.0247	U	0.0306	0.0307		0.107	pCi/g	09/02/21 09:49	09/28/21 21:05	1
Europium-155	0.0300	U	0.101	0.101		0.418	pCi/g	09/02/21 09:49	09/28/21 21:05	1
Sodium-22	-0.0382	U	0.0545	0.0546		0.0927	pCi/g	09/02/21 09:49	09/28/21 21:05	1
Zinc-65	-0.0859	U	0.149	0.149		0.255	pCi/g	09/02/21 09:49	09/28/21 21:05	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-117-082421

Lab Sample ID: 160-43195-3

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.193	U	0.778	0.778	5.00	1.41	pCi/g	09/16/21 17:56	09/25/21 01:47	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	100		40 - 110					09/16/21 17:56	09/25/21 01:47	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.940	U	1.54	1.55	5.00	2.52	pCi/g	09/12/21 17:46	09/27/21 17:59	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	73.2		30 - 110					09/12/21 17:46	09/27/21 17:59	1

Client Sample ID: FSS-117-082421

Lab Sample ID: 160-43195-3

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 88.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	15		0.25	0.015	mg/Kg	☼	09/16/21 07:48	09/16/21 20:43	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	61		21	6.8	ug/Kg	☼	09/18/21 15:00	09/19/21 14:45	1

Client Sample ID: FSS-118-082421

Lab Sample ID: 160-43195-4

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0368	U	0.0596	0.0597	3.00	0.152	pCi/g	09/18/21 16:37	09/30/21 21:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	58.0		40 - 110					09/18/21 16:37	09/30/21 21:39	1
Y Carrier	101		40 - 110					09/18/21 16:37	09/30/21 21:39	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0437	U	0.189	0.189	1.00	0.346	pCi/g	09/19/21 15:41	09/20/21 19:09	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-118-082421

Lab Sample ID: 160-43195-4

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	0.00308	U	0.0463	0.0463	1.00	0.112	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Plutonium-239/240	-0.00616	U	0.00854	0.00855	1.00	0.0690	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	57.1		30 - 110					09/11/21 11:55	09/20/21 20:54	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.115	U	0.0936	0.0940	1.00	0.138	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-235/236	-0.0234	U	0.0535	0.0536	1.00	0.147	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-238	0.123		0.0802	0.0809	1.00	0.0943	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.2		30 - 110					09/12/21 17:44	09/20/21 11:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.125	U	0.638	0.638	5.00	1.15	pCi/g	09/23/21 08:54	09/27/21 15:30	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.609		0.174	0.184		0.0985	pCi/g	09/02/21 09:49	09/28/21 21:04	1
Bismuth-212	0.204	U	0.910	0.910		1.62	pCi/g	09/02/21 09:49	09/28/21 21:04	1
Bismuth-214	0.454		0.147	0.154		0.147	pCi/g	09/02/21 09:49	09/28/21 21:04	1
Lead-212	0.506		0.0933	0.107		0.0865	pCi/g	09/02/21 09:49	09/28/21 21:04	1
Lead-214	0.377		0.0965	0.104		0.112	pCi/g	09/02/21 09:49	09/28/21 21:04	1
Potassium-40	4.35		0.931	1.03		0.382	pCi/g	09/02/21 09:49	09/28/21 21:04	1
Radium-226	0.454		0.147	0.154	1.00	0.147	pCi/g	09/02/21 09:49	09/28/21 21:04	1
Thorium-232	0.609		0.174	0.184		0.0985	pCi/g	09/02/21 09:49	09/28/21 21:04	1
Americium-241	0.0852	U	0.0785	0.0791		0.128	pCi/g	09/02/21 09:49	09/28/21 21:04	1
Cesium-137	0.0192	U	0.0651	0.0651		0.116	pCi/g	09/02/21 09:49	09/28/21 21:04	1
Cobalt-60	0.0309	U	0.0247	0.0249		0.0379	pCi/g	09/02/21 09:49	09/28/21 21:04	1
Europium-152	0.0945	U	0.150	0.151		0.182	pCi/g	09/02/21 09:49	09/28/21 21:04	1
Europium-154	0.0648	U	0.108	0.108		0.133	pCi/g	09/02/21 09:49	09/28/21 21:04	1
Europium-155	0.00357	U	0.0134	0.0134		0.557	pCi/g	09/02/21 09:49	09/28/21 21:04	1
Sodium-22	0.0215	U	0.0386	0.0386		0.0686	pCi/g	09/02/21 09:49	09/28/21 21:04	1
Zinc-65	0.0521	U	0.146	0.146		0.259	pCi/g	09/02/21 09:49	09/28/21 21:04	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.0393	U	0.876	0.876	5.00	1.56	pCi/g	09/16/21 17:56	09/25/21 02:53	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-118-082421

Lab Sample ID: 160-43195-4

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	92.1		40 - 110	09/16/21 17:56	09/25/21 02:53	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.00	U	2.19	2.19	5.00	3.22	pCi/g	09/12/21 17:46	09/27/21 18:33	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	57.1		30 - 110	09/12/21 17:46	09/27/21 18:33	1

Client Sample ID: FSS-118-082421

Lab Sample ID: 160-43195-4

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 95.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.2		0.26	0.016	mg/Kg	☼	09/16/21 07:48	09/16/21 20:54	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.2	ug/Kg	☼	09/18/21 15:00	09/19/21 14:47	1

Client Sample ID: FSS-119-082421

Lab Sample ID: 160-43195-5

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.350	U	0.247	0.249	3.00	0.394	pCi/g	09/18/21 16:37	09/30/21 21:39	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	60.2		40 - 110	09/18/21 16:37	09/30/21 21:39	1
Y Carrier	100		40 - 110	09/18/21 16:37	09/30/21 21:39	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.144	U	0.197	0.197	1.00	0.338	pCi/g	09/19/21 15:41	09/20/21 19:31	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0248	U	0.0462	0.0462	1.00	0.0869	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Plutonium-239/240	-0.00677	U	0.00767	0.00769	1.00	0.0559	pCi/g	09/11/21 11:55	09/20/21 20:54	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	82.4		30 - 110	09/11/21 11:55	09/20/21 20:54	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-119-082421

Lab Sample ID: 160-43195-5

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Uranium-233/234	0.194		0.0831	0.0846	1.00	0.0505	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-235/236	0.000	U	0.00550	0.00550	1.00	0.0337	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-238	0.223		0.0883	0.0902	1.00	0.0435	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	81.7		30 - 110					09/12/21 17:44	09/20/21 11:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Carbon-14	-0.689	U	0.793	0.797	5.00	1.49	pCi/g	09/23/21 08:54	09/27/21 15:52	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Actinium 228	0.386		0.0824	0.0910		0.0901	pCi/g	09/02/21 09:49	09/28/21 21:07	1
Bismuth-212	0.000	U	0.224	0.224		0.199	pCi/g	09/02/21 09:49	09/28/21 21:07	1
Bismuth-214	0.283		0.0648	0.0710		0.0285	pCi/g	09/02/21 09:49	09/28/21 21:07	1
Lead-212	0.340		0.0606	0.0744		0.0567	pCi/g	09/02/21 09:49	09/28/21 21:07	1
Lead-214	0.223		0.0837	0.0867		0.119	pCi/g	09/02/21 09:49	09/28/21 21:07	1
Potassium-40	2.54		0.567	0.622		0.243	pCi/g	09/02/21 09:49	09/28/21 21:07	1
Radium-226	0.283		0.0648	0.0710	1.00	0.0285	pCi/g	09/02/21 09:49	09/28/21 21:07	1
Thorium-232	0.386		0.0824	0.0910		0.0901	pCi/g	09/02/21 09:49	09/28/21 21:07	1
Americium-241	0.0472	U	0.101	0.101		0.173	pCi/g	09/02/21 09:49	09/28/21 21:07	1
Cesium-137	0.00298	U	0.0482	0.0482		0.0867	pCi/g	09/02/21 09:49	09/28/21 21:07	1
Cobalt-60	-0.0447	U	0.0754	0.0755		0.0814	pCi/g	09/02/21 09:49	09/28/21 21:07	1
Europium-152	0.0403	U	0.0941	0.0942		0.115	pCi/g	09/02/21 09:49	09/28/21 21:07	1
Europium-154	0.0232	U	0.0265	0.0266		0.0876	pCi/g	09/02/21 09:49	09/28/21 21:07	1
Europium-155	0.000	U	0.0620	0.0620		0.335	pCi/g	09/02/21 09:49	09/28/21 21:07	1
Sodium-22	-0.0126	U	0.0381	0.0382		0.0692	pCi/g	09/02/21 09:49	09/28/21 21:07	1
Zinc-65	0.000	U	0.0348	0.0348		0.183	pCi/g	09/02/21 09:49	09/28/21 21:07	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.193	U	0.843	0.843	5.00	1.50	pCi/g	09/16/21 17:56	09/25/21 03:59	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	98.5		40 - 110					09/16/21 17:56	09/25/21 03:59	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-0.108	U	1.48	1.48	5.00	2.32	pCi/g	09/12/21 17:46	09/27/21 19:06	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-119-082421

Lab Sample ID: 160-43195-5

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	82.4		30 - 110	09/12/21 17:46	09/27/21 19:06	1

Client Sample ID: FSS-119-082421

Lab Sample ID: 160-43195-5

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 94.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.3		0.27	0.017	mg/Kg	☼	09/16/21 07:48	09/16/21 20:57	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.0	ug/Kg	☼	09/18/21 15:00	09/19/21 14:50	1

Client Sample ID: FSS-120-082421

Lab Sample ID: 160-43195-6

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0736	U	0.187	0.187	3.00	0.330	pCi/g	09/18/21 16:37	09/30/21 21:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	68.8		40 - 110					09/18/21 16:37	09/30/21 21:39	1
Y Carrier	102		40 - 110					09/18/21 16:37	09/30/21 21:39	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.167	U	0.207	0.207	1.00	0.354	pCi/g	09/19/21 15:41	09/20/21 19:54	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0170	U	0.0352	0.0353	1.00	0.0695	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Plutonium-239/240	-0.00212	U	0.00416	0.00416	1.00	0.0411	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	96.1		30 - 110					09/11/21 11:55	09/20/21 20:54	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.105	U	0.0923	0.0927	1.00	0.117	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-235/236	-0.0218	U	0.0213	0.0214	1.00	0.145	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-238	0.170		0.109	0.109	1.00	0.0845	pCi/g	09/12/21 17:44	09/20/21 11:59	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-120-082421

Lab Sample ID: 160-43195-6

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	44.7		30 - 110	09/12/21 17:44	09/20/21 11:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.212	U	0.844	0.845	5.00	1.47	pCi/g	09/23/21 08:54	09/27/21 16:15	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.544		0.153	0.162		0.127	pCi/g	09/02/21 09:49	09/28/21 21:06	1
Bismuth-212	0.254	U	0.566	0.567		0.995	pCi/g	09/02/21 09:49	09/28/21 21:06	1
Bismuth-214	0.124	U	0.0676	0.0688		0.322	pCi/g	09/02/21 09:49	09/28/21 21:06	1
Lead-212	0.345		0.0822	0.0932		0.100	pCi/g	09/02/21 09:49	09/28/21 21:06	1
Lead-214	0.283		0.0932	0.0976		0.0966	pCi/g	09/02/21 09:49	09/28/21 21:06	1
Potassium-40	4.68		0.944	1.05		0.682	pCi/g	09/02/21 09:49	09/28/21 21:06	1
Radium-226	0.124	U	0.0676	0.0688	1.00	0.322	pCi/g	09/02/21 09:49	09/28/21 21:06	1
Thorium-232	0.544		0.153	0.162		0.127	pCi/g	09/02/21 09:49	09/28/21 21:06	1
Americium-241	0.0669	U	0.168	0.168		0.287	pCi/g	09/02/21 09:49	09/28/21 21:06	1
Cesium-137	-0.0162	U	0.0530	0.0530		0.0941	pCi/g	09/02/21 09:49	09/28/21 21:06	1
Cobalt-60	-0.0369	U	0.0563	0.0564		0.104	pCi/g	09/02/21 09:49	09/28/21 21:06	1
Europium-152	0.0779	U	0.144	0.145		0.149	pCi/g	09/02/21 09:49	09/28/21 21:06	1
Europium-154	0.0712	U	0.0527	0.0532		0.0997	pCi/g	09/02/21 09:49	09/28/21 21:06	1
Europium-155	-0.00216	U	0.00461	0.00462		0.307	pCi/g	09/02/21 09:49	09/28/21 21:06	1
Sodium-22	-0.0385	U	0.0583	0.0584		0.0999	pCi/g	09/02/21 09:49	09/28/21 21:06	1
Zinc-65	0.000	U	0.0144	0.0144		0.239	pCi/g	09/02/21 09:49	09/28/21 21:06	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.160	U	0.785	0.785	5.00	1.43	pCi/g	09/16/21 17:56	09/25/21 05:05	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	99.5		40 - 110	09/16/21 17:56	09/25/21 05:05	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.270	U	1.31	1.31	5.00	1.98	pCi/g	09/12/21 17:46	09/27/21 19:40	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	96.1		30 - 110	09/12/21 17:46	09/27/21 19:40	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-120-082421

Lab Sample ID: 160-43195-6

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 93.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.5		0.24	0.014	mg/Kg	☼	09/16/21 07:48	09/16/21 21:01	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/18/21 15:00	09/19/21 14:52	1

Client Sample ID: FSS-121-082421

Lab Sample ID: 160-43195-7

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.175	U	0.136	0.137	3.00	0.289	pCi/g	09/18/21 16:37	09/30/21 21:39	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Sr Carrier</i>	72.4		40 - 110					09/18/21 16:37	09/30/21 21:39	1
<i>Y Carrier</i>	98.7		40 - 110					09/18/21 16:37	09/30/21 21:39	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0101	U	0.174	0.174	1.00	0.330	pCi/g	09/19/21 15:41	09/20/21 20:17	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0154	U	0.0247	0.0247	1.00	0.0425	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Plutonium-239/240	-0.00439	U	0.00609	0.00610	1.00	0.0492	pCi/g	09/11/21 11:55	09/20/21 20:54	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	91.1		30 - 110					09/11/21 11:55	09/20/21 20:54	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.197		0.0837	0.0853	1.00	0.0548	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-235/236	0.0221	U	0.0306	0.0306	1.00	0.0331	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-238	0.325		0.106	0.109	1.00	0.0428	pCi/g	09/12/21 17:44	09/20/21 11:59	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Uranium-232</i>	82.6		30 - 110					09/12/21 17:44	09/20/21 11:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.420	U	0.666	0.667	5.00	1.23	pCi/g	09/23/21 08:54	09/27/21 16:38	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-121-082421

Lab Sample ID: 160-43195-7

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.180	U	0.165	0.166		0.208	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Bismuth-212	0.179	U	0.417	0.417		0.736	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Bismuth-214	0.163		0.0724	0.0743		0.0903	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Lead-212	0.372		0.0625	0.0783		0.0530	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Lead-214	0.240		0.0784	0.0821		0.0794	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Potassium-40	2.99		0.675	0.738		0.515	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Radium-226	0.163		0.0724	0.0743	1.00	0.0903	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Thorium-232	0.180	U	0.165	0.166		0.208	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Americium-241	-0.0530	U	0.118	0.118		0.202	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Cesium-137	0.00120	U	0.0301	0.0301		0.0564	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Cobalt-60	0.0334		0.0207	0.0210		0.0246	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Europium-152	0.0384	U	0.0962	0.0963		0.0998	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Europium-154	0.0342	U	0.0699	0.0700		0.0882	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Europium-155	0.0182	U	0.0676	0.0676		0.177	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Sodium-22	-0.0494	U	0.0536	0.0538		0.0887	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Zinc-65	-0.00908	U	0.0984	0.0984		0.179	pCi/g	09/02/21 09:49	09/28/21 21:38	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.000	U	0.794	0.794	5.00	1.43	pCi/g	09/16/21 17:56	09/25/21 06:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	98.3		40 - 110					09/16/21 17:56	09/25/21 06:11	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.383	U	1.42	1.42	5.00	2.17	pCi/g	09/12/21 17:46	09/27/21 20:13	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	91.1		30 - 110					09/12/21 17:46	09/27/21 20:13	1

Client Sample ID: FSS-121-082421

Lab Sample ID: 160-43195-7

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 98.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.5		0.23	0.014	mg/Kg	☼	09/16/21 07:48	09/16/21 21:04	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/18/21 15:00	09/19/21 14:55	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-122-082421

Lab Sample ID: 160-43195-8

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0582	U	0.168	0.168	3.00	0.319	pCi/g	09/18/21 16:37	09/30/21 21:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	72.2		40 - 110					09/18/21 16:37	09/30/21 21:39	1
Y Carrier	99.1		40 - 110					09/18/21 16:37	09/30/21 21:39	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.00963	U	0.182	0.182	1.00	0.343	pCi/g	09/19/21 15:41	09/20/21 20:39	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0258	U	0.0239	0.0240	1.00	0.0892	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Plutonium-239/240	-0.0259	U	0.0146	0.0148	1.00	0.0808	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	91.8		30 - 110					09/11/21 11:55	09/20/21 20:54	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.190		0.0896	0.0910	1.00	0.0722	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-235/236	0.0189	U	0.0361	0.0361	1.00	0.0707	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-238	0.172		0.0848	0.0859	1.00	0.0676	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	76.2		30 - 110					09/12/21 17:44	09/20/21 11:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0135	U	0.838	0.838	5.00	1.49	pCi/g	09/23/21 08:54	09/27/21 17:00	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.528		0.145	0.154		0.0921	pCi/g	09/02/21 09:49	09/28/21 21:37	1
Bismuth-212	0.439	U	0.772	0.773		1.33	pCi/g	09/02/21 09:49	09/28/21 21:37	1
Bismuth-214	0.404		0.143	0.149		0.133	pCi/g	09/02/21 09:49	09/28/21 21:37	1
Lead-212	0.480		0.0941	0.106		0.101	pCi/g	09/02/21 09:49	09/28/21 21:37	1
Lead-214	0.368		0.0989	0.105		0.102	pCi/g	09/02/21 09:49	09/28/21 21:37	1
Potassium-40	2.86		0.730	0.783		0.357	pCi/g	09/02/21 09:49	09/28/21 21:37	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-122-082421

Lab Sample ID: 160-43195-8

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.404		0.143	0.149	1.00	0.133	pCi/g	09/02/21 09:49	09/28/21 21:37	1
Thorium-232	0.528		0.145	0.154		0.0921	pCi/g	09/02/21 09:49	09/28/21 21:37	1
Americium-241	0.0158	U	0.138	0.138		0.193	pCi/g	09/02/21 09:49	09/28/21 21:37	1
Cesium-137	-0.0495	U	0.0766	0.0767		0.131	pCi/g	09/02/21 09:49	09/28/21 21:37	1
Cobalt-60	-0.0305	U	0.0781	0.0782		0.0885	pCi/g	09/02/21 09:49	09/28/21 21:37	1
Europium-152	0.0474	U	0.0674	0.0676		0.445	pCi/g	09/02/21 09:49	09/28/21 21:37	1
Europium-154	0.0131	U	0.0167	0.0167		0.129	pCi/g	09/02/21 09:49	09/28/21 21:37	1
Europium-155	0.0220	U	0.0656	0.0657		0.564	pCi/g	09/02/21 09:49	09/28/21 21:37	1
Sodium-22	0.000	U	0.0129	0.0129		0.0343	pCi/g	09/02/21 09:49	09/28/21 21:37	1
Zinc-65	-0.120	U	0.194	0.194		0.332	pCi/g	09/02/21 09:49	09/28/21 21:37	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.05	U	0.885	0.891	5.00	1.50	pCi/g	09/16/21 17:56	09/25/21 07:18	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	98.7		40 - 110					09/16/21 17:56	09/25/21 07:18	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.897	U	1.41	1.41	5.00	2.07	pCi/g	09/12/21 17:46	09/27/21 20:47	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	91.8		30 - 110					09/12/21 17:46	09/27/21 20:47	1

Client Sample ID: FSS-122-082421

Lab Sample ID: 160-43195-8

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 97.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.9		0.25	0.015	mg/Kg	☼	09/16/21 07:48	09/16/21 21:08	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	20	6.4	ug/Kg	☼	09/18/21 15:00	09/19/21 14:57	1

Client Sample ID: FSS-123-082421

Lab Sample ID: 160-43195-9

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0771	U	0.167	0.167	3.00	0.320	pCi/g	09/18/21 16:37	09/30/21 21:39	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-123-082421

Lab Sample ID: 160-43195-9

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	69.1		40 - 110	09/18/21 16:37	09/30/21 21:39	1
Y Carrier	100		40 - 110	09/18/21 16:37	09/30/21 21:39	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.211	U	0.200	0.201	1.00	0.329	pCi/g	09/19/21 15:41	09/20/21 21:02	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0105	U	0.0145	0.0145	1.00	0.117	pCi/g	09/21/21 14:53	09/24/21 11:19	1
Plutonium-239/240	0.0315	U	0.0599	0.0600	1.00	0.117	pCi/g	09/21/21 14:53	09/24/21 11:19	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	68.4		30 - 110	09/21/21 14:53	09/24/21 11:19	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.178		0.132	0.133	1.00	0.157	pCi/g	09/21/21 15:00	09/24/21 11:55	1
Uranium-235/236	-0.00652	U	0.0128	0.0128	1.00	0.126	pCi/g	09/21/21 15:00	09/24/21 11:55	1
Uranium-238	0.141	U	0.118	0.119	1.00	0.149	pCi/g	09/21/21 15:00	09/24/21 11:55	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	75.6		30 - 110	09/21/21 15:00	09/24/21 11:55	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0375	U	0.505	0.505	5.00	0.905	pCi/g	09/24/21 08:07	09/28/21 03:27	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.399		0.118	0.125		0.210	pCi/g	09/02/21 09:49	09/28/21 21:43	1
Bismuth-212	0.000	U	0.309	0.309		0.675	pCi/g	09/02/21 09:49	09/28/21 21:43	1
Bismuth-214	0.348		0.0877	0.0946		0.0527	pCi/g	09/02/21 09:49	09/28/21 21:43	1
Lead-212	0.310		0.0604	0.0721		0.0586	pCi/g	09/02/21 09:49	09/28/21 21:43	1
Lead-214	0.224		0.0781	0.0814		0.0763	pCi/g	09/02/21 09:49	09/28/21 21:43	1
Potassium-40	3.30		0.668	0.746		0.259	pCi/g	09/02/21 09:49	09/28/21 21:43	1
Radium-226	0.348		0.0877	0.0946	1.00	0.0527	pCi/g	09/02/21 09:49	09/28/21 21:43	1
Thorium-232	0.399		0.118	0.125		0.210	pCi/g	09/02/21 09:49	09/28/21 21:43	1
Americium-241	0.0492	U	0.108	0.108		0.185	pCi/g	09/02/21 09:49	09/28/21 21:43	1
Cesium-137	-0.0174	U	0.0395	0.0395		0.0693	pCi/g	09/02/21 09:49	09/28/21 21:43	1
Cobalt-60	-0.0116	U	0.0553	0.0554		0.0641	pCi/g	09/02/21 09:49	09/28/21 21:43	1
Europium-152	0.0773	U	0.140	0.141		0.103	pCi/g	09/02/21 09:49	09/28/21 21:43	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-123-082421

Lab Sample ID: 160-43195-9

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0528	U	0.0659	0.0661		0.0682	pCi/g	09/02/21 09:49	09/28/21 21:43	1
Europium-155	0.0702	U	0.227	0.227		0.387	pCi/g	09/02/21 09:49	09/28/21 21:43	1
Sodium-22	-0.0460	U	0.0506	0.0508		0.0838	pCi/g	09/02/21 09:49	09/28/21 21:43	1
Zinc-65	0.0351	U	0.118	0.118		0.209	pCi/g	09/02/21 09:49	09/28/21 21:43	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.214	U	0.791	0.792	5.00	1.40	pCi/g	09/16/21 17:56	09/25/21 08:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	99.7		40 - 110					09/16/21 17:56	09/25/21 08:24	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-3.61	U J	4.44	4.45	5.00	8.47	pCi/g	09/21/21 14:59	09/30/21 06:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	68.4		30 - 110					09/21/21 14:59	09/30/21 06:56	1

Client Sample ID: FSS-123-082421

Lab Sample ID: 160-43195-9

Date Collected: 08/24/21 09:00

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 98.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.5		0.25	0.015	mg/Kg	☼	09/16/21 07:48	09/16/21 21:11	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.8	ug/Kg	☼	09/18/21 15:00	09/19/21 15:00	1

Client Sample ID: FSS-124-082421

Lab Sample ID: 160-43195-10

Date Collected: 08/24/21 09:30

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.116	U J	0.164	0.165	3.00	0.281	pCi/g	09/19/21 19:37	10/05/21 18:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	88.8		40 - 110					09/19/21 19:37	10/05/21 18:06	1
Y Carrier	99.4		40 - 110					09/19/21 19:37	10/05/21 18:06	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-124-082421

Lab Sample ID: 160-43195-10

Date Collected: 08/24/21 09:30

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.104	U	0.192	0.193	1.00	0.337	pCi/g	09/19/21 15:41	09/20/21 21:24	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.000	U	0.00789	0.00789	1.00	0.0483	pCi/g	09/21/21 14:53	09/24/21 11:19	1
Plutonium-239/240	0.0161	U	0.0316	0.0316	1.00	0.0484	pCi/g	09/21/21 14:53	09/24/21 11:19	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	85.1		30 - 110					09/21/21 14:53	09/24/21 11:19	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.239		0.140	0.141	1.00	0.163	pCi/g	09/21/21 15:00	09/24/21 11:55	1
Uranium-235/236	-0.00512	U	0.0460	0.0460	1.00	0.146	pCi/g	09/21/21 15:00	09/24/21 11:55	1
Uranium-238	0.275		0.133	0.135	1.00	0.0795	pCi/g	09/21/21 15:00	09/24/21 11:55	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.1		30 - 110					09/21/21 15:00	09/24/21 11:55	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0135	U	0.790	0.790	5.00	1.41	pCi/g	09/24/21 08:07	09/28/21 04:35	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.323		0.153	0.157		0.236	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Bismuth-212	0.235	U	0.592	0.592		1.04	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Bismuth-214	0.0589	U	0.0421	0.0425		0.321	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Lead-212	0.290		0.0736	0.0822		0.0893	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Lead-214	0.325		0.0957	0.101		0.0968	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Potassium-40	5.26		0.974	1.11		0.658	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Radium-226	0.0589	U	0.0421	0.0425	1.00	0.321	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Thorium-232	0.323		0.153	0.157		0.236	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Americium-241	-0.0646	U	0.154	0.154		0.263	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Cesium-137	0.0240	U	0.0414	0.0415		0.0718	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Cobalt-60	-0.0479	U	0.0200	0.0205		0.100	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Europium-152	0.0954	U	0.187	0.187		0.141	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Europium-154	0.0260	U	0.0477	0.0477		0.0966	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Europium-155	-0.000469	U	0.139	0.139		0.311	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Sodium-22	0.00663	U	0.0274	0.0274		0.0536	pCi/g	09/02/21 09:49	09/28/21 21:38	1
Zinc-65	0.000	U	0.0197	0.0197		0.228	pCi/g	09/02/21 09:49	09/28/21 21:38	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-124-082421

Lab Sample ID: 160-43195-10

Date Collected: 08/24/21 09:30

Matrix: Solid

Date Received: 08/25/21 13:20

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.273	U	0.753	0.754	5.00	1.32	pCi/g	09/16/21 17:56	09/25/21 09:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	101		40 - 110					09/16/21 17:56	09/25/21 09:30	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.950	U J	3.77	3.77	5.00	6.92	pCi/g	09/21/21 14:59	09/30/21 07:30	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	85.1		30 - 110					09/21/21 14:59	09/30/21 07:30	1

Client Sample ID: FSS-124-082421

Lab Sample ID: 160-43195-10

Date Collected: 08/24/21 09:30

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 92.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	13		0.22	0.013	mg/Kg	☼	09/16/21 07:48	09/16/21 21:15	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	13	J	19	6.1	ug/Kg	☼	09/18/21 15:00	09/19/21 15:03	1

Client Sample ID: FSS-125-082421

Lab Sample ID: 160-43195-11

Date Collected: 08/24/21 09:30

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0901	U J	0.161	0.161	3.00	0.278	pCi/g	09/19/21 19:37	10/05/21 18:07	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	90.2		40 - 110					09/19/21 19:37	10/05/21 18:07	1
Y Carrier	97.6		40 - 110					09/19/21 19:37	10/05/21 18:07	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.458		0.235	0.238	1.00	0.346	pCi/g	09/19/21 15:41	09/20/21 21:47	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-125-082421

Lab Sample ID: 160-43195-11

Date Collected: 08/24/21 09:30

Matrix: Solid

Date Received: 08/25/21 13:20

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	-0.00406	U	0.00796	0.00796	1.00	0.0786	pCi/g	09/21/21 14:53	09/24/21 11:19	1
Plutonium-239/240	0.000	U	0.00797	0.00797	1.00	0.0488	pCi/g	09/21/21 14:53	09/24/21 11:19	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	85.5		30 - 110					09/21/21 14:53	09/24/21 11:19	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.353		0.160	0.162	1.00	0.129	pCi/g	09/21/21 15:00	09/24/21 11:55	1
Uranium-235/236	0.0590	U	0.0735	0.0737	1.00	0.104	pCi/g	09/21/21 15:00	09/24/21 11:55	1
Uranium-238	0.434		0.172	0.176	1.00	0.106	pCi/g	09/21/21 15:00	09/24/21 11:55	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	80.1		30 - 110					09/21/21 15:00	09/24/21 11:55	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.0341	U	0.597	0.597	5.00	1.06	pCi/g	09/24/21 08:07	09/28/21 04:58	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.413		0.107	0.114		0.0725	pCi/g	09/02/21 09:49	09/28/21 22:11	1
Bismuth-212	0.342	U	0.653	0.654		1.13	pCi/g	09/02/21 09:49	09/28/21 22:11	1
Bismuth-214	0.341		0.102	0.108		0.0973	pCi/g	09/02/21 09:49	09/28/21 22:11	1
Lead-212	0.444		0.0716	0.0911		0.0690	pCi/g	09/02/21 09:49	09/28/21 22:11	1
Lead-214	0.351		0.0774	0.0853		0.0956	pCi/g	09/02/21 09:49	09/28/21 22:11	1
Potassium-40	5.71		0.898	1.06		0.514	pCi/g	09/02/21 09:49	09/28/21 22:11	1
Radium-226	0.341		0.102	0.108	1.00	0.0973	pCi/g	09/02/21 09:49	09/28/21 22:11	1
Thorium-232	0.413		0.107	0.114		0.0725	pCi/g	09/02/21 09:49	09/28/21 22:11	1
Americium-241	0.0311	U	0.102	0.102		0.135	pCi/g	09/02/21 09:49	09/28/21 22:11	1
Cesium-137	0.0971		0.0354	0.0368		0.0279	pCi/g	09/02/21 09:49	09/28/21 22:11	1
Cobalt-60	-0.00483	U	0.00902	0.00904		0.0731	pCi/g	09/02/21 09:49	09/28/21 22:11	1
Europium-152	0.0363	U	0.0649	0.0651		0.115	pCi/g	09/02/21 09:49	09/28/21 22:11	1
Europium-154	0.0763	U	0.0756	0.0760		0.0786	pCi/g	09/02/21 09:49	09/28/21 22:11	1
Europium-155	0.0683	U	0.211	0.211		0.360	pCi/g	09/02/21 09:49	09/28/21 22:11	1
Sodium-22	0.0172	U	0.0258	0.0258		0.0444	pCi/g	09/02/21 09:49	09/28/21 22:11	1
Zinc-65	-0.0223	U	0.117	0.117		0.209	pCi/g	09/02/21 09:49	09/28/21 22:11	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.248	U	0.749	0.749	5.00	1.30	pCi/g	09/16/21 17:56	09/25/21 10:36	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-125-082421

Lab Sample ID: 160-43195-11

Date Collected: 08/24/21 09:30

Matrix: Solid

Date Received: 08/25/21 13:20

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	104		40 - 110	09/16/21 17:56	09/25/21 10:36	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.58	U J	3.71	3.71	5.00	6.91	pCi/g	09/21/21 14:59	09/30/21 08:03	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	85.5		30 - 110	09/21/21 14:59	09/30/21 08:03	1

Client Sample ID: FSS-125-082421

Lab Sample ID: 160-43195-11

Date Collected: 08/24/21 09:30

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 93.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	12		0.26	0.016	mg/Kg	☼	09/16/21 07:48	09/16/21 21:18	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	28		20	6.5	ug/Kg	☼	09/18/21 15:00	09/19/21 15:10	1

Client Sample ID: FSS-126-082421

Lab Sample ID: 160-43195-12

Date Collected: 08/24/21 09:30

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0326	U J	0.133	0.133	3.00	0.251	pCi/g	09/19/21 19:37	10/05/21 18:07	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	88.5		40 - 110	09/19/21 19:37	10/05/21 18:07	1
Y Carrier	98.3		40 - 110	09/19/21 19:37	10/05/21 18:07	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.283	U	0.212	0.214	1.00	0.336	pCi/g	09/19/21 15:41	09/20/21 22:10	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00440	U	0.0328	0.0328	1.00	0.0775	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Plutonium-239/240	-0.00440	U	0.0202	0.0202	1.00	0.0661	pCi/g	09/11/21 11:55	09/20/21 20:54	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.3		30 - 110	09/11/21 11:55	09/20/21 20:54	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-126-082421

Lab Sample ID: 160-43195-12

Date Collected: 08/24/21 09:30

Matrix: Solid

Date Received: 08/25/21 13:20

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.189		0.0831	0.0846	1.00	0.0658	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-235/236	-0.00819	U	0.0257	0.0257	1.00	0.0859	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-238	0.129		0.0693	0.0701	1.00	0.0623	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	95.1		30 - 110					09/12/21 17:44	09/20/21 11:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.152	U	0.793	0.793	5.00	1.39	pCi/g	09/24/21 08:07	09/28/21 05:20	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.567		0.161	0.171		0.0936	pCi/g	09/02/21 09:49	09/28/21 22:09	1
Bismuth-212	0.446	U	0.868	0.869		1.50	pCi/g	09/02/21 09:49	09/28/21 22:09	1
Bismuth-214	0.436		0.115	0.123		0.104	pCi/g	09/02/21 09:49	09/28/21 22:09	1
Lead-212	0.550		0.0928	0.109		0.0807	pCi/g	09/02/21 09:49	09/28/21 22:09	1
Lead-214	0.102	U	0.0713	0.0720		0.242	pCi/g	09/02/21 09:49	09/28/21 22:09	1
Potassium-40	6.11		1.08	1.23		0.363	pCi/g	09/02/21 09:49	09/28/21 22:09	1
Radium-226	0.436		0.115	0.123	1.00	0.104	pCi/g	09/02/21 09:49	09/28/21 22:09	1
Thorium-232	0.567		0.161	0.171		0.0936	pCi/g	09/02/21 09:49	09/28/21 22:09	1
Americium-241	-0.0725	U	0.191	0.191		0.326	pCi/g	09/02/21 09:49	09/28/21 22:09	1
Cesium-137	0.0308	U	0.0566	0.0567		0.0982	pCi/g	09/02/21 09:49	09/28/21 22:09	1
Cobalt-60	0.00947	U	0.00830	0.00835		0.0675	pCi/g	09/02/21 09:49	09/28/21 22:09	1
Europium-152	0.292		0.0947	0.0993		0.177	pCi/g	09/02/21 09:49	09/28/21 22:09	1
Europium-154	0.202		0.0955	0.0977		0.133	pCi/g	09/02/21 09:49	09/28/21 22:09	1
Europium-155	0.0337	U	0.101	0.101		0.525	pCi/g	09/02/21 09:49	09/28/21 22:09	1
Sodium-22	-0.00630	U	0.0454	0.0454		0.0869	pCi/g	09/02/21 09:49	09/28/21 22:09	1
Zinc-65	0.000	U	0.0619	0.0619		0.249	pCi/g	09/02/21 09:49	09/28/21 22:09	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.844	U	0.783	0.788	5.00	1.32	pCi/g	09/16/21 17:56	09/25/21 11:42	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	108		40 - 110					09/16/21 17:56	09/25/21 11:42	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	0.639	U	1.41	1.41	5.00	2.09	pCi/g	09/12/21 17:46	09/27/21 23:01	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-126-082421

Lab Sample ID: 160-43195-12

Date Collected: 08/24/21 09:30

Matrix: Solid

Date Received: 08/25/21 13:20

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.3		30 - 110	09/12/21 17:46	09/27/21 23:01	1

Client Sample ID: FSS-126-082421

Lab Sample ID: 160-43195-12

Date Collected: 08/24/21 09:30

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 95.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	10		0.26	0.016	mg/Kg	☼	09/16/21 07:48	09/16/21 21:22	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	25		19	6.2	ug/Kg	☼	09/18/21 15:00	09/19/21 15:13	1

Client Sample ID: FSS-127-082421

Lab Sample ID: 160-43195-13

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0572	U J	0.173	0.173	3.00	0.307	pCi/g	09/19/21 19:37	10/05/21 18:07	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	77.2		40 - 110					09/19/21 19:37	10/05/21 18:07	1
Y Carrier	97.6		40 - 110					09/19/21 19:37	10/05/21 18:07	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.141	U	0.201	0.201	1.00	0.346	pCi/g	09/19/21 15:41	09/20/21 22:32	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0341	U	0.0374	0.0375	1.00	0.120	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Plutonium-239/240	-0.0131	U	0.0257	0.0257	1.00	0.0893	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	77.6		30 - 110					09/11/21 11:55	09/20/21 20:54	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.132		0.0694	0.0703	1.00	0.0510	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-235/236	0.00850	U	0.0229	0.0229	1.00	0.0549	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-238	0.164		0.0756	0.0768	1.00	0.0273	pCi/g	09/12/21 17:44	09/20/21 11:59	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-127-082421

Lab Sample ID: 160-43195-13

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

<u>Tracer</u>	<u>%Yield</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Uranium-232	76.6		30 - 110	09/12/21 17:44	09/20/21 11:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Count</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>Total</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>LOQ</u>	<u>MDC</u>	<u>Unit</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Carbon-14	0.153	U	0.691	0.691	5.00	1.21	pCi/g	09/24/21 08:07	09/28/21 05:43	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Count</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>Total</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>LOQ</u>	<u>MDC</u>	<u>Unit</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Actinium 228	0.213		0.110	0.112		0.103	pCi/g	09/02/21 09:49	09/28/21 22:16	1
Bismuth-212	0.00848	U	0.461	0.461		0.843	pCi/g	09/02/21 09:49	09/28/21 22:16	1
Bismuth-214	0.289		0.0771	0.0826		0.0569	pCi/g	09/02/21 09:49	09/28/21 22:16	1
Lead-212	0.326		0.0668	0.0786		0.0594	pCi/g	09/02/21 09:49	09/28/21 22:16	1
Lead-214	0.279		0.0837	0.0884		0.112	pCi/g	09/02/21 09:49	09/28/21 22:16	1
Potassium-40	3.85		0.678	0.781		0.229	pCi/g	09/02/21 09:49	09/28/21 22:16	1
Radium-226	0.289		0.0771	0.0826	1.00	0.0569	pCi/g	09/02/21 09:49	09/28/21 22:16	1
Thorium-232	0.213		0.110	0.112		0.103	pCi/g	09/02/21 09:49	09/28/21 22:16	1
Americium-241	0.0478	U	0.101	0.102		0.173	pCi/g	09/02/21 09:49	09/28/21 22:16	1
Cesium-137	0.0254	U	0.0587	0.0588		0.101	pCi/g	09/02/21 09:49	09/28/21 22:16	1
Cobalt-60	0.00963	U	0.0259	0.0260		0.0425	pCi/g	09/02/21 09:49	09/28/21 22:16	1
Europium-152	0.0802	U	0.118	0.118		0.118	pCi/g	09/02/21 09:49	09/28/21 22:16	1
Europium-154	0.0653	U	0.0759	0.0762		0.0718	pCi/g	09/02/21 09:49	09/28/21 22:16	1
Europium-155	0.0561	U	0.170	0.170		0.290	pCi/g	09/02/21 09:49	09/28/21 22:16	1
Sodium-22	-0.00396	U	0.0286	0.0286		0.0547	pCi/g	09/02/21 09:49	09/28/21 22:16	1
Zinc-65	0.00321	U	0.0899	0.0899		0.165	pCi/g	09/02/21 09:49	09/28/21 22:16	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Count</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>Total</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>LOQ</u>	<u>MDC</u>	<u>Unit</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Nickel-63	-0.128	U	0.713	0.713	5.00	1.29	pCi/g	09/16/21 17:56	09/25/21 13:55	1

<u>Carrier</u>	<u>%Yield</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Ni	110		40 - 110	09/16/21 17:56	09/25/21 13:55	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Count</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>Total</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>LOQ</u>	<u>MDC</u>	<u>Unit</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Plutonium-241	-0.231	U	1.59	1.59	5.00	2.54	pCi/g	09/12/21 17:46	09/27/21 23:34	1

<u>Tracer</u>	<u>%Yield</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Pu-242 (T)	77.6		30 - 110	09/12/21 17:46	09/27/21 23:34	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-127-082421

Lab Sample ID: 160-43195-13

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 94.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	11		0.22	0.014	mg/Kg	☼	09/16/21 07:48	09/16/21 21:33	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	11	J	19	6.1	ug/Kg	☼	09/18/21 15:00	09/19/21 15:15	1

Client Sample ID: FSS-128-082421

Lab Sample ID: 160-43195-14

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.217	U J	0.174	0.175	3.00	0.282	pCi/g	09/19/21 19:37	10/05/21 18:07	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Sr Carrier</i>	79.3		40 - 110					09/19/21 19:37	10/05/21 18:07	1
<i>Y Carrier</i>	101		40 - 110					09/19/21 19:37	10/05/21 18:07	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.211	U	0.212	0.212	1.00	0.352	pCi/g	09/19/21 15:41	09/20/21 22:55	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00594	U	0.0359	0.0359	1.00	0.0892	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Plutonium-239/240	0.00892	U	0.0240	0.0240	1.00	0.0576	pCi/g	09/11/21 11:55	09/20/21 20:54	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	71.8		30 - 110					09/11/21 11:55	09/20/21 20:54	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.0973		0.0727	0.0731	1.00	0.0961	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-235/236	0.00931	U	0.0251	0.0251	1.00	0.0601	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-238	0.224		0.0938	0.0956	1.00	0.0558	pCi/g	09/12/21 17:44	09/20/21 11:59	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Uranium-232</i>	72.8		30 - 110					09/12/21 17:44	09/20/21 11:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.234	U	0.774	0.774	5.00	1.36	pCi/g	09/24/21 08:07	09/28/21 06:06	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-128-082421

Lab Sample ID: 160-43195-14

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.183	U	0.192	0.193		0.253	pCi/g	09/02/21 09:49	09/28/21 22:12	1
Bismuth-212	-0.0333	U	0.557	0.557		1.02	pCi/g	09/02/21 09:49	09/28/21 22:12	1
Bismuth-214	0.263		0.111	0.114		0.117	pCi/g	09/02/21 09:49	09/28/21 22:12	1
Lead-212	0.299		0.0760	0.0849		0.0952	pCi/g	09/02/21 09:49	09/28/21 22:12	1
Lead-214	0.324		0.0952	0.101		0.0989	pCi/g	09/02/21 09:49	09/28/21 22:12	1
Potassium-40	3.57		0.809	0.885		0.637	pCi/g	09/02/21 09:49	09/28/21 22:12	1
Radium-226	0.263		0.111	0.114	1.00	0.117	pCi/g	09/02/21 09:49	09/28/21 22:12	1
Thorium-232	0.183	U	0.192	0.193		0.253	pCi/g	09/02/21 09:49	09/28/21 22:12	1
Americium-241	-0.0585	U	0.167	0.167		0.286	pCi/g	09/02/21 09:49	09/28/21 22:12	1
Cesium-137	0.0797		0.0290	0.0301		0.0202	pCi/g	09/02/21 09:49	09/28/21 22:12	1
Cobalt-60	0.0213	U	0.0453	0.0453		0.0549	pCi/g	09/02/21 09:49	09/28/21 22:12	1
Europium-152	0.0494	U	0.103	0.103		0.149	pCi/g	09/02/21 09:49	09/28/21 22:12	1
Europium-154	0.0407	U	0.0711	0.0712		0.104	pCi/g	09/02/21 09:49	09/28/21 22:12	1
Europium-155	0.0542	U	0.109	0.109		0.303	pCi/g	09/02/21 09:49	09/28/21 22:12	1
Sodium-22	0.0103	U	0.0275	0.0276		0.0519	pCi/g	09/02/21 09:49	09/28/21 22:12	1
Zinc-65	0.000	U	0.0134	0.0134		0.194	pCi/g	09/02/21 09:49	09/28/21 22:12	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.730	U	0.956	0.959	5.00	1.65	pCi/g	09/20/21 14:05	09/25/21 20:07	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	83.7		40 - 110					09/20/21 14:05	09/25/21 20:07	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.30	U	1.81	1.82	5.00	2.61	pCi/g	09/12/21 17:46	09/28/21 00:08	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	71.8		30 - 110					09/12/21 17:46	09/28/21 00:08	1

Client Sample ID: FSS-128-082421

Lab Sample ID: 160-43195-14

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 93.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	11		0.23	0.014	mg/Kg	☼	09/16/21 07:48	09/16/21 21:37	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	17	J	20	6.6	ug/Kg	☼	09/18/21 15:00	09/19/21 15:18	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-129-082421

Lab Sample ID: 160-43195-15

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0271	U J	0.147	0.147	3.00	0.265	pCi/g	09/19/21 19:37	10/05/21 18:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.4		40 - 110					09/19/21 19:37	10/05/21 18:13	1
Y Carrier	98.3		40 - 110					09/19/21 19:37	10/05/21 18:13	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0304	U	0.187	0.187	1.00	0.345	pCi/g	09/19/21 15:41	09/20/21 23:18	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0448	U	0.0539	0.0540	1.00	0.0849	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Plutonium-239/240	0.00299	U	0.0255	0.0255	1.00	0.0739	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	61.4		30 - 110					09/11/21 11:55	09/20/21 20:54	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.185		0.0880	0.0893	1.00	0.0327	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-235/236	0.0135	U	0.0266	0.0266	1.00	0.0406	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-238	0.283		0.109	0.111	1.00	0.0326	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	65.9		30 - 110					09/12/21 17:44	09/20/21 11:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.183	U	0.657	0.657	5.00	1.15	pCi/g	09/24/21 08:07	09/28/21 06:28	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.325		0.178	0.181		0.208	pCi/g	09/02/21 09:49	09/28/21 23:22	1
Bismuth-212	0.297	U	0.535	0.536		0.932	pCi/g	09/02/21 09:49	09/28/21 23:22	1
Bismuth-214	0.126	U	0.0663	0.0674		0.267	pCi/g	09/02/21 09:49	09/28/21 23:22	1
Lead-212	0.316		0.0770	0.0836		0.0875	pCi/g	09/02/21 09:49	09/28/21 23:22	1
Lead-214	0.264		0.0986	0.102		0.133	pCi/g	09/02/21 09:49	09/28/21 23:22	1
Potassium-40	4.36		0.881	0.980		0.342	pCi/g	09/02/21 09:49	09/28/21 23:22	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-129-082421

Lab Sample ID: 160-43195-15

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.126	U	0.0663	0.0674	1.00	0.267	pCi/g	09/02/21 09:49	09/28/21 23:22	1
Thorium-232	0.325		0.178	0.181		0.208	pCi/g	09/02/21 09:49	09/28/21 23:22	1
Americium-241	0.0654	U	0.155	0.155		0.265	pCi/g	09/02/21 09:49	09/28/21 23:22	1
Cesium-137	0.0334	U	0.0621	0.0622		0.107	pCi/g	09/02/21 09:49	09/28/21 23:22	1
Cobalt-60	0.000	U	0.0180	0.0180		0.0339	pCi/g	09/02/21 09:49	09/28/21 23:22	1
Europium-152	0.0915	U	0.148	0.148		0.170	pCi/g	09/02/21 09:49	09/28/21 23:22	1
Europium-154	0.100	U	0.0928	0.0934		0.105	pCi/g	09/02/21 09:49	09/28/21 23:22	1
Europium-155	-0.0929	U	0.316	0.316		0.538	pCi/g	09/02/21 09:49	09/28/21 23:22	1
Sodium-22	-0.0148	U	0.0444	0.0445		0.0818	pCi/g	09/02/21 09:49	09/28/21 23:22	1
Zinc-65	0.0514	U	0.0969	0.0970		0.170	pCi/g	09/02/21 09:49	09/28/21 23:22	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.948	U	1.05	1.06	5.00	1.80	pCi/g	09/20/21 14:05	09/25/21 21:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	70.9		40 - 110					09/20/21 14:05	09/25/21 21:14	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.643	U	2.18	2.18	5.00	3.37	pCi/g	09/12/21 17:46	09/28/21 00:41	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	61.4		30 - 110					09/12/21 17:46	09/28/21 00:41	1

Client Sample ID: FSS-129-082421

Lab Sample ID: 160-43195-15

Date Collected: 08/24/21 08:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 94.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	11		0.23	0.014	mg/Kg	☼	09/16/21 07:48	09/16/21 21:40	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	13	J	20	6.5	ug/Kg	☼	09/18/21 15:00	09/19/21 15:20	1

Client Sample ID: FSS-130-082421

Lab Sample ID: 160-43195-16

Date Collected: 08/24/21 11:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0500	U J	0.121	0.121	3.00	0.214	pCi/g	09/19/21 19:37	10/05/21 18:13	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-130-082421

Lab Sample ID: 160-43195-16

Date Collected: 08/24/21 11:15

Matrix: Solid

Date Received: 08/25/21 13:20

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	83.5		40 - 110	09/19/21 19:37	10/05/21 18:13	1
Y Carrier	98.7		40 - 110	09/19/21 19:37	10/05/21 18:13	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0522	U	0.194	0.194	1.00	0.356	pCi/g	09/19/21 15:41	09/20/21 23:40	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0340	U	0.0387	0.0388	1.00	0.0545	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Plutonium-239/240	0.00243	U	0.0298	0.0298	1.00	0.0766	pCi/g	09/11/21 11:55	09/20/21 20:54	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	83.4		30 - 110	09/11/21 11:55	09/20/21 20:54	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.236		0.0956	0.0976	1.00	0.0601	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-235/236	0.0121	U	0.0237	0.0237	1.00	0.0363	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-238	0.233		0.0932	0.0951	1.00	0.0291	pCi/g	09/12/21 17:44	09/20/21 11:59	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	68.3		30 - 110	09/12/21 17:44	09/20/21 11:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.219	U	0.750	0.750	5.00	1.36	pCi/g	09/24/21 08:07	09/28/21 06:51	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.251		0.185	0.186		0.197	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Bismuth-212	0.305	U	0.494	0.495		0.848	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Bismuth-214	0.0960	U	0.104	0.104		0.169	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Lead-212	0.395		0.0636	0.0810		0.0547	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Lead-214	0.363		0.0658	0.0755		0.0612	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Potassium-40	3.93		0.706	0.809		0.243	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Radium-226	0.0960	U	0.104	0.104	1.00	0.169	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Thorium-232	0.251		0.185	0.186		0.197	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Americium-241	-0.0566	U	0.124	0.124		0.211	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Cesium-137	0.000	U	0.0138	0.0138		0.0649	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Cobalt-60	-0.0535	U	0.0842	0.0844		0.0901	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Europium-152	0.0537	U	0.0965	0.0966		0.117	pCi/g	09/02/21 09:49	09/28/21 23:23	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-130-082421

Lab Sample ID: 160-43195-16

Date Collected: 08/24/21 11:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	-0.0326	U	0.0545	0.0546		0.0929	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Europium-155	-0.0726	U	0.235	0.235		0.400	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Sodium-22	-0.0137	U	0.0322	0.0322		0.0582	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Zinc-65	0.000	U	0.0270	0.0270		0.195	pCi/g	09/02/21 09:49	09/28/21 23:23	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.50	U	1.03	1.04	5.00	1.74	pCi/g	09/20/21 14:05	09/25/21 22:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	82.1		40 - 110					09/20/21 14:05	09/25/21 22:21	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.875	U	1.48	1.48	5.00	2.14	pCi/g	09/12/21 17:46	09/28/21 01:15	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	83.4		30 - 110					09/12/21 17:46	09/28/21 01:15	1

Client Sample ID: FSS-130-082421

Lab Sample ID: 160-43195-16

Date Collected: 08/24/21 11:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 94.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.8		0.22	0.013	mg/Kg	☼	09/16/21 07:48	09/16/21 21:44	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	280		19	6.3	ug/Kg	☼	09/18/21 15:00	09/19/21 15:23	1

Client Sample ID: FSS-131-082421

Lab Sample ID: 160-43195-17

Date Collected: 08/24/21 11:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.144	U J	0.152	0.152	3.00	0.253	pCi/g	09/19/21 19:37	10/05/21 18:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	86.7		40 - 110					09/19/21 19:37	10/05/21 18:13	1
Y Carrier	98.3		40 - 110					09/19/21 19:37	10/05/21 18:13	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-131-082421

Lab Sample ID: 160-43195-17

Date Collected: 08/24/21 11:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0496	U	0.215	0.215	1.00	0.408	pCi/g	09/20/21 15:14	09/27/21 23:16	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00469	U	0.00649	0.00651	1.00	0.0525	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Plutonium-239/240	0.00469	U	0.0195	0.0195	1.00	0.0525	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.8		30 - 110					09/11/21 11:55	09/20/21 20:54	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.226		0.0907	0.0926	1.00	0.0517	pCi/g	09/12/21 17:44	09/20/21 11:58	1
Uranium-235/236	0.00862	U	0.0232	0.0232	1.00	0.0556	pCi/g	09/12/21 17:44	09/20/21 11:58	1
Uranium-238	0.313		0.105	0.108	1.00	0.0276	pCi/g	09/12/21 17:44	09/20/21 11:58	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	74.7		30 - 110					09/12/21 17:44	09/20/21 11:58	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.251	U	0.667	0.667	5.00	1.16	pCi/g	09/24/21 08:07	09/28/21 07:14	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.365		0.258	0.260		0.294	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Bismuth-212	0.337	U	0.686	0.687		1.19	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Bismuth-214	0.313		0.110	0.114		0.117	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Lead-212	0.365		0.0835	0.0954		0.0954	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Lead-214	0.356		0.103	0.109		0.115	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Potassium-40	4.79		0.997	1.11		0.738	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Radium-226	0.313		0.110	0.114	1.00	0.117	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Thorium-232	0.365		0.258	0.260		0.294	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Americium-241	0.0258	U	0.167	0.167		0.289	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Cesium-137	0.0219	U	0.0446	0.0446		0.0783	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Cobalt-60	-0.00297	U	0.0543	0.0543		0.0636	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Europium-152	0.0652	U	0.0370	0.0376		0.182	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Europium-154	0.0378	U	0.0739	0.0740		0.131	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Europium-155	0.0337	U	0.0958	0.0958		0.429	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Sodium-22	0.0164	U	0.0331	0.0331		0.0601	pCi/g	09/02/21 09:49	09/28/21 23:23	1
Zinc-65	0.000	U	0.0312	0.0312		0.224	pCi/g	09/02/21 09:49	09/28/21 23:23	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-131-082421

Lab Sample ID: 160-43195-17

Date Collected: 08/24/21 11:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.276	U	0.875	0.875	5.00	1.55	pCi/g	09/20/21 14:05	09/25/21 23:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	89.7		40 - 110					09/20/21 14:05	09/25/21 23:28	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.992	U	1.50	1.51	5.00	2.47	pCi/g	09/12/21 17:46	09/28/21 01:48	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	75.8		30 - 110					09/12/21 17:46	09/28/21 01:48	1

Client Sample ID: FSS-131-082421

Lab Sample ID: 160-43195-17

Date Collected: 08/24/21 11:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 93.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	7.2		0.23	0.014	mg/Kg	☼	09/16/21 07:48	09/16/21 21:47	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	890		19	6.2	ug/Kg	☼	09/18/21 15:00	09/19/21 15:25	1

Client Sample ID: FSS-132-082421

Lab Sample ID: 160-43195-18

Date Collected: 08/24/21 11:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.118	U J	0.157	0.158	3.00	0.268	pCi/g	09/19/21 19:37	10/05/21 18:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	85.5		40 - 110					09/19/21 19:37	10/05/21 18:12	1
Y Carrier	100		40 - 110					09/19/21 19:37	10/05/21 18:12	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0798	U	0.220	0.220	1.00	0.389	pCi/g	09/20/21 15:14	09/27/21 23:39	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-132-082421

Lab Sample ID: 160-43195-18

Date Collected: 08/24/21 11:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	-0.00240	U	0.00469	0.00470	1.00	0.0464	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Plutonium-239/240	0.000	U	0.00470	0.00470	1.00	0.0288	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.9		30 - 110					09/11/21 11:55	09/20/21 20:54	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.178		0.0851	0.0864	1.00	0.0661	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-235/236	0.0154	U	0.0357	0.0357	1.00	0.0762	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Uranium-238	0.170		0.0826	0.0838	1.00	0.0611	pCi/g	09/12/21 17:44	09/20/21 11:59	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	64.4		30 - 110					09/12/21 17:44	09/20/21 11:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.308	U	0.652	0.653	5.00	1.20	pCi/g	09/24/21 08:07	09/28/21 07:36	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.0584	U	0.107	0.108		0.380	pCi/g	09/02/21 09:49	09/29/21 05:30	1
Bismuth-212	0.363	U	0.667	0.668		1.15	pCi/g	09/02/21 09:49	09/29/21 05:30	1
Bismuth-214	0.417		0.103	0.112		0.0872	pCi/g	09/02/21 09:49	09/29/21 05:30	1
Lead-212	0.349		0.0681	0.0812		0.0722	pCi/g	09/02/21 09:49	09/29/21 05:30	1
Lead-214	0.367		0.0955	0.103		0.0873	pCi/g	09/02/21 09:49	09/29/21 05:30	1
Potassium-40	3.84		0.776	0.866		0.545	pCi/g	09/02/21 09:49	09/29/21 05:30	1
Radium-226	0.417		0.103	0.112	1.00	0.0872	pCi/g	09/02/21 09:49	09/29/21 05:30	1
Thorium-232	0.0584	U	0.107	0.108		0.380	pCi/g	09/02/21 09:49	09/29/21 05:30	1
Americium-241	-0.0635	U	0.130	0.130		0.169	pCi/g	09/02/21 09:49	09/29/21 05:30	1
Cesium-137	0.0476		0.0290	0.0294		0.0321	pCi/g	09/02/21 09:49	09/29/21 05:30	1
Cobalt-60	0.0131	U	0.0279	0.0279		0.0488	pCi/g	09/02/21 09:49	09/29/21 05:30	1
Europium-152	-0.00893	U	0.0159	0.0159		0.151	pCi/g	09/02/21 09:49	09/29/21 05:30	1
Europium-154	0.0820		0.0689	0.0694		0.0732	pCi/g	09/02/21 09:49	09/29/21 05:30	1
Europium-155	-0.00455	U	0.0102	0.0102		0.385	pCi/g	09/02/21 09:49	09/29/21 05:30	1
Sodium-22	-0.0295	U	0.0491	0.0492		0.0849	pCi/g	09/02/21 09:49	09/29/21 05:30	1
Zinc-65	0.000	U	0.0168	0.0168		0.197	pCi/g	09/02/21 09:49	09/29/21 05:30	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.11	U	0.848	0.856	5.00	1.43	pCi/g	09/20/21 14:05	09/26/21 00:35	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-132-082421

Lab Sample ID: 160-43195-18

Date Collected: 08/24/21 11:15

Matrix: Solid

Date Received: 08/25/21 13:20

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	96.0		40 - 110	09/20/21 14:05	09/26/21 00:35	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.43	U	1.79	1.79	5.00	2.57	pCi/g	09/12/21 17:46	09/28/21 02:22	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	70.9		30 - 110	09/12/21 17:46	09/28/21 02:22	1

Client Sample ID: FSS-132-082421

Lab Sample ID: 160-43195-18

Date Collected: 08/24/21 11:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 93.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.7		0.23	0.014	mg/Kg	☼	09/16/21 07:48	09/16/21 21:51	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	890		19	6.1	ug/Kg	☼	09/18/21 15:00	09/19/21 15:30	1

Client Sample ID: FSS-133-082421

Lab Sample ID: 160-43195-22

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.351	J	0.184	0.186	3.00	0.282	pCi/g	09/19/21 19:37	10/05/21 18:12	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	85.0		40 - 110	09/19/21 19:37	10/05/21 18:12	1
Y Carrier	97.6		40 - 110	09/19/21 19:37	10/05/21 18:12	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.111	U	0.199	0.199	1.00	0.385	pCi/g	09/20/21 15:14	09/28/21 01:09	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0211	U	0.0293	0.0293	1.00	0.0474	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	-0.00212	U	0.00415	0.00415	1.00	0.0410	pCi/g	09/11/21 12:57	09/19/21 23:44	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.2		30 - 110	09/11/21 12:57	09/19/21 23:44	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-133-082421

Lab Sample ID: 160-43195-22

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Uranium-233/234	0.496		0.132	0.138	1.00	0.0714	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-235/236	0.00541	U	0.0225	0.0225	1.00	0.0606	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-238	0.395		0.116	0.120	1.00	0.0486	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	80.1		30 - 110					09/12/21 17:59	09/20/21 11:34	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Carbon-14	0.807	U	0.784	0.789	5.00	1.31	pCi/g	09/24/21 08:07	09/28/21 09:08	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Actinium 228	0.759		0.195	0.209		0.162	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Bismuth-212	0.000	U	0.593	0.593		0.919	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Bismuth-214	0.640		0.135	0.149		0.105	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Lead-212	0.853		0.120	0.149		0.114	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Lead-214	0.685		0.136	0.152		0.135	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Potassium-40	6.78		1.14	1.32		0.367	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Radium-226	0.640		0.135	0.149	1.00	0.105	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Thorium-232	0.759		0.195	0.209		0.162	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Americium-241	-0.0878	U	0.211	0.211		0.360	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Cesium-137	0.00231	U	0.0582	0.0582		0.107	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Cobalt-60	0.0354	U	0.0209	0.0212		0.0683	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Europium-152	0.0997	U	0.196	0.196		0.204	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Europium-154	0.0779	U	0.129	0.130		0.139	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Europium-155	0.0821	U	0.183	0.183		0.574	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Sodium-22	-0.0271	U	0.0669	0.0670		0.119	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Zinc-65	0.000	U	0.0473	0.0473		0.281	pCi/g	09/02/21 11:05	09/24/21 08:51	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	1.68	U	1.04	1.05	5.00	1.71	pCi/g	09/20/21 14:05	09/26/21 05:02	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	79.9		40 - 110					09/20/21 14:05	09/26/21 05:02	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	0.0410	U	1.67	1.67	5.00	3.00	pCi/g	09/12/21 18:00	09/27/21 16:14	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-133-082421

Lab Sample ID: 160-43195-22

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.2		30 - 110	09/12/21 18:00	09/27/21 16:14	1

Client Sample ID: FSS-133-082421

Lab Sample ID: 160-43195-22

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 92.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.1		0.29	0.017	mg/Kg	☼	10/14/21 07:54	10/14/21 16:33	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.1	ug/Kg	☼	10/13/21 18:15	10/13/21 19:57	1

Client Sample ID: FSS-134-082421

Lab Sample ID: 160-43195-23

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.112	U J	0.149	0.149	3.00	0.253	pCi/g	09/19/21 19:37	10/05/21 18:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.9		40 - 110					09/19/21 19:37	10/05/21 18:12	1
Y Carrier	100		40 - 110					09/19/21 19:37	10/05/21 18:12	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.180	U	0.224	0.224	1.00	0.377	pCi/g	09/20/21 15:14	09/28/21 01:32	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0205	U	0.0284	0.0285	1.00	0.0459	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	0.000	U	0.0180	0.0180	1.00	0.0548	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	90.6		30 - 110					09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.173		0.0792	0.0805	1.00	0.0622	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-235/236	0.00272	U	0.0233	0.0233	1.00	0.0674	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-238	0.168		0.0769	0.0782	1.00	0.0540	pCi/g	09/12/21 17:59	09/20/21 11:34	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-134-082421

Lab Sample ID: 160-43195-23

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	75.1		30 - 110	09/12/21 17:59	09/20/21 11:34	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.195	U	0.748	0.749	5.00	1.36	pCi/g	09/24/21 08:07	09/28/21 09:32	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.633		0.180	0.191		0.152	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Bismuth-212	0.337	U	0.550	0.551		0.950	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Bismuth-214	0.355		0.117	0.123		0.111	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Lead-212	0.375		0.0800	0.0930		0.0834	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Lead-214	0.350		0.104	0.110		0.0900	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Potassium-40	4.48		0.964	1.06		0.716	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Radium-226	0.355		0.117	0.123	1.00	0.111	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Thorium-232	0.633		0.180	0.191		0.152	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Americium-241	-0.0749	U	0.181	0.182		0.310	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Cesium-137	0.0266	U	0.0471	0.0471		0.0816	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Cobalt-60	-0.0231	U	0.0846	0.0846		0.0984	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Europium-152	0.150	U	0.0714	0.0731		0.158	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Europium-154	0.0484	U	0.0533	0.0536		0.124	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Europium-155	-0.0779	U	0.131	0.132		0.344	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Sodium-22	-0.0119	U	0.0428	0.0428		0.0799	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Zinc-65	0.0289	U	0.133	0.133		0.238	pCi/g	09/02/21 11:05	09/24/21 08:51	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.32	U	0.977	0.986	5.00	1.65	pCi/g	09/20/21 14:05	09/26/21 06:09	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	80.6		40 - 110	09/20/21 14:05	09/26/21 06:09	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.25	U	1.42	1.42	5.00	2.75	pCi/g	09/12/21 18:00	09/27/21 16:48	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	90.6		30 - 110	09/12/21 18:00	09/27/21 16:48	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-134-082421

Lab Sample ID: 160-43195-23

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 95.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.2		0.28	0.017	mg/Kg	☼	10/14/21 07:54	10/14/21 16:58	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	6.0	ug/Kg	☼	10/13/21 18:15	10/13/21 20:09	1

Client Sample ID: FSS-135-082421

Lab Sample ID: 160-43195-24

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0667	U J	0.128	0.128	3.00	0.249	pCi/g	09/19/21 19:37	10/05/21 18:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	82.3		40 - 110					09/19/21 19:37	10/05/21 18:12	1
Y Carrier	99.8		40 - 110					09/19/21 19:37	10/05/21 18:12	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0734	U	0.201	0.201	1.00	0.381	pCi/g	09/20/21 15:14	09/28/21 01:55	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0116	U	0.0242	0.0242	1.00	0.0742	pCi/g	09/11/21 12:57	09/20/21 20:52	1
Plutonium-239/240	-0.00482	U	0.00944	0.00945	1.00	0.0487	pCi/g	09/11/21 12:57	09/20/21 20:52	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	35.2		30 - 110					09/11/21 12:57	09/20/21 20:52	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.284		0.150	0.151	1.00	0.126	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-235/236	0.0177	U	0.0476	0.0476	1.00	0.114	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-238	0.335		0.163	0.165	1.00	0.134	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	41.5		30 - 110					09/12/21 17:59	09/20/21 11:34	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.119	U	0.607	0.607	5.00	1.07	pCi/g	09/24/21 08:07	09/28/21 09:54	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-135-082421

Lab Sample ID: 160-43195-24

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.361		0.185	0.189		0.200	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Bismuth-212	0.324	U	0.526	0.527		0.907	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Bismuth-214	0.218		0.0954	0.0979		0.131	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Lead-212	0.312		0.0721	0.0822		0.0771	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Lead-214	0.284		0.0921	0.0966		0.113	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Potassium-40	4.05		0.894	0.982		0.695	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Radium-226	0.218		0.0954	0.0979	1.00	0.131	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Thorium-232	0.361		0.185	0.189		0.200	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Americium-241	-0.0491	U	0.134	0.134		0.184	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Cesium-137	-0.0204	U	0.0537	0.0538		0.0947	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Cobalt-60	0.0295	U	0.0163	0.0165		0.0620	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Europium-152	0.181		0.105	0.107		0.143	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Europium-154	-0.00377	U	0.0528	0.0528		0.0938	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Europium-155	0.0294	U	0.0829	0.0830		0.308	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Sodium-22	0.0153	U	0.0421	0.0421		0.0769	pCi/g	09/02/21 11:05	09/24/21 08:51	1
Zinc-65	0.0813	U	0.130	0.130		0.223	pCi/g	09/02/21 11:05	09/24/21 08:51	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.36	U	0.940	0.950	5.00	1.58	pCi/g	09/20/21 14:05	09/26/21 07:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	83.6		40 - 110					09/20/21 14:05	09/26/21 07:16	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.365	U	4.07	4.07	5.00	7.48	pCi/g	09/12/21 18:00	09/27/21 17:21	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	35.2		30 - 110					09/12/21 18:00	09/27/21 17:21	1

Client Sample ID: FSS-135-082421

Lab Sample ID: 160-43195-24

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 96.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.6		0.28	0.017	mg/Kg	☼	10/14/21 07:54	10/14/21 17:09	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.8	ug/Kg	☼	10/13/21 18:15	10/13/21 20:22	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-139-082421

Lab Sample ID: 160-43195-25

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0555	U J	0.158	0.158	3.00	0.278	pCi/g	09/19/21 19:37	10/05/21 18:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	92.6		40 - 110					09/19/21 19:37	10/05/21 18:13	1
Y Carrier	97.6		40 - 110					09/19/21 19:37	10/05/21 18:13	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0413	U	0.206	0.206	1.00	0.384	pCi/g	09/20/21 15:14	09/28/21 02:17	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00411	U	0.0307	0.0307	1.00	0.0724	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	0.00411	U	0.0248	0.0248	1.00	0.0617	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	93.4		30 - 110					09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.191		0.0842	0.0856	1.00	0.0667	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-235/236	0.0304	U	0.0379	0.0380	1.00	0.0535	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-238	0.264		0.0972	0.0996	1.00	0.0631	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	86.4		30 - 110					09/12/21 17:59	09/20/21 11:34	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.000	U	0.726	0.726	5.00	1.29	pCi/g	09/26/21 17:53	09/28/21 10:27	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.545		0.130	0.141		0.0919	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Bismuth-212	0.251	U	0.883	0.883		1.56	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Bismuth-214	0.432		0.126	0.133		0.119	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Lead-212	0.554		0.0965	0.112		0.0946	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Lead-214	0.404		0.0955	0.104		0.115	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Potassium-40	4.01		0.863	0.950		0.356	pCi/g	09/02/21 11:05	09/24/21 09:23	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-139-082421

Lab Sample ID: 160-43195-25

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.432		0.126	0.133	1.00	0.119	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Thorium-232	0.545		0.130	0.141		0.0919	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Americium-241	-0.0802	U	0.173	0.174		0.296	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Cesium-137	0.0349	U	0.0608	0.0609		0.105	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Cobalt-60	-0.00336	U	0.00776	0.00777		0.0883	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Europium-152	0.0974	U	0.163	0.163		0.182	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Europium-154	0.0615	U	0.107	0.108		0.121	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Europium-155	-0.0930	U	0.325	0.325		0.554	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Sodium-22	0.0294	U	0.0382	0.0383		0.0640	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Zinc-65	0.0536	U	0.107	0.107		0.188	pCi/g	09/02/21 11:05	09/24/21 09:23	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.21	U	0.904	0.913	5.00	1.52	pCi/g	09/20/21 14:05	09/26/21 08:23	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	89.5		40 - 110					09/20/21 14:05	09/26/21 08:23	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.270	U	1.54	1.54	5.00	2.72	pCi/g	09/12/21 18:00	09/27/21 17:55	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	93.4		30 - 110					09/12/21 18:00	09/27/21 17:55	1

Client Sample ID: FSS-139-082421

Lab Sample ID: 160-43195-25

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 94.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.9		0.22	0.014	mg/Kg	☼	09/17/21 15:40	09/20/21 19:55	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	J	19	6.3	ug/Kg	☼	09/18/21 15:00	09/19/21 16:05	1

Client Sample ID: FSS-140-082421

Lab Sample ID: 160-43195-26

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0734	U J	0.173	0.173	3.00	0.302	pCi/g	09/19/21 19:37	10/05/21 18:13	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-140-082421

Lab Sample ID: 160-43195-26

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	86.0		40 - 110	09/19/21 19:37	10/05/21 18:13	1
Y Carrier	98.3		40 - 110	09/19/21 19:37	10/05/21 18:13	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0298	U	0.219	0.219	1.00	0.413	pCi/g	09/20/21 15:14	09/28/21 02:40	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0175	U	0.0317	0.0317	1.00	0.0890	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	-0.0175	U	0.0115	0.0115	1.00	0.0664	pCi/g	09/11/21 12:57	09/19/21 23:44	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	106		30 - 110	09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.215		0.0886	0.0903	1.00	0.0803	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-235/236	0.0481	U	0.0498	0.0500	1.00	0.0720	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-238	0.250		0.0886	0.0910	1.00	0.0393	pCi/g	09/12/21 17:59	09/20/21 11:34	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	82.3		30 - 110	09/12/21 17:59	09/20/21 11:34	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.0632	U	0.732	0.733	5.00	1.30	pCi/g	09/26/21 17:53	09/28/21 11:35	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.519		0.128	0.138		0.0607	pCi/g	09/02/21 11:05	09/24/21 09:25	1
Bismuth-212	0.398	U	0.710	0.711		1.22	pCi/g	09/02/21 11:05	09/24/21 09:25	1
Bismuth-214	0.252		0.0891	0.0927		0.0897	pCi/g	09/02/21 11:05	09/24/21 09:25	1
Lead-212	0.335		0.0589	0.0726		0.0531	pCi/g	09/02/21 11:05	09/24/21 09:25	1
Lead-214	0.304		0.0692	0.0758		0.0868	pCi/g	09/02/21 11:05	09/24/21 09:25	1
Potassium-40	3.35		0.646	0.728		0.240	pCi/g	09/02/21 11:05	09/24/21 09:25	1
Radium-226	0.252		0.0891	0.0927	1.00	0.0897	pCi/g	09/02/21 11:05	09/24/21 09:25	1
Thorium-232	0.519		0.128	0.138		0.0607	pCi/g	09/02/21 11:05	09/24/21 09:25	1
Americium-241	0.00865	U	0.111	0.111		0.193	pCi/g	09/02/21 11:05	09/24/21 09:25	1
Cesium-137	0.0293	U	0.0463	0.0464		0.0792	pCi/g	09/02/21 11:05	09/24/21 09:25	1
Cobalt-60	-0.0471	U	0.0745	0.0747		0.0802	pCi/g	09/02/21 11:05	09/24/21 09:25	1
Europium-152	0.0776	U	0.163	0.163		0.263	pCi/g	09/02/21 11:05	09/24/21 09:25	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-140-082421

Lab Sample ID: 160-43195-26

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0102	U	0.0479	0.0479		0.0837	pCi/g	09/02/21 11:05	09/24/21 09:25	1
Europium-155	0.0553	U	0.103	0.103		0.176	pCi/g	09/02/21 11:05	09/24/21 09:25	1
Sodium-22	0.0135	U	0.0241	0.0242		0.0429	pCi/g	09/02/21 11:05	09/24/21 09:25	1
Zinc-65	0.000	U	0.0265	0.0265		0.146	pCi/g	09/02/21 11:05	09/24/21 09:25	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	2.46		1.25	1.28	5.00	2.06	pCi/g	09/20/21 14:05	09/26/21 09:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	68.2		40 - 110					09/20/21 14:05	09/26/21 09:30	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.109	U	1.37	1.37	5.00	2.48	pCi/g	09/12/21 18:00	09/27/21 18:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	106		30 - 110					09/12/21 18:00	09/27/21 18:28	1

Client Sample ID: FSS-140-082421

Lab Sample ID: 160-43195-26

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 93.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.5		0.28	0.017	mg/Kg	☼	09/17/21 15:40	09/20/21 19:59	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/18/21 15:00	09/19/21 16:07	1

Client Sample ID: FSS-141-082421

Lab Sample ID: 160-43195-27

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0615	U J	0.157	0.157	3.00	0.277	pCi/g	09/19/21 19:37	10/05/21 18:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.1		40 - 110					09/19/21 19:37	10/05/21 18:13	1
Y Carrier	98.7		40 - 110					09/19/21 19:37	10/05/21 18:13	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-141-082421

Lab Sample ID: 160-43195-27

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0452	U	0.205	0.205	1.00	0.385	pCi/g	09/20/21 15:14	09/28/21 03:02	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0141	U	0.0339	0.0339	1.00	0.0706	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	-0.00235	U	0.00462	0.00462	1.00	0.0456	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	91.4		30 - 110					09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.143		0.0728	0.0737	1.00	0.0650	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-235/236	0.00808	U	0.0218	0.0218	1.00	0.0522	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-238	0.270		0.0961	0.0987	1.00	0.0535	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	80.3		30 - 110					09/12/21 17:59	09/20/21 11:34	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.286	U	0.755	0.756	5.00	1.31	pCi/g	09/26/21 17:53	09/28/21 11:58	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.317		0.146	0.150		0.174	pCi/g	09/02/21 11:05	09/24/21 09:24	1
Bismuth-212	-0.0663	U	0.603	0.603		1.09	pCi/g	09/02/21 11:05	09/24/21 09:24	1
Bismuth-214	0.293		0.0890	0.0939		0.0842	pCi/g	09/02/21 11:05	09/24/21 09:24	1
Lead-212	0.255		0.0664	0.0739		0.0787	pCi/g	09/02/21 11:05	09/24/21 09:24	1
Lead-214	0.261		0.0709	0.0757		0.0558	pCi/g	09/02/21 11:05	09/24/21 09:24	1
Potassium-40	2.58		0.816	0.856		0.778	pCi/g	09/02/21 11:05	09/24/21 09:24	1
Radium-226	0.293		0.0890	0.0939	1.00	0.0842	pCi/g	09/02/21 11:05	09/24/21 09:24	1
Thorium-232	0.317		0.146	0.150		0.174	pCi/g	09/02/21 11:05	09/24/21 09:24	1
Americium-241	0.0244	U	0.141	0.141		0.243	pCi/g	09/02/21 11:05	09/24/21 09:24	1
Cesium-137	0.00343	U	0.0454	0.0454		0.0831	pCi/g	09/02/21 11:05	09/24/21 09:24	1
Cobalt-60	0.0279	U	0.0207	0.0209		0.0294	pCi/g	09/02/21 11:05	09/24/21 09:24	1
Europium-152	0.0111	U	0.0226	0.0227		0.141	pCi/g	09/02/21 11:05	09/24/21 09:24	1
Europium-154	0.0421	U	0.0880	0.0881		0.114	pCi/g	09/02/21 11:05	09/24/21 09:24	1
Europium-155	0.0607	U	0.187	0.187		0.320	pCi/g	09/02/21 11:05	09/24/21 09:24	1
Sodium-22	-0.0219	U	0.0393	0.0393		0.0692	pCi/g	09/02/21 11:05	09/24/21 09:24	1
Zinc-65	-0.0716	U	0.127	0.127		0.237	pCi/g	09/02/21 11:05	09/24/21 09:24	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-141-082421

Lab Sample ID: 160-43195-27

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.74		0.933	0.950	5.00	1.52	pCi/g	09/20/21 14:05	09/26/21 10:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	91.0		40 - 110					09/20/21 14:05	09/26/21 10:37	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.124	U	1.57	1.57	5.00	2.83	pCi/g	09/12/21 18:00	09/27/21 19:02	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	91.4		30 - 110					09/12/21 18:00	09/27/21 19:02	1

Client Sample ID: FSS-141-082421

Lab Sample ID: 160-43195-27

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 93.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.8		0.27	0.016	mg/Kg	☼	09/17/21 15:40	09/20/21 20:02	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/18/21 15:00	09/19/21 16:15	1

Client Sample ID: FSS-339-082421

Lab Sample ID: 160-43195-28

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.158	U J	0.152	0.153	3.00	0.252	pCi/g	09/19/21 19:37	10/05/21 18:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	90.1		40 - 110					09/19/21 19:37	10/05/21 18:13	1
Y Carrier	99.1		40 - 110					09/19/21 19:37	10/05/21 18:13	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0246	U	0.214	0.214	1.00	0.398	pCi/g	09/20/21 15:14	09/28/21 03:25	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-339-082421

Lab Sample ID: 160-43195-28

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	0.00537	U	0.0213	0.0213	1.00	0.0509	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	0.00895	U	0.0208	0.0208	1.00	0.0443	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	97.9		30 - 110					09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.298		0.101	0.104	1.00	0.0631	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-235/236	0.0392	U	0.0413	0.0414	1.00	0.0506	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-238	0.352		0.108	0.112	1.00	0.0560	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	80.9		30 - 110					09/12/21 17:59	09/20/21 11:34	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.265	U	0.592	0.592	5.00	1.02	pCi/g	09/26/21 17:53	09/28/21 12:20	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.447		0.122	0.130		0.139	pCi/g	09/02/21 11:05	09/24/21 09:26	1
Bismuth-212	-0.190	U	0.685	0.685		1.21	pCi/g	09/02/21 11:05	09/24/21 09:26	1
Bismuth-214	0.423		0.101	0.110		0.0787	pCi/g	09/02/21 11:05	09/24/21 09:26	1
Lead-212	0.536		0.0819	0.106		0.0722	pCi/g	09/02/21 11:05	09/24/21 09:26	1
Lead-214	0.350		0.110	0.115		0.110	pCi/g	09/02/21 11:05	09/24/21 09:26	1
Potassium-40	5.31		0.934	1.07		0.609	pCi/g	09/02/21 11:05	09/24/21 09:26	1
Radium-226	0.423		0.101	0.110	1.00	0.0787	pCi/g	09/02/21 11:05	09/24/21 09:26	1
Thorium-232	0.447		0.122	0.130		0.139	pCi/g	09/02/21 11:05	09/24/21 09:26	1
Americium-241	0.00977	U	0.120	0.120		0.168	pCi/g	09/02/21 11:05	09/24/21 09:26	1
Cesium-137	-0.0367	U	0.0618	0.0619		0.106	pCi/g	09/02/21 11:05	09/24/21 09:26	1
Cobalt-60	-0.0134	U	0.101	0.101		0.0843	pCi/g	09/02/21 11:05	09/24/21 09:26	1
Europium-152	0.215		0.0792	0.0822		0.159	pCi/g	09/02/21 11:05	09/24/21 09:26	1
Europium-154	0.0844	U	0.0927	0.0931		0.0906	pCi/g	09/02/21 11:05	09/24/21 09:26	1
Europium-155	-0.0602	U	0.170	0.170		0.291	pCi/g	09/02/21 11:05	09/24/21 09:26	1
Sodium-22	0.00977	U	0.0361	0.0362		0.0674	pCi/g	09/02/21 11:05	09/24/21 09:26	1
Zinc-65	-0.0935	U	0.152	0.152		0.259	pCi/g	09/02/21 11:05	09/24/21 09:26	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.17	U	1.02	1.03	5.00	1.73	pCi/g	09/20/21 14:05	09/26/21 11:44	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-339-082421

Lab Sample ID: 160-43195-28

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	80.8		40 - 110	09/20/21 14:05	09/26/21 11:44	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.14	U	1.32	1.33	5.00	2.56	pCi/g	09/12/21 18:00	09/27/21 19:35	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	97.9		30 - 110	09/12/21 18:00	09/27/21 19:35	1

Client Sample ID: FSS-339-082421

Lab Sample ID: 160-43195-28

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 94.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	7.5		0.24	0.014	mg/Kg	☼	09/17/21 15:40	09/20/21 20:06	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	J	19	6.2	ug/Kg	☼	09/18/21 15:00	09/19/21 16:17	1

Client Sample ID: FSS-340-082421

Lab Sample ID: 160-43195-29

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.109	U J	0.140	0.140	3.00	0.275	pCi/g	09/19/21 19:37	10/05/21 18:13	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	84.2		40 - 110	09/19/21 19:37	10/05/21 18:13	1
Y Carrier	97.9		40 - 110	09/19/21 19:37	10/05/21 18:13	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0190	U	0.215	0.215	1.00	0.393	pCi/g	09/20/21 15:14	09/28/21 03:48	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0438	U	0.0386	0.0388	1.00	0.0446	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	-0.00598	U	0.0187	0.0187	1.00	0.0627	pCi/g	09/11/21 12:57	09/19/21 23:44	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	104		30 - 110	09/11/21 12:57	09/19/21 23:44	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-340-082421

Lab Sample ID: 160-43195-29

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.264		0.0948	0.0973	1.00	0.0486	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-235/236	0.0108	U	0.0211	0.0212	1.00	0.0324	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-238	0.303		0.100	0.103	1.00	0.0260	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	78.4		30 - 110					09/12/21 17:59	09/20/21 11:34	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.312	U	0.630	0.631	5.00	1.15	pCi/g	09/26/21 17:53	09/28/21 12:43	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.469		0.117	0.126		0.0672	pCi/g	09/02/21 11:05	09/24/21 09:57	1
Bismuth-212	0.609		0.396	0.401		0.425	pCi/g	09/02/21 11:05	09/24/21 09:57	1
Bismuth-214	0.389		0.0966	0.104		0.102	pCi/g	09/02/21 11:05	09/24/21 09:57	1
Lead-212	0.369		0.0673	0.0820		0.0657	pCi/g	09/02/21 11:05	09/24/21 09:57	1
Lead-214	0.457		0.0866	0.0983		0.0937	pCi/g	09/02/21 11:05	09/24/21 09:57	1
Potassium-40	3.81		0.785	0.873		0.579	pCi/g	09/02/21 11:05	09/24/21 09:57	1
Radium-226	0.389		0.0966	0.104	1.00	0.102	pCi/g	09/02/21 11:05	09/24/21 09:57	1
Thorium-232	0.469		0.117	0.126		0.0672	pCi/g	09/02/21 11:05	09/24/21 09:57	1
Americium-241	0.107	U	0.115	0.116		0.192	pCi/g	09/02/21 11:05	09/24/21 09:57	1
Cesium-137	0.00324	U	0.0449	0.0449		0.0815	pCi/g	09/02/21 11:05	09/24/21 09:57	1
Cobalt-60	0.0250	U	0.0185	0.0187		0.0263	pCi/g	09/02/21 11:05	09/24/21 09:57	1
Europium-152	-0.0371	U	0.0844	0.0845		0.145	pCi/g	09/02/21 11:05	09/24/21 09:57	1
Europium-154	0.0601	U	0.0759	0.0762		0.0840	pCi/g	09/02/21 11:05	09/24/21 09:57	1
Europium-155	-0.000827	U	0.134	0.134		0.371	pCi/g	09/02/21 11:05	09/24/21 09:57	1
Sodium-22	-0.0172	U	0.0422	0.0422		0.0756	pCi/g	09/02/21 11:05	09/24/21 09:57	1
Zinc-65	-0.0525	U	0.134	0.134		0.233	pCi/g	09/02/21 11:05	09/24/21 09:57	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.941	U	0.864	0.869	5.00	1.47	pCi/g	09/20/21 14:05	09/26/21 12:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	89.6		40 - 110					09/20/21 14:05	09/26/21 12:51	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	0.162	U	1.48	1.48	5.00	2.68	pCi/g	09/12/21 18:00	09/27/21 20:09	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-340-082421

Lab Sample ID: 160-43195-29

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	104		30 - 110	09/12/21 18:00	09/27/21 20:09	1

Client Sample ID: FSS-340-082421

Lab Sample ID: 160-43195-29

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 93.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.5		0.28	0.017	mg/Kg	☼	09/17/21 15:40	09/20/21 20:09	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	12	J	21	6.7	ug/Kg	☼	09/18/21 15:00	09/19/21 16:20	1

Client Sample ID: FSS-341-082421

Lab Sample ID: 160-43195-30

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.153	U	0.195	0.195	3.00	0.330	pCi/g	09/20/21 10:28	10/04/21 17:18	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.1		40 - 110					09/20/21 10:28	10/04/21 17:18	1
Y Carrier	99.4		40 - 110					09/20/21 10:28	10/04/21 17:18	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0615	U	0.217	0.217	1.00	0.389	pCi/g	09/20/21 15:14	09/28/21 04:10	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00200	U	0.00391	0.00391	1.00	0.0386	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	-0.00200	U	0.00392	0.00392	1.00	0.0387	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	86.1		30 - 110					09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.231		0.0891	0.0911	1.00	0.0489	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-235/236	0.0434		0.0426	0.0427	1.00	0.0326	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-238	0.287		0.0981	0.101	1.00	0.0261	pCi/g	09/12/21 17:59	09/20/21 11:34	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-341-082421

Lab Sample ID: 160-43195-30

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	78.9		30 - 110	09/12/21 17:59	09/20/21 11:34	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.570	U	0.850	0.852	5.00	1.45	pCi/g	09/26/21 17:53	09/28/21 13:05	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.589		0.167	0.177		0.0948	pCi/g	09/02/21 11:05	09/24/21 09:58	1
Bismuth-212	-0.0350	U	0.757	0.757		1.38	pCi/g	09/02/21 11:05	09/24/21 09:58	1
Bismuth-214	0.431		0.131	0.138		0.125	pCi/g	09/02/21 11:05	09/24/21 09:58	1
Lead-212	0.388		0.0891	0.0976		0.102	pCi/g	09/02/21 11:05	09/24/21 09:58	1
Lead-214	0.410		0.101	0.109		0.139	pCi/g	09/02/21 11:05	09/24/21 09:58	1
Potassium-40	4.34		0.912	1.01		0.368	pCi/g	09/02/21 11:05	09/24/21 09:58	1
Radium-226	0.431		0.131	0.138	1.00	0.125	pCi/g	09/02/21 11:05	09/24/21 09:58	1
Thorium-232	0.589		0.167	0.177		0.0948	pCi/g	09/02/21 11:05	09/24/21 09:58	1
Americium-241	-0.0683	U	0.167	0.167		0.286	pCi/g	09/02/21 11:05	09/24/21 09:58	1
Cesium-137	-0.00447	U	0.0601	0.0601		0.110	pCi/g	09/02/21 11:05	09/24/21 09:58	1
Cobalt-60	0.0190	U	0.0141	0.0142		0.0684	pCi/g	09/02/21 11:05	09/24/21 09:58	1
Europium-152	0.117	U	0.120	0.121		0.199	pCi/g	09/02/21 11:05	09/24/21 09:58	1
Europium-154	0.0669	U	0.122	0.122		0.142	pCi/g	09/02/21 11:05	09/24/21 09:58	1
Europium-155	0.0340	U	0.0975	0.0975		0.521	pCi/g	09/02/21 11:05	09/24/21 09:58	1
Sodium-22	0.0575		0.0325	0.0330		0.0353	pCi/g	09/02/21 11:05	09/24/21 09:58	1
Zinc-65	0.0330	U	0.136	0.136		0.246	pCi/g	09/02/21 11:05	09/24/21 09:58	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.10	U	0.991	0.997	5.00	1.70	pCi/g	09/20/21 14:05	09/26/21 13:58	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	83.2		40 - 110	09/20/21 14:05	09/26/21 13:58	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.736	U	1.55	1.55	5.00	2.87	pCi/g	09/12/21 18:00	09/27/21 20:42	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	86.1		30 - 110	09/12/21 18:00	09/27/21 20:42	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-341-082421

Lab Sample ID: 160-43195-30

Date Collected: 08/24/21 13:45

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 92.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.9		0.26	0.016	mg/Kg	☼	09/17/21 15:40	09/20/21 20:13	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	7.0	J	19	6.2	ug/Kg	☼	09/18/21 15:00	09/19/21 16:22	1

Client Sample ID: FSS-142-082421

Lab Sample ID: 160-43195-31

Date Collected: 08/24/21 13:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.193	U	0.160	0.161	3.00	0.326	pCi/g	09/20/21 10:28	10/04/21 17:18	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.9		40 - 110					09/20/21 10:28	10/04/21 17:18	1
Y Carrier	102		40 - 110					09/20/21 10:28	10/04/21 17:18	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0798	U	0.225	0.225	1.00	0.400	pCi/g	09/20/21 15:14	09/28/21 04:33	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00579	U	0.0156	0.0156	1.00	0.0374	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	0.000	U	0.00379	0.00379	1.00	0.0232	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	88.8		30 - 110					09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.316		0.102	0.106	1.00	0.0665	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Uranium-235/236	0.0252	U	0.0350	0.0350	1.00	0.0565	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Uranium-238	0.235		0.0891	0.0911	1.00	0.0664	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.5		30 - 110					09/12/21 17:59	09/20/21 11:37	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.894	U	0.681	0.688	5.00	1.11	pCi/g	09/26/21 17:53	09/28/21 13:28	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-142-082421

Lab Sample ID: 160-43195-31

Date Collected: 08/24/21 13:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.414		0.161	0.166		0.144	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Bismuth-212	0.400	U	0.762	0.763		1.31	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Bismuth-214	0.329		0.0909	0.0969		0.0867	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Lead-212	0.367		0.0651	0.0800		0.0661	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Lead-214	0.315		0.0898	0.0953		0.0847	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Potassium-40	3.66		0.677	0.770		0.241	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Radium-226	0.329		0.0909	0.0969	1.00	0.0867	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Thorium-232	0.414		0.161	0.166		0.144	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Americium-241	-0.0686	U	0.149	0.150		0.254	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Cesium-137	0.0949		0.0284	0.0300		0.0163	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Cobalt-60	-0.0108	U	0.0514	0.0514		0.0596	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Europium-152	0.149	U	0.145	0.146		0.348	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Europium-154	0.104		0.0447	0.0460		0.0890	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Europium-155	-0.00441	U	0.00964	0.00965		0.371	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Sodium-22	0.00834	U	0.0308	0.0308		0.0575	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Zinc-65	0.00843	U	0.106	0.106		0.192	pCi/g	09/02/21 11:05	09/24/21 09:59	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.890	U	0.963	0.967	5.00	1.65	pCi/g	09/20/21 14:05	09/26/21 15:05	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	82.9		40 - 110					09/20/21 14:05	09/26/21 15:05	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.505	U	1.56	1.56	5.00	2.89	pCi/g	09/12/21 18:00	09/27/21 21:16	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	88.8		30 - 110					09/12/21 18:00	09/27/21 21:16	1

Client Sample ID: FSS-142-082421

Lab Sample ID: 160-43195-31

Date Collected: 08/24/21 13:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 94.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	8.1		0.26	0.016	mg/Kg	☼	09/17/21 15:40	09/20/21 20:16	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	53		18	6.0	ug/Kg	☼	09/18/21 15:00	09/19/21 16:25	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-143-082421

Lab Sample ID: 160-43195-32

Date Collected: 08/24/21 13:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0884	U	0.162	0.163	3.00	0.283	pCi/g	09/20/21 10:28	10/04/21 17:18	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.9		40 - 110					09/20/21 10:28	10/04/21 17:18	1
Y Carrier	101		40 - 110					09/20/21 10:28	10/04/21 17:18	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0286	U	0.203	0.203	1.00	0.375	pCi/g	09/20/21 15:14	09/28/21 04:56	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0219	U	0.0217	0.0218	1.00	0.0805	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	-0.0199	U	0.0276	0.0276	1.00	0.0860	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	91.1		30 - 110					09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.242		0.0926	0.0947	1.00	0.0716	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Uranium-235/236	0.00785	U	0.0211	0.0211	1.00	0.0506	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Uranium-238	0.279		0.0962	0.0989	1.00	0.0519	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	80.6		30 - 110					09/12/21 17:59	09/20/21 11:37	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.219	U	0.579	0.580	5.00	1.01	pCi/g	09/26/21 17:53	09/28/21 13:51	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.299		0.125	0.129		0.106	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Bismuth-212	0.000	U	0.163	0.163		1.13	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Bismuth-214	0.377		0.0909	0.0986		0.0683	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Lead-212	0.377		0.115	0.125		0.170	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Lead-214	0.419		0.0959	0.105		0.0703	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Potassium-40	3.26		0.784	0.850		0.633	pCi/g	09/02/21 11:05	09/24/21 09:59	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-143-082421

Lab Sample ID: 160-43195-32

Date Collected: 08/24/21 13:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.377		0.0909	0.0986	1.00	0.0683	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Thorium-232	0.299		0.125	0.129		0.106	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Americium-241	-0.0573	U	0.150	0.150		0.257	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Cesium-137	0.147		0.0591	0.0610		0.0810	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Cobalt-60	0.0263	U	0.0466	0.0466		0.0549	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Europium-152	0.0454	U	0.128	0.128		0.152	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Europium-154	0.0734	U	0.0544	0.0549		0.0904	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Europium-155	-0.0733	U	0.114	0.115		0.334	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Sodium-22	0.0354		0.0231	0.0234		0.0290	pCi/g	09/02/21 11:05	09/24/21 09:59	1
Zinc-65	-0.00391	U	0.0409	0.0409		0.217	pCi/g	09/02/21 11:05	09/24/21 09:59	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	-0.0142	U	1.01	1.01	5.00	1.82	pCi/g	09/20/21 14:05	09/26/21 16:12	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	74.9		40 - 110					09/20/21 14:05	09/26/21 16:12	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.02	U	1.54	1.54	5.00	2.95	pCi/g	09/12/21 18:00	09/27/21 21:49	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	91.1		30 - 110					09/12/21 18:00	09/27/21 21:49	1

Client Sample ID: FSS-143-082421

Lab Sample ID: 160-43195-32

Date Collected: 08/24/21 13:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 93.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	8.7		0.26	0.016	mg/Kg	☼	09/17/21 15:40	09/20/21 20:20	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	42		21	6.7	ug/Kg	☼	09/18/21 15:00	09/19/21 16:27	1

Client Sample ID: FSS-144-082421

Lab Sample ID: 160-43195-33

Date Collected: 08/24/21 13:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.137	U	0.187	0.188	3.00	0.319	pCi/g	09/20/21 10:28	10/04/21 17:18	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-144-082421

Lab Sample ID: 160-43195-33

Date Collected: 08/24/21 13:15

Matrix: Solid

Date Received: 08/25/21 13:20

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	75.8		40 - 110	09/20/21 10:28	10/04/21 17:18	1
Y Carrier	99.8		40 - 110	09/20/21 10:28	10/04/21 17:18	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0278	U	0.219	0.219	1.00	0.399	pCi/g	09/20/21 15:14	09/28/21 05:18	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00450	U	0.00623	0.00624	1.00	0.0504	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	-0.00450	U	0.00624	0.00625	1.00	0.0504	pCi/g	09/11/21 12:57	09/19/21 23:44	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.9		30 - 110	09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.358		0.104	0.108	1.00	0.0378	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Uranium-235/236	0.0170	U	0.0274	0.0274	1.00	0.0471	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Uranium-238	0.396		0.111	0.115	1.00	0.0555	pCi/g	09/12/21 17:59	09/20/21 11:37	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	88.9		30 - 110	09/12/21 17:59	09/20/21 11:37	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.257	U	0.752	0.752	5.00	1.31	pCi/g	09/26/21 17:53	09/28/21 14:13	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.487		0.123	0.132		0.0777	pCi/g	09/02/21 11:05	09/24/21 10:01	1
Bismuth-212	0.177	U	0.462	0.462		0.825	pCi/g	09/02/21 11:05	09/24/21 10:01	1
Bismuth-214	0.353		0.106	0.112		0.0898	pCi/g	09/02/21 11:05	09/24/21 10:01	1
Lead-212	0.385		0.0792	0.0930		0.0865	pCi/g	09/02/21 11:05	09/24/21 10:01	1
Lead-214	0.308		0.0871	0.0926		0.106	pCi/g	09/02/21 11:05	09/24/21 10:01	1
Potassium-40	3.55		0.819	0.893		0.658	pCi/g	09/02/21 11:05	09/24/21 10:01	1
Radium-226	0.353		0.106	0.112	1.00	0.0898	pCi/g	09/02/21 11:05	09/24/21 10:01	1
Thorium-232	0.487		0.123	0.132		0.0777	pCi/g	09/02/21 11:05	09/24/21 10:01	1
Americium-241	-0.0587	U	0.132	0.132		0.181	pCi/g	09/02/21 11:05	09/24/21 10:01	1
Cesium-137	0.0281	U	0.0457	0.0458		0.0787	pCi/g	09/02/21 11:05	09/24/21 10:01	1
Cobalt-60	-0.0377	U	0.0636	0.0637		0.103	pCi/g	09/02/21 11:05	09/24/21 10:01	1
Europium-152	0.0352	U	0.0450	0.0452		0.147	pCi/g	09/02/21 11:05	09/24/21 10:01	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-1

Client Sample ID: FSS-144-082421

Lab Sample ID: 160-43195-33

Date Collected: 08/24/21 13:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Europium-154	0.0612	U	0.0748	0.0750		0.0989	pCi/g	09/02/21 11:05	09/24/21 10:01	1
Europium-155	0.0392	U	0.0974	0.0975		0.225	pCi/g	09/02/21 11:05	09/24/21 10:01	1
Sodium-22	-0.0158	U	0.0478	0.0479		0.0868	pCi/g	09/02/21 11:05	09/24/21 10:01	1
Zinc-65	-0.0595	U	0.139	0.139		0.243	pCi/g	09/02/21 11:05	09/24/21 10:01	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	1.13	U	0.936	0.944	5.00	1.59	pCi/g	09/20/21 14:05	09/26/21 17:19	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	84.2		40 - 110					09/20/21 14:05	09/26/21 17:19	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-0.890	U	1.75	1.75	5.00	3.29	pCi/g	09/12/21 18:00	09/27/21 22:23	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	79.9		30 - 110					09/12/21 18:00	09/27/21 22:23	1

Client Sample ID: FSS-144-082421

Lab Sample ID: 160-43195-33

Date Collected: 08/24/21 13:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 94.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.2		0.22	0.013	mg/Kg	☼	09/17/21 15:40	09/20/21 20:24	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	29		20	6.5	ug/Kg	☼	09/18/21 15:00	09/19/21 16:30	1



Laboratory Report

Eurofins TestAmerica, St. Louis
 13715 Rider Trail North
 Earth City, MO 63045
 United States
 Attention: Ivan H Vania
 Telephone: 314-288-8566

Report Date: 10/11/2021
 Sample Receipt Date: 08/27/2021
 RJ Lee Group Job No.: AOH1063277-0
 Authorization/P.O. No.:
 Client Job No./Name: 160-43195-1

Analysis: Asbestos In Bulk Samples by Point Count
 Method: NYELAP Method 198.1

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546739.HPL	FSS-115-082421 (160-43195-1)	Yes	1	ND	100.00	100.00	Q, CA, F, OP, MI, M	EAF-10/08/2021
Description: Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								
10546740.HPL	FSS-116-082421 (160-43195-2)	Yes	1	ND	100.00	100.00	Q, CA, AM, F, OP, MI, M	EAF-10/08/2021
Description: Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								
10546741.HPL	FSS-117-082421 (160-43195-3)	Yes	1	ND	100.00	100.00	Q, CA, AM, F, OP, MI, M	EAF-10/08/2021
Description: Brown Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								



Laboratory Report (Cont)

Client Job No./Name: 160-43195-1 RJ Lee Group Job No: AOH1063277-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546742.HPL	FSS-118-082421 (160-43195-4)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/08/2021
Description: Brown Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								
10546743.HPL	FSS-119-082421 (160-43195-5)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/08/2021
Description: Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								
10546744.HPL	FSS-120-082421 (160-43195-6)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/08/2021
Description: Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								
10546745.HPL	FSS-121-082421 (160-43195-7)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/08/2021
Description: Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								
10546746.HPL	FSS-122-082421 (160-43195-8)	Yes	1	ND		100.00	Q, CA, F, OP, MI, M	EAF-10/08/2021
Description: Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								



Laboratory Report (Cont)

Client Job No./Name: 160-43195-1 RJ Lee Group Job No: AOH1063277-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546747.HPL	FSS-123-082421 (160-43195-9)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/08/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10546748.HPL	FSS-124-082421 (160-43195-10)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/08/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10546749.HPL	FSS-125-082421 (160-43195-11)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/08/2021
Description:	Brown Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10546750.HPL	FSS-126-082421 (160-43195-12)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10546751.HPL	FSS-127-082421 (160-43195-13)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-10/10/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								

Client Job No./Name: 160-43195-1 RJ Lee Group Job No: AOH1063277-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546752.HPL	FSS-128-082421 (160-43195-14)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10546753.HPL	FSS-128-082421 (160-43195-15)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-10/10/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss: 0.0%								
10546754.HPL	FSS-130-082421 (160-43195-16)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10546755.HPL	FSS-131-082421 (160-43195-17)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10546756.HPL	FSS-132-082421 (160-43195-18)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								



Laboratory Report (Cont)

Client Job No./Name: 160-43195-1 RJ Lee Group Job No: AOH1063277-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546757.HPL	FSS-125-082421 (160-43195-19) 136 10/15/21	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10546758.HPL	FSS-125-082421 (160-43195-20) 137 10/15/21	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-10/10/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss: 0.0%								
10546759.HPL	FSS-125-082421 (160-43195-21) 138 10/15/21	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-10/10/2021
Description:	Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss: 0.0%								
10546760.HPL	FSS-125-082421 (160-43195-22) 133 10-15-21	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								



Laboratory Report (Cont)

Client Job No./Name: 160-43195-1 RJ Lee Group Job No: AOH1063277-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546761.HPL	FSS-139-082421 (160-43195-23) <i>139 10-15-21</i>	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/08/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10546762.HPL	FSS-139-082421 (160-43195-24) <i>139 10-15-21</i>	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/08/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10546763.HPL	FSS-139-082421 (160-43195-25)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10546764.HPL	FSS-140-082421 (160-43195-26)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								
10546765.HPL	FSS-141-082421 (160-43195-27)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/08/2021
Description:	Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.							
Weight Loss: 0.0%								



Laboratory Report (Cont)

Client Job No./Name: 160-43195-1 RJ Lee Group Job No: AOH1063277-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546766.HPL	FSS-338-082421 (160-43195-28)	Yes	1	ND	100.00	100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description: Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								
10546767.HPL	FSS-340-082421 (160-43195-29)	Yes	1	ND	100.00	100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description: Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								
10546768.HPL	FSS-341-082421 (160-43195-30)	Yes	1	ND	100.00	100.00	Q, CA, CL, F, OP, MI, M	AC-10/10/2021
Description: Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								
10546769.HPL	FSS-142-082421 (160-43195-31)	Yes	1	ND	100.00	100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description: Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								
10546770.HPL	FSS-143-082421 (160-43195-32)	Yes	1	ND	100.00	100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description: Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.								
Weight Loss: 0.0%								



Laboratory Report (Cont)

Client Job No./Name: 160-43195-1 RJ Lee Group Job No: AOH1063277-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546771.HPL	FSS-144-082421 (160-43195-33)	Yes	1	ND		100.00	Q, CA, CL, F, OR, OP, MI, M	AC-10/10/2021
Description: Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1								
Weight Loss: 0.0%								

Client Job No./Name: 160-43195-1

RJ Lee Group Job No: AOH1063277-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected (%)	Non-Asbestos Fibers (%)	Non-Fibrous Materials (%)	Matrix Material	Analyst - Analysis Date
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Alexandra Cheek

Authorized Signature:

Alexandra Cheek, Microscopist

ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthrophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollestonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- AM = Amphibole
- B = Binder
- CA = Carbonates
- CL = Clay
- F = Feldspar
- G = Gypsum
- HY = Hydromagnesite
- M = Miscellaneous
- MI = Mica
- OP = Opaque
- OR = Organic
- P = Perlite
- Q = Quartz
- T = Tar
- V = Vermiculite

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantization limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43195-19	FSS-136-082421	Solid	08/24/21 14:15	08/25/21 13:20
160-43195-20	FSS-137-082421	Solid	08/24/21 14:15	08/25/21 13:20
160-43195-21	FSS-138-082421	Solid	08/24/21 14:15	08/25/21 13:20

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43195-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/25/2021 1:20 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 4.5° C, 17.5° C, 18.5° C and 27.4° C.

Receipt Exceptions

Samples are logged in for MS and/or MSD analysis using the client sample ID as a parent sample ID, and the same ID with MS or MSD on the end is used for the spikes. This allows the system to calculate the QC statistics for sample duplicates. This was unknown to the client at the time the revised COC was delivered. The result was that three samples for three project points (one for each point) were analyzed in duplicate. One of each sample had an MS/MSD analyzed with it. The duplicate sample only results were reported in job 160-43195-2. Refer to Table 1 (Job 160-43195-1 - Updated Sample IDs) after the case narrative for a summary of this information.

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis. The report supplied by RJ LEE was annotated by the lab to account for the sample ID updates listed in the receipt exceptions section of the narrative.

NOTES

Due to a limitation of the LIM system, some batch QC sample results will only display in the primary job (160-43195-1) reports. Refer to this job QC sample section for additional batch QC results.

METALS (ICP/MS)

Samples FSS-136-082421 (160-43195-19), FSS-137-082421 (160-43195-20), and FSS-138-082421 (160-43195-21) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 09/16/2021, and analyzed on 09/16/2021.

Preparation Batch 280-550205, Analytical Batch 280-550511:

The matrix spike / matrix spike duplicate (MS/MSD) recoveries were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-136-082421 (160-43195-19), FSS-137-082421 (160-43195-20), and FSS-138-082421 (160-43195-21) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B_ DoD5. The samples were prepared on 09/18/2021 and analyzed on 09/19/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples FSS-136-082421 (160-43195-19), FSS-137-082421 (160-43195-20), and FSS-138-082421 (160-43195-21) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 09/02/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-136-082421 (160-43195-19), FSS-137-082421 (160-43195-20), and FSS-138-082421 (160-43195-21) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 08/27/2021, prepared on 09/19/2021 and analyzed on 10/05/2021.

Preparation Batch 160-527618:

The strontium-90 LCS recovered outside the lower QC limit at 42.53% (70%). All of the sample tracer recoveries were in the upper QC range. The highest activity in the group is 0.3514pCi/g. If this result is adjusted for an LCS recovery at 100%, the value would still be at least an order of magnitude below the project action limit of 15pCi/g. To date, 92 project samples have not demonstrated any significant amount of strontium-90 activity. Therefore, given the weight of the site data, the results were reported in consultation with the client: FSS-136-082421 (160-43195-19), FSS-137-082421 (160-43195-20), and FSS-138-082421 (160-43195-21).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-136-082421 (160-43195-19), FSS-137-082421 (160-43195-20), FSS-138-082421 (160-43195-21) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 09/20/2021 and analyzed on 09/28/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-136-082421 (160-43195-19), FSS-137-082421 (160-43195-20), FSS-138-082421 (160-43195-21) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 08/27/2021, prepared on 09/11/2021 and 09/21/2021 and analyzed on 09/19/2021, 09/20/2021 and 09/24/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-136-082421 (160-43195-19), FSS-137-082421 (160-43195-20), FSS-138-082421 (160-43195-21) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/27/2021, prepared on 09/12/2021 and 09/21/2021 and analyzed on 09/20/2021 and 09/24/2021.

Preparation Batch 160-526536:

Uranium-238 was detected in method blank MB 160-526536/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate.

Preparation Batch 160-528279:

Uranium-238 was detected in method blank MB 160-528279/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-136-082421 (160-43195-19), FSS-137-082421 (160-43195-20), FSS-138-082421 (160-43195-21) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 09/23/2021, 09/24/2021 and 09/26/2021 and analyzed on 09/27/2021 and 09/28/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-136-082421 (160-43195-19), FSS-137-082421 (160-43195-20), FSS-138-082421 (160-43195-21) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/27/2021, prepared on 09/02/2021 and analyzed on 09/24/2021, 09/28/2021 and 09/29/2021.

Preparation Batch 160-525244:

For samples FSS-138-082421 (160-43195-21), (LCS 160-525244/2-A), (MB 160-525244/1-A), (160-43230-A-7-C), and (160-43230-A-7-D DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

Preparation Batch 160-525240:

The replicate precision for Bi-214/Ra-226 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for these statistical exceedances: (160-43195-A-20-D DU).

For samples FSS-136-082421 (160-43195-19), FSS-137-082421 (160-43195-20), (LCS 160-525240/2-A), (MB 160-525240/1-A), and (160-43195-A-20-D DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m

Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-136-082421 (160-43195-19), FSS-137-082421 (160-43195-20), FSS-138-082421 (160-43195-21) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 08/27/2021, prepared on 09/16/2021 and 09/20/2021 and analyzed on 09/24/2021, 09/25/2021 and 09/26/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-136-082421 (160-43195-19), FSS-137-082421 (160-43195-20), FSS-138-082421 (160-43195-21) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared on 09/12/2021 and 09/21/2021 and analyzed on 09/27/2021, 09/28/2021 and 09/30/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Table 1. Job 160-43195-1 - Updated Sample IDs

Project Sample Point	Lab sample ID	Initial Client Sample ID	Revised Client Sample ID	Results Reported in Job #
SU 7D - SS007 0"-6"	160-43195-19	FSS-133-082421	FSS-136-082421	160-43195-2
SU 7D - SS007 0"-6"	160-43195-22	FSS-136-082421	FSS-133-082421	160-43195-1
SU 7D - SS007 0"-6"	160-43195-22MS	FSS-136-082421MS	FSS-133-082421MS	160-43195-1
SU 7D - SS007 0"-6"	160-43195-22MSD	FSS-136-082421MSD	FSS-133-082421MSD	160-43195-1
SU 7D - SS007 6"-12"	160-43195-20	FSS-134-082421	FSS-137-082421	160-43195-2
SU 7D - SS007 6"-12"	160-43195-23	FSS-137-082421	FSS-134-082421	160-43195-1
SU 7D - SS007 6"-12"	160-43195-23MS	FSS-137-082421MS	FSS-134-082421MS	160-43195-1
SU 7D - SS007 6"-12"	160-43195-23MSD	FSS-137-082421MSD	FSS-134-082421MSD	160-43195-1
SU 7D - SS007 18"-24"	160-43195-21	FSS-135-082421	FSS-138-082421	160-43195-2
SU 7D - SS007 18"-24"	160-43195-24	FSS-138-082421	FSS-0135-082421	160-43195-1
SU 7D - SS007 18"-24"	160-43195-24MS	FSS-138-082421MS	FSS-0135-082421MS	160-43195-1
SU 7D - SS007 18"-24"	160-43195-24MSD	FSS-138-082421MSD	FSS-0135-082421MSD	160-43195-1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-2

Client Sample ID: FSS-136-082421

Lab Sample ID: 160-43195-19

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.121	U J	0.139	0.139	3.00	0.275	pCi/g	09/19/21 19:37	10/05/21 18:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	86.8		40 - 110					09/19/21 19:37	10/05/21 18:12	1
Y Carrier	97.9		40 - 110					09/19/21 19:37	10/05/21 18:12	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.00888	U	0.201	0.201	1.00	0.366	pCi/g	09/20/21 15:14	09/28/21 00:01	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0292	U	0.0290	0.0291	1.00	0.108	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Plutonium-239/240	-0.0478	U	0.0221	0.0224	1.00	0.115	pCi/g	09/11/21 11:55	09/20/21 20:54	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	68.1		30 - 110					09/11/21 11:55	09/20/21 20:54	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.296		0.115	0.118	1.00	0.0786	pCi/g	09/12/21 17:44	09/20/21 11:58	1
Uranium-235/236	0.0103	U	0.0410	0.0410	1.00	0.0978	pCi/g	09/12/21 17:44	09/20/21 11:58	1
Uranium-238	0.270		0.108	0.111	1.00	0.0618	pCi/g	09/12/21 17:44	09/20/21 11:58	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	65.7		30 - 110					09/12/21 17:44	09/20/21 11:58	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.0779	U	0.600	0.600	5.00	1.06	pCi/g	09/24/21 08:07	09/28/21 07:59	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	1.19		0.192	0.225		0.163	pCi/g	09/02/21 09:49	09/29/21 05:34	1
Bismuth-212	0.228	U	0.621	0.621		1.11	pCi/g	09/02/21 09:49	09/29/21 05:34	1
Bismuth-214	0.624		0.157	0.169		0.139	pCi/g	09/02/21 09:49	09/29/21 05:34	1
Lead-212	1.06		0.134	0.172		0.126	pCi/g	09/02/21 09:49	09/29/21 05:34	1
Lead-214	0.705		0.159	0.173		0.144	pCi/g	09/02/21 09:49	09/29/21 05:34	1
Potassium-40	6.64		1.13	1.31		0.370	pCi/g	09/02/21 09:49	09/29/21 05:34	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-2

Client Sample ID: FSS-136-082421

Lab Sample ID: 160-43195-19

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.624		0.157	0.169	1.00	0.139	pCi/g	09/02/21 09:49	09/29/21 05:34	1
Thorium-232	1.19		0.192	0.225		0.163	pCi/g	09/02/21 09:49	09/29/21 05:34	1
Americium-241	0.0789	U	0.208	0.208		0.356	pCi/g	09/02/21 09:49	09/29/21 05:34	1
Cesium-137	-0.0462	U	0.0956	0.0957		0.165	pCi/g	09/02/21 09:49	09/29/21 05:34	1
Cobalt-60	0.00832	U	0.0782	0.0782		0.0918	pCi/g	09/02/21 09:49	09/29/21 05:34	1
Europium-152	0.110	U	0.193	0.194		0.202	pCi/g	09/02/21 09:49	09/29/21 05:34	1
Europium-154	0.0266	U	0.141	0.141		0.160	pCi/g	09/02/21 09:49	09/29/21 05:34	1
Europium-155	0.116	U	0.387	0.387		0.659	pCi/g	09/02/21 09:49	09/29/21 05:34	1
Sodium-22	-0.0386	U	0.0613	0.0614		0.106	pCi/g	09/02/21 09:49	09/29/21 05:34	1
Zinc-65	-0.00503	U	0.174	0.174		0.315	pCi/g	09/02/21 09:49	09/29/21 05:34	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.18	U	1.03	1.04	5.00	1.75	pCi/g	09/20/21 14:05	09/26/21 01:42	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	78.5		40 - 110					09/20/21 14:05	09/26/21 01:42	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.710	U	1.84	1.84	5.00	2.73	pCi/g	09/12/21 17:46	09/28/21 02:55	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	68.1		30 - 110					09/12/21 17:46	09/28/21 02:55	1

Client Sample ID: FSS-136-082421

Lab Sample ID: 160-43195-19

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 92.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.7		0.32	0.019	mg/Kg	☼	09/16/21 07:48	09/16/21 21:54	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg	☼	09/18/21 15:00	09/19/21 15:34	1

Client Sample ID: FSS-137-082421

Lab Sample ID: 160-43195-20

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0183	U J	0.140	0.140	3.00	0.261	pCi/g	09/19/21 19:37	10/05/21 18:12	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-2

Client Sample ID: FSS-137-082421

Lab Sample ID: 160-43195-20

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	83.7		40 - 110	09/19/21 19:37	10/05/21 18:12	1
Y Carrier	97.9		40 - 110	09/19/21 19:37	10/05/21 18:12	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0203	U	0.212	0.212	1.00	0.384	pCi/g	09/20/21 15:14	09/28/21 00:24	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.000	U	0.0251	0.0251	1.00	0.0665	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	-0.00203	U	0.00398	0.00398	1.00	0.0393	pCi/g	09/11/21 12:57	09/19/21 23:44	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	99.4		30 - 110	09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.263		0.0954	0.0979	1.00	0.0705	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-235/236	0.000	U	0.00505	0.00505	1.00	0.0309	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-238	0.302		0.0987	0.102	1.00	0.0463	pCi/g	09/12/21 17:59	09/20/21 11:34	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	97.4		30 - 110	09/12/21 17:59	09/20/21 11:34	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0357	U	0.780	0.780	5.00	1.39	pCi/g	09/24/21 08:07	09/28/21 08:22	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.508		0.0999	0.112		0.0834	pCi/g	09/02/21 09:49	09/28/21 23:21	1
Bismuth-212	-0.466	U	0.690	0.691		1.17	pCi/g	09/02/21 09:49	09/28/21 23:21	1
Bismuth-214	0.0258	U	0.151	0.151		0.315	pCi/g	09/02/21 09:49	09/28/21 23:21	1
Lead-212	0.484		0.0797	0.101		0.0759	pCi/g	09/02/21 09:49	09/28/21 23:21	1
Lead-214	0.356		0.0871	0.0943		0.0835	pCi/g	09/02/21 09:49	09/28/21 23:21	1
Potassium-40	4.59		0.879	0.992		0.591	pCi/g	09/02/21 09:49	09/28/21 23:21	1
Radium-226	0.0258	U	0.151	0.151	1.00	0.315	pCi/g	09/02/21 09:49	09/28/21 23:21	1
Thorium-232	0.508		0.0999	0.112		0.0834	pCi/g	09/02/21 09:49	09/28/21 23:21	1
Americium-241	0.0570	U	0.122	0.122		0.208	pCi/g	09/02/21 09:49	09/28/21 23:21	1
Cesium-137	0.0186	U	0.0488	0.0489		0.0858	pCi/g	09/02/21 09:49	09/28/21 23:21	1
Cobalt-60	-0.00895	U	0.0604	0.0604		0.0705	pCi/g	09/02/21 09:49	09/28/21 23:21	1
Europium-152	0.0601	U	0.0951	0.0953		0.150	pCi/g	09/02/21 09:49	09/28/21 23:21	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-2

Client Sample ID: FSS-137-082421

Lab Sample ID: 160-43195-20

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.00994	U	0.0561	0.0561		0.0983	pCi/g	09/02/21 09:49	09/28/21 23:21	1
Europium-155	0.000	U	0.0868	0.0868		0.277	pCi/g	09/02/21 09:49	09/28/21 23:21	1
Sodium-22	-0.0148	U	0.0447	0.0447		0.0811	pCi/g	09/02/21 09:49	09/28/21 23:21	1
Zinc-65	0.0132	U	0.106	0.106		0.194	pCi/g	09/02/21 09:49	09/28/21 23:21	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.96		1.00	1.02	5.00	1.66	pCi/g	09/20/21 14:05	09/26/21 02:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	89.3		40 - 110					09/20/21 14:05	09/26/21 02:49	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.549	U	1.35	1.35	5.00	2.48	pCi/g	09/12/21 18:00	09/27/21 14:34	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	99.4		30 - 110					09/12/21 18:00	09/27/21 14:34	1

Client Sample ID: FSS-137-082421

Lab Sample ID: 160-43195-20

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 95.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.3		0.25	0.015	mg/Kg	☼	09/16/21 07:48	09/16/21 22:05	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.2	ug/Kg	☼	09/18/21 15:00	09/19/21 15:37	1

Client Sample ID: FSS-138-082421

Lab Sample ID: 160-43195-21

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0715	U J	0.177	0.177	3.00	0.310	pCi/g	09/19/21 19:37	10/05/21 18:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	81.5		40 - 110					09/19/21 19:37	10/05/21 18:12	1
Y Carrier	96.1		40 - 110					09/19/21 19:37	10/05/21 18:12	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-2

Client Sample ID: FSS-138-082421

Lab Sample ID: 160-43195-21

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.00539	U	0.218	0.218	1.00	0.404	pCi/g	09/20/21 15:14	09/28/21 00:47	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0221	U	0.0205	0.0205	1.00	0.0765	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	-0.0222	U	0.0125	0.0127	1.00	0.0693	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	108		30 - 110					09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.188		0.0795	0.0810	1.00	0.0418	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-235/236	0.0215	U	0.0298	0.0298	1.00	0.0322	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Uranium-238	0.226		0.0881	0.0900	1.00	0.0533	pCi/g	09/12/21 17:59	09/20/21 11:34	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.4		30 - 110					09/12/21 17:59	09/20/21 11:34	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.371	U	0.808	0.809	5.00	1.40	pCi/g	09/24/21 08:07	09/28/21 08:44	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.376		0.109	0.115		0.162	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Bismuth-212	0.289	U	0.456	0.457		0.784	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Bismuth-214	0.380		0.101	0.108		0.0907	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Lead-212	0.0349	U	0.0838	0.0840		0.144	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Lead-214	0.299		0.0757	0.0815		0.0833	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Potassium-40	4.43		0.846	0.955		0.589	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Radium-226	0.380		0.101	0.108	1.00	0.0907	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Thorium-232	0.376		0.109	0.115		0.162	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Americium-241	0.0445	U	0.102	0.102		0.176	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Cesium-137	0.0480		0.0277	0.0281		0.0362	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Cobalt-60	-0.00605	U	0.0408	0.0408		0.0501	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Europium-152	0.0559	U	0.0969	0.0971		0.118	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Europium-154	0.0108	U	0.0492	0.0492		0.0863	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Europium-155	-0.000841	U	0.120	0.120		0.186	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Sodium-22	0.0152	U	0.0272	0.0272		0.0484	pCi/g	09/02/21 11:05	09/24/21 09:23	1
Zinc-65	-0.00839	U	0.108	0.108		0.197	pCi/g	09/02/21 11:05	09/24/21 09:23	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43195-2

Client Sample ID: FSS-138-082421

Lab Sample ID: 160-43195-21

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.42	U	0.936	0.947	5.00	1.56	pCi/g	09/20/21 14:05	09/26/21 03:56	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	83.3		40 - 110					09/20/21 14:05	09/26/21 03:56	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.213	U	1.31	1.31	5.00	2.38	pCi/g	09/12/21 18:00	09/27/21 15:41	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	108		30 - 110					09/12/21 18:00	09/27/21 15:41	1

Client Sample ID: FSS-138-082421

Lab Sample ID: 160-43195-21

Date Collected: 08/24/21 14:15

Matrix: Solid

Date Received: 08/25/21 13:20

Percent Solids: 96.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.95	J1 J	0.27	0.017	mg/Kg	✱	09/17/21 15:40	09/20/21 19:20	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	20	6.4	ug/Kg	✱	09/18/21 15:00	09/19/21 15:49	1

cut
10/21/21

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43220-1	FSS-136-082521	Solid	08/25/21 13:45	08/26/21 09:00
160-43220-2	FSS-137-082521	Solid	08/25/21 13:45	08/26/21 09:00
160-43220-3	FSS-138-082521	Solid	08/25/21 13:45	08/26/21 09:00
160-43220-4	FSS-145-082521	Solid	08/25/21 08:45	08/26/21 09:00
160-43220-5	FSS-146-082521	Solid	08/25/21 08:45	08/26/21 09:00
160-43220-6	FSS-147-082521	Solid	08/25/21 08:45	08/26/21 09:00
160-43220-7	FSS-148-082521	Solid	08/25/21 09:15	08/26/21 09:00
160-43220-8	FSS-348-082521	Solid	08/25/21 09:15	08/26/21 09:00
160-43220-9	FSS-149-082521	Solid	08/25/21 09:15	08/26/21 09:00
160-43220-10	FSS-349-082521	Solid	08/25/21 09:15	08/26/21 09:00
160-43220-11	FSS-150-082521	Solid	08/25/21 09:15	08/26/21 09:00
160-43220-12	FSS-350-082521	Solid	08/25/21 09:15	08/26/21 09:00
160-43220-13	FSS-151-082521	Solid	08/25/21 09:45	08/26/21 09:00
160-43220-14	FSS-152-082521	Solid	08/25/21 09:45	08/26/21 09:00
160-43220-15	FSS-088-081921	Solid	08/25/21 14:00	08/26/21 09:00
160-43220-16	FSS-089-081921	Solid	08/25/21 14:00	08/26/21 09:00
160-43220-17	FSS-090-081921	Solid	08/19/21 14:00	08/26/21 09:00

Client Contact		Regulatory Program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other:	
Project Manager: Dan Ours Email: d.ours@fpm-remediations.com		Site Contact: Doug Beard	
Tel/Fax: (315) 336-7721 ext. 218		Date: 08-25-21	
Address: 181 Kenwood Avenue		Carrier: Fed Ex	
Oneida, NY 13421		TALS Project #: _____	
Fax (315) 336-7722 Phone _____		Sampler: B. Gaudette	
Project Name: BNL 705 Stack Demo		For Lab Use Only: _____	
Site: BNL		Walk-in Client: _____	
P O # 1085-20-01-01		Lab Sampling: _____	
		Job / SDG No.: _____	
		Sample Specific Notes: _____	
		SU 7D - SS010 0"-6"	
		SU 7D - SS010 6"-12"	
		SU 7D - SS010 18"-24"	
		SU 7D - SS012 0"-6"	
		SU 7D - SS012 6"-12"	
		SU 7D - SS012 18"-24"	
		SU 7D - SS013 0"-6" Dup	
		SU 7D - SS013 6"-12"	
		SU 7D - SS013 6"-12" Dup	
		SU 7D - SS013 18"-24"	
		SU 7D - SS013 18"-24" Dup	
		SU 7D - SS014 0"-6"	
		SU 7D - SS014 6"-12"	



160-43220 Chain of Custody

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client Disposal by Lab Archive for _____ Months

Project Manager: Dan Ours
Tel/Fax: (315) 336-7721 ext. 218
Address: 181 Kenwood Avenue, Oneida, NY 13421
Fax (315) 336-7722
Project Name: BNL 705 Stack Demo
Site: BNL
P O # 1085-20-01-01

Site Contact: Doug Beard
Lab Contact: Ivan Vania
Date: 08-25-21
Carrier: Fed Ex

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below: _____ Days
 2 weeks
 1 week
 2 days
 1 day

Sample Identification

Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.
25-Aug	13:45	C	S	3
25-Aug	13:45	C	S	3
25-Aug	13:45	C	S	3
25-Aug	8:45	C	S	3
25-Aug	8:45	C	S	3
25-Aug	8:45	C	S	3
25-Aug	9:15	C	S	3
25-Aug	9:15	C	S	3
25-Aug	9:15	C	S	3
25-Aug	9:15	C	S	3
25-Aug	9:15	C	S	3
25-Aug	9:15	C	S	3
25-Aug	9:45	C	S	3
25-Aug	9:45	C	S	3

Performs MS / MSD (Y / N)
Filtered Sample (Y / N)
Gamma Spec: Ra-226+detecs
Stronium-90 (GFP)
Asbestos - EPA600 R-93
Lead (CPMS) - 6020B
Mercury - EPA 7470A
Ni-63
Tritium
C-14
Alpha Spec Pu 238,239,240
Alpha Spec U 234,235,238
Pu 241 by LSC

Preservation Used: 1= Ice, 2= HCI; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Ca-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu154, Eu155

Non-Hazard Flammable Skin Irritant Unknown
Poison B

Custody Seal No.: _____
Relinquished by: Douglas Beard
Relinquished by: *DP*
Relinquished by: *Fedex*

Received by: *Sina Worthington*
Received in Laboratory by: *GHASR*
Date/Time: 8-26-21 0900

Therm ID No.: _____
Date/Time: _____
Cooler Temp. (°C): Obs'd: _____
Received by: Fed Ex
Date/Time: 21/17:00
Company: Cabrera Services, Inc.
Company: _____

Chain of Custody Record

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Client Contact FPM Address 181 Kenwood Avenue Oneida, NY 13421 (315) 336-7721 ext. 218 Phone Fax (315) 336-7722 FAX Project Name: BNL 705 Stack Demo Site: BNL P O # 1085-20-01-01		Project Manager: Dan Ours Email: d.ours@ipm-remediations.com Tel/Fax: (315) 336-7721 ext. 218 <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below <u>30</u> Days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: Doug Beard Lab Contact: Ivan Vania Date: 08-25-21 Carrier: Fed Ex COC No: 2 of 2 COCs	
Sample Identification FSS-088-081921 FSS-089-081921 FSS-090-081921		Analysis Turnaround Time Sample Date Sample Time Sample Type Matrix # of Cont. 25-Aug 14:00 C S 3 25-Aug 14:00 C S 3 19-Aug 14:00 C S 3		Gamma Spec: Ra-226+detects Strontium-90 (GFPC) Asbestos - EPA600 R-93 Lead (ICP/MS) - 6020B Mercury - EPA 7470A NI-63 Tritium C-14 Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC	
Filtered Sample (Y / N) Perform MS / MSD (Y / N)		Sample Specific Notes: SU 7C - SS011 0"-6" SU 7C - SS011 6"-12" SU 7C - SS011 18"-24"		Sampler: J. Gollhofer For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other					
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.					
Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu154, Eu155					
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Relinquished by: Douglas Beard		Cooler Temp. (°C): Obs'd: Received by: Fed Ex Date/Time: 8-25-21/17:00		Therm ID No.: Date/Time:	
Relinquished by: <i>FedEx</i>		Received by: <i>Sina Watteringer</i> Date/Time:		Company: <i>ETA-STR</i> Date/Time: 8-26-21 0900	

Chain of Custody Record



Client Information (Sub Contract Lab)		Lab PM: Vania, Ivan H		Carrier Tracking No: 280-586800.1															
Shipping/Receiving		E-Mail: Ivan.Vania@Eurofins.com		Page: Page 1 of 2 509/08/2021															
Company: TestAmerica Laboratories, Inc.		State of Origin: New York		Job #: 160-43220-1															
Address: 13715 Rider Trail North, Earth City, MO, 63045		Duties Requested: 8/30/2021		Preservation Codes:															
Phone: 314-298-8566 (Tel) 314-298-8757 (Fax)		TAT Requested (days):		M - Hexane N - Nona O - AsNaO2 P - Na2O/S Q - NaHSO4 R - Na2SO3 S - H2SO4 T - TSP Dodecalhydrate U - Acetone V - MCAA W - pH 4.5 X - other (specify)															
Email:		Project #: 16009147		OTHER:															
Project Name: BNL Decommissioning Project		Site: 5500M																	
Sample ID	Sample Date	Sample Time	Sample Type (C=Comp, G=grat)	Matrix (S=solid, L=liquid, D=dust, O=oil)	Preservation Code	Field Filtered Sample (Yes or No)	QA of R. Rndy. Grnd (MOD) Custom per CDC (NORM type list)	QA of R. Rndy. Grnd (MOD) Copy Analytes (Alpha Spectro)	ADP. Rndy. Grnd Plutonium 238 and 239/240 (Alpha Spectro)	ADP. Rndy. Grnd Plutonium 238 and 239/240 (Alpha Spectro)	LSC Pu241 Rndy. Precip (MOD) Copy Analytes (Alpha Spectro)	ADP. WDRY. Grnd Standard Target List	ADP. WDRY. Grnd Standard Target List	90E/LSC. Diet. Susp. Thium (LSC)	C. O. 1.18C. Diet. Susp.	LSC. WDRY. Grnd Nickel-63 (LSC)	LSC. WDRY. Grnd Nickel-63 (LSC)	Total Number of Containers	Special Instructions/Notes:
FSS-136-082521 (160-43220-1)	8/25/21	13:45 Eastern	Solid	Solid	X	X	X	X	X	X	X	X	X	X	X	X	X	1	1.96 Sigma, DER-3, Log ICP. Carriers and ICP. Native. 1.96 Sigma, DER-3
FSS-137-082521 (160-43220-2)	8/25/21	13:45 Eastern	Solid	Solid	X	X	X	X	X	X	X	X	X	X	X	X	X	1	1.96 Sigma, DER-3, Log ICP. Carriers and ICP. Native. 1.96 Sigma, DER-3
FSS-138-082521 (160-43220-3)	8/25/21	13:45 Eastern	Solid	Solid	X	X	X	X	X	X	X	X	X	X	X	X	X	1	1.96 Sigma, DER-3, Log ICP. Carriers and ICP. Native. 1.96 Sigma, DER-3

Special Instructions/Notes:
 * Extra Volume requested.
 TO 09/08/2021

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal B: Lab Archive For Months

Special Instructions/QC Requirements:

Possible Hazard Identification
 Level 1 radioactive
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Received by: [Signature] Date: 8/25/21 14:40
 Requisitioned by: [Signature] Date/Time: 8/25/21 08:47
 Requisitioned by: [Signature] Date/Time: 8/25/21 08:47
 Company: [Signature] Company: [Signature]

Custody Seal Intact: Yes No
 Custody Seal No.: 3.4 (+0.7)

Ver: 06/08/2021

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler	Lab PM	Carrier Tracking No(s)	COC No.						
Client Contact		Phone	Vania, Ivan H		160-218247.1						
Shipping/Receiving			E-Mail	State of Origin	Page						
Company			Ivan.Vania@Eurofins.com	New York	Page 1 of 2						
Address			Accreditations Required (See note)	Job #	160-43220-1						
City			DoD - AZLA; DoD - ANAB; NELAP - New York	Preservation Codes:							
State Zip				A - HCL	M - Hexane						
CO. 80002				B - NaOH	N - None						
Phone				C - Zn Acetate	O - AsN6O2						
303-736-0100(Tel) 303-431-7171(Fax)				D - Nitric Acid	P - Na2O/S						
Email				E - NaHSO4	Q - Na2SO3						
				F - MeOH	R - Na2S2O3						
				G - Amchlor	S - H2SO4						
				H - Ascorbic Acid	T - TSP Dodecahydrate						
				I - Ice	U - Acetone						
				J - DI Water	V - MCAA						
				K - EDTA	W - pH 4-5						
				L - EDA	Z - other (specify)						
				Other:							
Project Name:											
BNL Decommissioning Project											
Site:											
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=ore/sed, B=biomass, etc)	Field Filled Sample (Yes or No)	Perform MS/MSD (Yes or No)	Moisture	6020B D005/3050B (MOD) IC/PMS Metals Pb Only	7471B D005/7471B Prep Mercury	Total Number of Containers	Special Instructions/Note:
FSS-136-082521 (160-43220-1)	8/25/21	13:45 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-137-082521 (160-43220-2)	8/25/21	13:45 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-138-082521 (160-43220-3)	8/25/21	13:45 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-145-082521 (160-43220-4)	8/25/21	08:45 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-146-082521 (160-43220-5)	8/25/21	08:45 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-147-082521 (160-43220-6)	8/25/21	08:45 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-148-082521 (160-43220-7)	8/25/21	09:15 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-348-082521 (160-43220-8)	8/25/21	09:15 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-149-082521 (160-43220-9)	8/25/21	09:15 Eastern	Solid	Solid	X	X	X	X	X	1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
 Level I radioactive

Deliverable Requested: I, II, III, IV, Other (specify)

Primary Deliverable Rank: 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/QC Requirements:

Empty Kit Relinquished by: _____ Date: _____ Time: _____ Method of Shipment: _____

Relinquished by: *MICHA KEMUNINGA* Date/Time: **AUG 26 2021 17:00** Company: **ETA**

Relinquished by: _____ Date/Time: _____ Company: _____

Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: Yes No Custody Seal No. _____

Cooler Temperature(s) °C and Other Remarks: **1.7 3.0 IR 11 + 1.0**

Eurofins TestAmerica, St. Louis
 13715 Rider Trail North
 Earth City, MO 63045
 Phone: 314-298-8568 Fax: 314-298-8757



Chain of Custody Record

Measurement System
 410001

AD-11063281-0

Client Information (Sub Contract Lab)
 Client Contact: Shipping/Receiving
 Company: RJ Lee Group, Inc.
 Address: 350 Hochberg Rd., Monroeville, PA, 15146
 Phone: (570) 432-2010
 State of Origin: New York
 Project Name: BNL Decommissioning Project
 Project #: 16009147
 Site: 3500

Lab Info: Version: Item H
 I-Item: Ivan.Venka@Eurofinsst.com
 State of Origin: New York
 Lab P#: 160-218246.2
 Page: Page 2 of 2
 Job #/ Tracking Note: 160-43220-1

Analysis Requested

Sample ID (Lab ID)	Sample Date	Sample Time	Sample Type (C-Comp, Grab)	Matrix (Pre-Proc, Post-Proc, Other)	Preservation Code:	Field Filtered Sample (Yes or No)	Priority (AS/MS/DO/CR/GR/SP)	Substrates - PLM-EPA600-R-931-AP-080.03
FSS-349-082521 (160-43220-10)	8/25/21	09:15 Eastern	Solid	Solid	AS/MS/DO/CR/GR/SP	X	X	Asbestos - PLM-EPA600-R-931-AP-080.03
FSS-150-082521 (160-43220-11)	8/25/21	09:15 Eastern	Solid	Solid	AS/MS/DO/CR/GR/SP	X	X	Asbestos - PLM-EPA600-R-931-AP-080.03
FSS-350-082521 (160-43220-12)	8/25/21	09:15 Eastern	Solid	Solid	AS/MS/DO/CR/GR/SP	X	X	Asbestos - PLM-EPA600-R-931-AP-080.03
FSS-151-082521 (160-43220-13)	8/25/21	09:45 Eastern	Solid	Solid	AS/MS/DO/CR/GR/SP	X	X	Asbestos - PLM-EPA600-R-931-AP-080.03
FSS-152-082521 (160-43220-14)	8/25/21	09:45 Eastern	Solid	Solid	AS/MS/DO/CR/GR/SP	X	X	Asbestos - PLM-EPA600-R-931-AP-080.03
FSS-089-081921 (160-43220-15)	8/25/21	14:00 Eastern	Solid	Solid	AS/MS/DO/CR/GR/SP	X	X	Asbestos - PLM-EPA600-R-931-AP-080.03
FSS-089-081921 (160-43220-16)	8/25/21	14:00 Eastern	Solid	Solid	AS/MS/DO/CR/GR/SP	X	X	Asbestos - PLM-EPA600-R-931-AP-080.03
FSS-190-081921 (160-43220-17)	8/19/21	Eastern	Solid	Solid	AS/MS/DO/CR/GR/SP	X	X	Asbestos - PLM-EPA600-R-931-AP-080.03

Special Instructions/Notes:
 1. Asbestos - PLM-EPA600-R-931-AP-080.03
 1. Asbestos - PLM-EPA600-R-931-AP-080.03
 1. Asbestos - PLM-EPA600-R-931-AP-080.03
 1. Asbestos - PLM-EPA600-R-931-AP-080.03
 1. Asbestos - PLM-EPA600-R-931-AP-080.03
 1. Asbestos - PLM-EPA600-R-931-AP-080.03
 1. Asbestos - PLM-EPA600-R-931-AP-080.03
 1. Asbestos - PLM-EPA600-R-931-AP-080.03

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return to Client Disposal By Lab Archive For _____ Months
 Special Instructions/OC Requirements:
 Return of Samples: _____
 Date/Time: _____
 Company: _____

Deliverable Requested: I, II, III, IV, Other (specify) _____
 Primary Deliverable Rank: 2
 Date: 8/25/21 17:00
 Company: ENAST Company
 Received by: _____
 Date/Time: _____
 Company: _____

Custody Seals Intact: Yes No
 Custody Seal No.: _____
 Requisitioned by: _____
 Date/Time: _____
 Company: _____

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43220-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an ""as received"" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/26/2021 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 17.3° C and 24.0° C.

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis.

METALS (ICP/MS)

Samples FSS-136-082521 (160-43220-1), FSS-137-082521 (160-43220-2), FSS-138-082521 (160-43220-3), FSS-145-082521 (160-43220-4), FSS-146-082521 (160-43220-5), FSS-147-082521 (160-43220-6), FSS-148-082521 (160-43220-7), FSS-348-082521 (160-43220-8), FSS-149-082521 (160-43220-9), FSS-349-082521 (160-43220-10), FSS-150-082521 (160-43220-11), FSS-350-082521 (160-43220-12), FSS-151-082521 (160-43220-13), FSS-152-082521 (160-43220-14), FSS-088-081921 (160-43220-15), FSS-089-081921 (160-43220-16), and FSS-090-081921 (160-43220-17) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared and analyzed on 09/23/2021.

Preparation Batch 280-549137:

Lead was detected in method blank MB 280-549137/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-136-082521 (160-43220-1), FSS-137-082521 (160-43220-2), FSS-138-082521 (160-43220-3), FSS-145-082521 (160-43220-4), FSS-146-082521 (160-43220-5), FSS-147-082521 (160-43220-6), FSS-148-082521 (160-43220-7), FSS-348-082521 (160-43220-8), FSS-149-082521 (160-43220-9), FSS-349-082521 (160-43220-10), FSS-150-082521 (160-43220-11), FSS-350-082521 (160-43220-12), FSS-151-082521 (160-43220-13), FSS-152-082521 (160-43220-14), FSS-088-081921 (160-43220-15), FSS-089-081921 (160-43220-16) and FSS-090-081921 (160-43220-17) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B_DoD5. The samples were prepared on 09/15/2021 and analyzed on 09/15/2021 and 09/16/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples FSS-136-082521 (160-43220-1), FSS-137-082521 (160-43220-2), FSS-138-082521 (160-43220-3), FSS-145-082521 (160-43220-4), FSS-146-082521 (160-43220-5), FSS-147-082521 (160-43220-6), FSS-148-082521 (160-43220-7), FSS-348-082521 (160-43220-8), FSS-149-082521 (160-43220-9), FSS-349-082521 (160-43220-10), FSS-150-082521 (160-43220-11), FSS-350-082521 (160-43220-12), FSS-151-082521 (160-43220-13), FSS-152-082521 (160-43220-14), FSS-088-081921 (160-43220-15), FSS-089-081921 (160-43220-16) and FSS-090-081921 (160-43220-17) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 09/02/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-136-082521 (160-43220-1), FSS-137-082521 (160-43220-2), FSS-138-082521 (160-43220-3), FSS-145-082521 (160-43220-4), FSS-146-082521 (160-43220-5), FSS-147-082521 (160-43220-6), FSS-148-082521 (160-43220-7), FSS-348-082521 (160-43220-8), FSS-149-082521 (160-43220-9), FSS-349-082521 (160-43220-10), FSS-150-082521 (160-43220-11), FSS-350-082521 (160-43220-12), FSS-151-082521 (160-43220-13), FSS-152-082521 (160-43220-14), FSS-088-081921 (160-43220-15), FSS-089-081921 (160-43220-16) and FSS-090-081921 (160-43220-17) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 08/27/2021, prepared on 09/20/2021 and analyzed on 10/04/2021 and 10/07/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-136-082521 (160-43220-1), FSS-137-082521 (160-43220-2), FSS-138-082521 (160-43220-3), FSS-145-082521 (160-43220-4), FSS-146-082521 (160-43220-5), FSS-147-082521 (160-43220-6), FSS-148-082521 (160-43220-7), FSS-348-082521 (160-43220-8), FSS-149-082521 (160-43220-9), FSS-349-082521 (160-43220-10), FSS-150-082521 (160-43220-11), FSS-350-082521 (160-43220-12), FSS-151-082521 (160-43220-13), FSS-152-082521 (160-43220-14), FSS-088-081921 (160-43220-15), FSS-089-081921 (160-43220-16) and FSS-090-081921 (160-43220-17) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 09/24/2021, 09/27/2021 and 09/30/2021 and analyzed on 10/02/2021 and 10/03/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-136-082521 (160-43220-1), FSS-137-082521 (160-43220-2), FSS-138-082521 (160-43220-3), FSS-145-082521 (160-43220-4), FSS-146-082521 (160-43220-5), FSS-147-082521 (160-43220-6), FSS-148-082521 (160-43220-7), FSS-348-082521 (160-43220-8), FSS-149-082521 (160-43220-9), FSS-349-082521 (160-43220-10), FSS-150-082521 (160-43220-11), FSS-350-082521 (160-43220-12), FSS-151-082521 (160-43220-13), FSS-152-082521 (160-43220-14), FSS-088-081921 (160-43220-15), FSS-089-081921 (160-43220-16) and FSS-090-081921 (160-43220-17) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 08/27/2021, prepared on 09/11/2021 and analyzed on 09/19/2021, 09/22/2021 and 09/23/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-136-082521 (160-43220-1), FSS-137-082521 (160-43220-2), FSS-138-082521 (160-43220-3), FSS-145-082521 (160-43220-4), FSS-146-082521 (160-43220-5), FSS-147-082521 (160-43220-6), FSS-148-082521 (160-43220-7), FSS-348-082521 (160-43220-8), FSS-149-082521 (160-43220-9), FSS-349-082521 (160-43220-10), FSS-150-082521 (160-43220-11), FSS-350-082521 (160-43220-12), FSS-151-082521 (160-43220-13), FSS-152-082521 (160-43220-14), FSS-088-081921 (160-43220-15), FSS-089-081921 (160-43220-16) and FSS-090-081921 (160-43220-17) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/27/2021, prepared on 09/12/2021 and analyzed on 09/20/2021, 09/21/2021 and 09/22/2021.

Preparation Batch 160-526536:

Uranium-238 was detected in method blank MB 160-526536/1-A at a level that was above the method detection limit but below the

reporting limit. The value should be considered an estimate.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-136-082521 (160-43220-1), FSS-137-082521 (160-43220-2), FSS-138-082521 (160-43220-3), FSS-145-082521 (160-43220-4), FSS-146-082521 (160-43220-5), FSS-147-082521 (160-43220-6), FSS-148-082521 (160-43220-7), FSS-348-082521 (160-43220-8), FSS-149-082521 (160-43220-9), FSS-349-082521 (160-43220-10), FSS-150-082521 (160-43220-11), FSS-350-082521 (160-43220-12), FSS-151-082521 (160-43220-13), FSS-152-082521 (160-43220-14), FSS-088-081921 (160-43220-15), FSS-089-081921 (160-43220-16) and FSS-090-081921 (160-43220-17) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 10/04/2021 and analyzed on 10/05/2021.

Preparation Batch 160-530072:

Although, daily check are generally counted prior to sample counts, per calendar date, the daily checks for 10/5/2021 were successfully analyzed and were within QC criteria just after the samples completed counting. Bracketing daily checks were performed, both within acceptance and all batch QC were within parameters, indicating acceptable batch and instrument performance: FSS-136-082521 (160-43220-1), FSS-137-082521 (160-43220-2), FSS-138-082521 (160-43220-3), FSS-145-082521 (160-43220-4), FSS-146-082521 (160-43220-5), FSS-147-082521 (160-43220-6), FSS-148-082521 (160-43220-7), FSS-348-082521 (160-43220-8), FSS-149-082521 (160-43220-9), FSS-349-082521 (160-43220-10), FSS-150-082521 (160-43220-11), FSS-350-082521 (160-43220-12), FSS-151-082521 (160-43220-13), FSS-152-082521 (160-43220-14), FSS-088-081921 (160-43220-15), FSS-089-081921 (160-43220-16), FSS-090-081921 (160-43220-17), (LCS 160-530072/2-A), (MB 160-530072/1-A), (160-43220-B-1-Z DU), and (160-43220-B-1-AA MS).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-136-082521 (160-43220-1), FSS-137-082521 (160-43220-2), FSS-138-082521 (160-43220-3), FSS-145-082521 (160-43220-4), FSS-146-082521 (160-43220-5), FSS-147-082521 (160-43220-6), FSS-148-082521 (160-43220-7), FSS-348-082521 (160-43220-8), FSS-149-082521 (160-43220-9), FSS-349-082521 (160-43220-10), FSS-150-082521 (160-43220-11), FSS-350-082521 (160-43220-12), FSS-151-082521 (160-43220-13), FSS-152-082521 (160-43220-14), FSS-088-081921 (160-43220-15), FSS-089-081921 (160-43220-16) and FSS-090-081921 (160-43220-17) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/27/2021, prepared on 08/31/2021 and analyzed on 09/29/2021 and 09/30/2021.

Preparation Batch 160-525011:

For samples FSS-136-082521 (160-43220-1), FSS-137-082521 (160-43220-2), FSS-138-082521 (160-43220-3), FSS-145-082521 (160-43220-4), FSS-146-082521 (160-43220-5), FSS-147-082521 (160-43220-6), FSS-148-082521 (160-43220-7), FSS-348-082521 (160-43220-8), FSS-149-082521 (160-43220-9), FSS-349-082521 (160-43220-10), FSS-150-082521 (160-43220-11), FSS-350-082521 (160-43220-12), FSS-151-082521 (160-43220-13), FSS-152-082521 (160-43220-14), FSS-088-081921 (160-43220-15), FSS-089-081921 (160-43220-16), FSS-090-081921 (160-43220-17), (160-43230-A-8-C), and (160-43230-A-8-D DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From	Reported to
Nuclide	Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-136-082521 (160-43220-1), FSS-137-082521 (160-43220-2), FSS-138-082521 (160-43220-3), FSS-145-082521 (160-43220-4), FSS-146-082521 (160-43220-5), FSS-147-082521 (160-43220-6), FSS-148-082521 (160-43220-7), FSS-348-082521 (160-43220-8), FSS-149-082521 (160-43220-9), FSS-349-082521 (160-43220-10), FSS-150-082521 (160-43220-11), FSS-350-082521 (160-43220-12), FSS-151-082521 (160-43220-13), FSS-152-082521 (160-43220-14), FSS-088-081921 (160-43220-15), FSS-089-081921 (160-43220-16) and FSS-090-081921 (160-43220-17) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 08/27/2021, prepared on 09/22/2021 and analyzed on 09/29/2021 and 09/30/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-136-082521 (160-43220-1), FSS-137-082521 (160-43220-2), FSS-138-082521 (160-43220-3), FSS-145-082521 (160-43220-4), FSS-146-082521 (160-43220-5), FSS-147-082521 (160-43220-6), FSS-148-082521 (160-43220-7), FSS-348-082521 (160-43220-8), FSS-149-082521 (160-43220-9), FSS-349-082521 (160-43220-10), FSS-150-082521 (160-43220-11), FSS-350-082521 (160-43220-12), FSS-151-082521 (160-43220-13), FSS-152-082521 (160-43220-14), FSS-088-081921 (160-43220-15), FSS-089-081921 (160-43220-16) and FSS-090-081921 (160-43220-17) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared on 09/12/2021 and analyzed on 09/27/2021, 09/28/2021, 10/01/2021 and 10/02/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-136-082521

Lab Sample ID: 160-43220-1

Date Collected: 08/25/21 13:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.266	U	0.182	0.183	3.00	0.289	pCi/g	09/20/21 10:28	10/04/21 17:26	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.9		40 - 110					09/20/21 10:28	10/04/21 17:26	1
Y Carrier	98.3		40 - 110					09/20/21 10:28	10/04/21 17:26	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.158	U	0.189	0.189	1.00	0.324	pCi/g	09/30/21 12:18	10/03/21 02:11	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.000	U	0.00421	0.00421	1.00	0.0258	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	0.000	U	0.00421	0.00421	1.00	0.0258	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	78.8		30 - 110					09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.242		0.0905	0.0927	1.00	0.0529	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Uranium-235/236	0.0319		0.0361	0.0362	1.00	0.0319	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Uranium-238	0.186		0.0786	0.0800	1.00	0.0413	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	78.2		30 - 110					09/12/21 17:59	09/20/21 11:37	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0501	U	0.885	0.885	5.00	1.56	pCi/g	10/04/21 14:52	10/05/21 04:43	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.185	U	0.153	0.155		0.208	pCi/g	08/31/21 16:48	09/29/21 10:59	1
Bismuth-212	-0.401	U	0.761	0.762		1.31	pCi/g	08/31/21 16:48	09/29/21 10:59	1
Bismuth-214	0.0597	U	0.0648	0.0651		0.264	pCi/g	08/31/21 16:48	09/29/21 10:59	1
Lead-212	0.298		0.0675	0.0773		0.0766	pCi/g	08/31/21 16:48	09/29/21 10:59	1
Lead-214	0.351		0.0916	0.0983		0.0818	pCi/g	08/31/21 16:48	09/29/21 10:59	1
Potassium-40	3.82		0.801	0.887		0.579	pCi/g	08/31/21 16:48	09/29/21 10:59	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-136-082521

Lab Sample ID: 160-43220-1

Date Collected: 08/25/21 13:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Radium-226	0.0597	U	0.0648	0.0651	1.00	0.264	pCi/g	08/31/21 16:48	09/29/21 10:59	1
Thorium-232	0.185	U	0.153	0.155		0.208	pCi/g	08/31/21 16:48	09/29/21 10:59	1
Cesium-137	0.101		0.0439	0.0451		0.0582	pCi/g	08/31/21 16:48	09/29/21 10:59	1
Europium-152	0.234		0.0733	0.0772		0.141	pCi/g	08/31/21 16:48	09/29/21 10:59	1
Europium-154	0.0441	U	0.0626	0.0628		0.0991	pCi/g	08/31/21 16:48	09/29/21 10:59	1
Europium-155	-0.00288	U	0.00700	0.00700		0.367	pCi/g	08/31/21 16:48	09/29/21 10:59	1
Sodium-22	-0.00846	U	0.0355	0.0355		0.0667	pCi/g	08/31/21 16:48	09/29/21 10:59	1
Zinc-65	0.000	U	0.0178	0.0178		0.216	pCi/g	08/31/21 16:48	09/29/21 10:59	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	1.97	U	1.47	1.49	5.00	2.41	pCi/g	09/22/21 10:22	09/29/21 23:42	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	77.5		40 - 110					09/22/21 10:22	09/29/21 23:42	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-0.411	U	1.75	1.75	5.00	3.19	pCi/g	09/12/21 18:00	09/27/21 22:57	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	78.8		30 - 110					09/12/21 18:00	09/27/21 22:57	1

Client Sample ID: FSS-136-082521

Lab Sample ID: 160-43220-1

Date Collected: 08/25/21 13:45

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 94.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.8		0.26	0.015	mg/Kg	☼	09/23/21 14:40	09/23/21 21:30	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	20	6.4	ug/Kg	☼	09/15/21 15:00	09/16/21 12:13	1

Client Sample ID: FSS-137-082521

Lab Sample ID: 160-43220-2

Date Collected: 08/25/21 13:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Strontium-90	0.265	U	0.200	0.201	3.00	0.322	pCi/g	09/20/21 10:28	10/04/21 17:26	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-137-082521

Lab Sample ID: 160-43220-2

Date Collected: 08/25/21 13:45

Matrix: Solid

Date Received: 08/26/21 09:00

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	79.8		40 - 110	09/20/21 10:28	10/04/21 17:26	1
Y Carrier	94.2		40 - 110	09/20/21 10:28	10/04/21 17:26	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.205	U	0.190	0.191	1.00	0.314	pCi/g	09/30/21 12:18	10/03/21 02:34	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00636	U	0.0171	0.0171	1.00	0.0410	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	0.000	U	0.00416	0.00416	1.00	0.0255	pCi/g	09/11/21 12:57	09/19/21 23:44	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	82.4		30 - 110	09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.278		0.0959	0.0986	1.00	0.0518	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Uranium-235/236	0.0182	U	0.0293	0.0294	1.00	0.0504	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Uranium-238	0.330		0.104	0.107	1.00	0.0468	pCi/g	09/12/21 17:59	09/20/21 11:37	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	82.4		30 - 110	09/12/21 17:59	09/20/21 11:37	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.203	U	0.736	0.736	5.00	1.27	pCi/g	10/04/21 14:52	10/05/21 05:51	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.138	U	0.123	0.124		0.207	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Bismuth-212	0.211	U	0.395	0.396		0.702	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Bismuth-214	0.241		0.108	0.111		0.120	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Lead-212	0.257		0.0696	0.0769		0.0755	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Lead-214	0.258		0.0854	0.0893		0.121	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Potassium-40	3.02		0.865	0.916		0.799	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Radium-226	0.241		0.108	0.111	1.00	0.120	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Thorium-232	0.138	U	0.123	0.124		0.207	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Cesium-137	0.0291	U	0.0610	0.0611		0.107	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Europium-152	0.0779	U	0.141	0.141		0.163	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Europium-154	0.0283	U	0.0423	0.0424		0.127	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Europium-155	0.0313	U	0.0973	0.0973		0.358	pCi/g	08/31/21 16:48	09/29/21 11:00	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-137-082521

Lab Sample ID: 160-43220-2

Date Collected: 08/25/21 13:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Sodium-22	0.000	U	0.00946	0.00946		0.0356	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Zinc-65	0.0516	U	0.107	0.107		0.189	pCi/g	08/31/21 16:48	09/29/21 11:00	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	2.89		1.73	1.76	5.00	2.78	pCi/g	09/22/21 10:22	09/30/21 00:16	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ni	66.0		40 - 110					09/22/21 10:22	09/30/21 00:16	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.61	U	1.77	1.77	5.00	3.52	pCi/g	09/12/21 18:00	09/27/21 23:30	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Pu-242 (T)	82.4		30 - 110					09/12/21 18:00	09/27/21 23:30	1

Client Sample ID: FSS-137-082521

Lab Sample ID: 160-43220-2

Date Collected: 08/25/21 13:45

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 96.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.7		0.22	0.014	mg/Kg	☼	09/23/21 14:40	09/23/21 21:48	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	16	U	20	6.5	ug/Kg	☼	09/15/21 15:00	09/15/21 19:42	1

Client Sample ID: FSS-138-082521

Lab Sample ID: 160-43220-3

Date Collected: 08/25/21 13:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.272	U	0.195	0.196	3.00	0.312	pCi/g	09/20/21 10:28	10/04/21 18:02	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Sr Carrier	82.6		40 - 110					09/20/21 10:28	10/04/21 18:02	1
Y Carrier	94.6		40 - 110					09/20/21 10:28	10/04/21 18:02	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-138-082521

Lab Sample ID: 160-43220-3

Date Collected: 08/25/21 13:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.201	U	0.186	0.187	1.00	0.305	pCi/g	09/30/21 12:18	10/03/21 02:56	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0137	U	0.0220	0.0220	1.00	0.0378	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	-0.00586	U	0.00663	0.00665	1.00	0.0483	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	82.1		30 - 110					09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.194		0.0825	0.0840	1.00	0.0755	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Uranium-235/236	0.00244	U	0.0208	0.0208	1.00	0.0603	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Uranium-238	0.299		0.0975	0.101	1.00	0.0615	pCi/g	09/12/21 17:59	09/20/21 11:37	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	80.7		30 - 110					09/12/21 17:59	09/20/21 11:37	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0365	U	0.657	0.657	5.00	1.16	pCi/g	10/04/21 14:52	10/05/21 06:14	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.309		0.196	0.198		0.222	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Bismuth-212	0.323	U	0.601	0.602		1.04	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Bismuth-214	0.288		0.109	0.113		0.116	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Lead-212	0.273		0.0718	0.0797		0.0845	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Lead-214	0.236		0.0862	0.0895		0.109	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Potassium-40	3.17		0.820	0.879		0.708	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Radium-226	0.288		0.109	0.113	1.00	0.116	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Thorium-232	0.309		0.196	0.198		0.222	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Cesium-137	-0.000509	U	0.0634	0.0634		0.0820	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Europium-152	0.0650	U	0.128	0.128		0.152	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Europium-154	0.0485	U	0.103	0.103		0.108	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Europium-155	-0.0714	U	0.127	0.127		0.347	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Sodium-22	0.0243	U	0.0339	0.0340		0.0577	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Zinc-65	0.000	U	0.0212	0.0212		0.202	pCi/g	08/31/21 16:48	09/29/21 12:47	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-138-082521

Lab Sample ID: 160-43220-3

Date Collected: 08/25/21 13:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	2.24	U	1.60	1.61	5.00	2.62	pCi/g	09/22/21 10:22	09/30/21 00:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	72.5		40 - 110					09/22/21 10:22	09/30/21 00:49	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.624	U	1.63	1.64	5.00	3.02	pCi/g	09/12/21 18:00	09/28/21 00:04	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	82.1		30 - 110					09/12/21 18:00	09/28/21 00:04	1

Client Sample ID: FSS-138-082521

Lab Sample ID: 160-43220-3

Date Collected: 08/25/21 13:45

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 95.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.3		0.25	0.015	mg/Kg	☼	09/23/21 14:40	09/23/21 21:58	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.2	ug/Kg	☼	09/15/21 15:00	09/15/21 19:45	1

Client Sample ID: FSS-145-082521

Lab Sample ID: 160-43220-4

Date Collected: 08/25/21 08:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.480		0.207	0.211	3.00	0.299	pCi/g	09/20/21 10:28	10/04/21 17:27	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	77.8		40 - 110					09/20/21 10:28	10/04/21 17:27	1
Y Carrier	95.3		40 - 110					09/20/21 10:28	10/04/21 17:27	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.173	U	0.185	0.186	1.00	0.309	pCi/g	09/27/21 11:23	10/03/21 00:41	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-145-082521

Lab Sample ID: 160-43220-4

Date Collected: 08/25/21 08:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	-0.00628	U	0.00711	0.00713	1.00	0.0518	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	0.00419	U	0.0174	0.0174	1.00	0.0470	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	85.0		30 - 110					09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.260		0.0919	0.0944	1.00	0.0543	pCi/g	09/12/21 17:59	09/21/21 10:06	1
Uranium-235/236	0.0582		0.0488	0.0491	1.00	0.0490	pCi/g	09/12/21 17:59	09/21/21 10:06	1
Uranium-238	0.258		0.0918	0.0942	1.00	0.0577	pCi/g	09/12/21 17:59	09/21/21 10:06	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Uranium-232</i>	99.2		30 - 110					09/12/21 17:59	09/21/21 10:06	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.428	U	0.774	0.775	5.00	1.41	pCi/g	10/04/21 14:52	10/05/21 06:37	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.516		0.157	0.165		0.135	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Bismuth-212	0.382	U	0.627	0.628		1.08	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Bismuth-214	0.368		0.111	0.117		0.107	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Lead-212	0.416		0.0809	0.0966		0.0786	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Lead-214	0.383		0.110	0.116		0.134	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Potassium-40	5.06		1.01	1.13		0.724	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Radium-226	0.368		0.111	0.117	1.00	0.107	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Thorium-232	0.516		0.157	0.165		0.135	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Cesium-137	0.537		0.0849	0.101		0.0376	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Europium-152	0.0551	U	0.0891	0.0893		0.139	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Europium-154	0.0600	U	0.0920	0.0922		0.108	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Europium-155	0.0135	U	0.0324	0.0325		0.404	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Sodium-22	0.0482		0.0285	0.0288		0.0323	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Zinc-65	-0.115	U	0.187	0.188		0.320	pCi/g	08/31/21 16:48	09/29/21 11:35	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.86	U	1.56	1.57	5.00	2.60	pCi/g	09/22/21 10:22	09/30/21 01:23	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-145-082521

Lab Sample ID: 160-43220-4

Date Collected: 08/25/21 08:45

Matrix: Solid

Date Received: 08/26/21 09:00

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	72.4		40 - 110	09/22/21 10:22	09/30/21 01:23	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.404	U	1.66	1.66	5.00	2.88	pCi/g	09/12/21 18:00	09/28/21 00:37	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	85.0		30 - 110	09/12/21 18:00	09/28/21 00:37	1

Client Sample ID: FSS-145-082521

Lab Sample ID: 160-43220-4

Date Collected: 08/25/21 08:45

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 93.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	12		0.29	0.017	mg/Kg	☼	09/23/21 14:40	09/23/21 22:02	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	47		21	6.8	ug/Kg	☼	09/15/21 15:00	09/15/21 19:47	1

Client Sample ID: FSS-146-082521

Lab Sample ID: 160-43220-5

Date Collected: 08/25/21 08:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.223	U	0.179	0.180	3.00	0.290	pCi/g	09/20/21 16:47	10/07/21 20:39	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	78.0		40 - 110	09/20/21 16:47	10/07/21 20:39	1
Y Carrier	98.7		40 - 110	09/20/21 16:47	10/07/21 20:39	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.161	U	0.193	0.193	1.00	0.329	pCi/g	09/27/21 11:23	10/03/21 01:03	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00195	U	0.00383	0.00383	1.00	0.0378	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	-0.00195	U	0.00383	0.00383	1.00	0.0378	pCi/g	09/11/21 12:57	09/19/21 23:44	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	90.3		30 - 110	09/11/21 12:57	09/19/21 23:44	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-146-082521

Lab Sample ID: 160-43220-5

Date Collected: 08/25/21 08:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.251		0.0902	0.0926	1.00	0.0598	pCi/g	09/12/21 17:59	09/21/21 10:06	1
Uranium-235/236	0.00744	U	0.0200	0.0200	1.00	0.0480	pCi/g	09/12/21 17:59	09/21/21 10:06	1
Uranium-238	0.157		0.0719	0.0731	1.00	0.0566	pCi/g	09/12/21 17:59	09/21/21 10:06	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	99.7		30 - 110					09/12/21 17:59	09/21/21 10:06	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.157	U	0.841	0.841	5.00	1.49	pCi/g	10/04/21 14:52	10/05/21 06:59	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.443		0.132	0.139		0.0813	pCi/g	08/31/21 16:48	09/29/21 13:19	1
Bismuth-212	0.343	U	0.551	0.552		0.946	pCi/g	08/31/21 16:48	09/29/21 13:19	1
Bismuth-214	0.348		0.0950	0.101		0.100	pCi/g	08/31/21 16:48	09/29/21 13:19	1
Lead-212	0.451		0.0758	0.0950		0.0719	pCi/g	08/31/21 16:48	09/29/21 13:19	1
Lead-214	0.418		0.0839	0.0941		0.0924	pCi/g	08/31/21 16:48	09/29/21 13:19	1
Potassium-40	4.25		0.837	0.940		0.576	pCi/g	08/31/21 16:48	09/29/21 13:19	1
Radium-226	0.348		0.0950	0.101	1.00	0.100	pCi/g	08/31/21 16:48	09/29/21 13:19	1
Thorium-232	0.443		0.132	0.139		0.0813	pCi/g	08/31/21 16:48	09/29/21 13:19	1
Cesium-137	0.208		0.0576	0.0614		0.0669	pCi/g	08/31/21 16:48	09/29/21 13:19	1
Europium-152	0.163		0.0858	0.0875		0.132	pCi/g	08/31/21 16:48	09/29/21 13:19	1
Europium-154	-0.0383	U	0.0690	0.0691		0.118	pCi/g	08/31/21 16:48	09/29/21 13:19	1
Europium-155	0.000	U	0.0936	0.0936		0.411	pCi/g	08/31/21 16:48	09/29/21 13:19	1
Sodium-22	0.0132	U	0.0377	0.0377		0.0688	pCi/g	08/31/21 16:48	09/29/21 13:19	1
Zinc-65	-0.00806	U	0.118	0.118		0.214	pCi/g	08/31/21 16:48	09/29/21 13:19	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.845	U	0.946	0.950	5.00	1.58	pCi/g	09/22/21 10:22	09/30/21 02:30	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	109		40 - 110					09/22/21 10:22	09/30/21 02:30	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	0.389	U	1.74	1.74	5.00	3.13	pCi/g	09/12/21 18:00	09/28/21 01:11	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	90.3		30 - 110					09/12/21 18:00	09/28/21 01:11	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-146-082521

Lab Sample ID: 160-43220-5

Date Collected: 08/25/21 08:45

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 91.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	8.6		0.29	0.018	mg/Kg	☼	09/23/21 14:40	09/23/21 22:05	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	56		21	7.0	ug/Kg	☼	09/15/21 15:00	09/15/21 19:50	1

Client Sample ID: FSS-147-082521

Lab Sample ID: 160-43220-6

Date Collected: 08/25/21 08:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.102	U	0.145	0.145	3.00	0.283	pCi/g	09/20/21 16:47	10/07/21 20:42	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.6		40 - 110					09/20/21 16:47	10/07/21 20:42	1
Y Carrier	97.9		40 - 110					09/20/21 16:47	10/07/21 20:42	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.215	U	0.199	0.200	1.00	0.327	pCi/g	09/27/21 11:23	10/03/21 01:26	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0158	U	0.0279	0.0279	1.00	0.0527	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Plutonium-239/240	0.00592	U	0.0159	0.0160	1.00	0.0382	pCi/g	09/11/21 12:57	09/19/21 23:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.9		30 - 110					09/11/21 12:57	09/19/21 23:44	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.208		0.0917	0.0933	1.00	0.0876	pCi/g	09/12/21 17:59	09/21/21 10:06	1
Uranium-235/236	-0.00276	U	0.0248	0.0248	1.00	0.0785	pCi/g	09/12/21 17:59	09/21/21 10:06	1
Uranium-238	0.166		0.0757	0.0769	1.00	0.0428	pCi/g	09/12/21 17:59	09/21/21 10:06	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	73.8		30 - 110					09/12/21 17:59	09/21/21 10:06	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.468	U	0.931	0.932	5.00	1.58	pCi/g	10/04/21 14:52	10/05/21 07:22	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-147-082521

Lab Sample ID: 160-43220-6

Date Collected: 08/25/21 08:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.251		0.119	0.122		0.190	pCi/g	08/31/21 16:48	09/29/21 11:33	1
Bismuth-212	0.418	U	0.740	0.741		1.27	pCi/g	08/31/21 16:48	09/29/21 11:33	1
Bismuth-214	0.220		0.0826	0.0856		0.0920	pCi/g	08/31/21 16:48	09/29/21 11:33	1
Lead-212	0.327		0.0669	0.0787		0.0741	pCi/g	08/31/21 16:48	09/29/21 11:33	1
Lead-214	0.289		0.0791	0.0844		0.0771	pCi/g	08/31/21 16:48	09/29/21 11:33	1
Potassium-40	2.94		0.681	0.743		0.531	pCi/g	08/31/21 16:48	09/29/21 11:33	1
Radium-226	0.220		0.0826	0.0856	1.00	0.0920	pCi/g	08/31/21 16:48	09/29/21 11:33	1
Thorium-232	0.251		0.119	0.122		0.190	pCi/g	08/31/21 16:48	09/29/21 11:33	1
Cesium-137	0.152		0.0447	0.0473		0.0376	pCi/g	08/31/21 16:48	09/29/21 11:33	1
Europium-152	0.0637	U	0.114	0.114		0.127	pCi/g	08/31/21 16:48	09/29/21 11:33	1
Europium-154	0.0749	U	0.0392	0.0400		0.0898	pCi/g	08/31/21 16:48	09/29/21 11:33	1
Europium-155	-0.0513	U	0.225	0.225		0.384	pCi/g	08/31/21 16:48	09/29/21 11:33	1
Sodium-22	-0.00443	U	0.0319	0.0319		0.0611	pCi/g	08/31/21 16:48	09/29/21 11:33	1
Zinc-65	0.000	U	0.0231	0.0231		0.165	pCi/g	08/31/21 16:48	09/29/21 11:33	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	2.14	U	1.35	1.37	5.00	2.18	pCi/g	09/22/21 10:22	09/30/21 03:03	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	<i>85.1</i>		<i>40 - 110</i>					<i>09/22/21 10:22</i>	<i>09/30/21 03:03</i>	<i>1</i>

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.272	U	1.62	1.62	5.00	2.97	pCi/g	09/12/21 18:00	09/28/21 01:44	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	<i>87.9</i>		<i>30 - 110</i>					<i>09/12/21 18:00</i>	<i>09/28/21 01:44</i>	<i>1</i>

Client Sample ID: FSS-147-082521

Lab Sample ID: 160-43220-6

Date Collected: 08/25/21 08:45

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 86.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.4		0.33	0.020	mg/Kg	☼	09/23/21 14:40	09/23/21 22:09	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	69		20	6.5	ug/Kg	☼	09/15/21 15:00	09/15/21 19:52	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-148-082521

Lab Sample ID: 160-43220-7

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0201	U	0.146	0.146	3.00	0.265	pCi/g	09/20/21 16:47	10/07/21 20:42	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.3		40 - 110					09/20/21 16:47	10/07/21 20:42	1
Y Carrier	101		40 - 110					09/20/21 16:47	10/07/21 20:42	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.111	U	0.178	0.178	1.00	0.309	pCi/g	09/27/21 11:23	10/03/21 01:49	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0313	U	0.0391	0.0392	1.00	0.0642	pCi/g	09/11/21 14:30	09/22/21 11:30	1
Plutonium-239/240	0.00588	U	0.0158	0.0158	1.00	0.0379	pCi/g	09/11/21 14:30	09/22/21 11:30	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	103		30 - 110					09/11/21 14:30	09/22/21 11:30	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.212		0.0853	0.0871	1.00	0.0669	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Uranium-235/236	0.0558	U	0.0492	0.0494	1.00	0.0568	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Uranium-238	0.313		0.0998	0.103	1.00	0.0456	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	85.0		30 - 110					09/12/21 17:52	09/22/21 15:44	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.201	U	0.783	0.783	5.00	1.35	pCi/g	10/04/21 14:52	10/05/21 07:44	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.437		0.104	0.112		0.0661	pCi/g	08/31/21 16:48	09/29/21 11:01	1
Bismuth-212	0.164	U	0.356	0.356		0.632	pCi/g	08/31/21 16:48	09/29/21 11:01	1
Bismuth-214	0.261		0.0848	0.0889		0.0725	pCi/g	08/31/21 16:48	09/29/21 11:01	1
Lead-212	0.420		0.0681	0.0864		0.0589	pCi/g	08/31/21 16:48	09/29/21 11:01	1
Lead-214	0.391		0.0831	0.0921		0.0583	pCi/g	08/31/21 16:48	09/29/21 11:01	1
Potassium-40	4.17		0.753	0.862		0.261	pCi/g	08/31/21 16:48	09/29/21 11:01	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-148-082521

Lab Sample ID: 160-43220-7

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.261		0.0848	0.0889	1.00	0.0725	pCi/g	08/31/21 16:48	09/29/21 11:01	1
Thorium-232	0.437		0.104	0.112		0.0661	pCi/g	08/31/21 16:48	09/29/21 11:01	1
Cesium-137	0.137		0.0407	0.0431		0.0283	pCi/g	08/31/21 16:48	09/29/21 11:01	1
Europium-152	-0.0476	U	0.0851	0.0852		0.145	pCi/g	08/31/21 16:48	09/29/21 11:01	1
Europium-154	0.127		0.0532	0.0548		0.0963	pCi/g	08/31/21 16:48	09/29/21 11:01	1
Europium-155	-0.0000000	U	0.191	0.191		0.331	pCi/g	08/31/21 16:48	09/29/21 11:01	1
	0629									
Sodium-22	-0.0327	U	0.0492	0.0493		0.0843	pCi/g	08/31/21 16:48	09/29/21 11:01	1
Zinc-65	-0.0811	U	0.137	0.138		0.236	pCi/g	08/31/21 16:48	09/29/21 11:01	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.57	U	1.37	1.38	5.00	2.26	pCi/g	09/22/21 10:22	09/30/21 03:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	75.7		40 - 110					09/22/21 10:22	09/30/21 03:37	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.51	U	1.28	1.29	5.00	2.49	pCi/g	09/12/21 17:54	10/01/21 02:51	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	103		30 - 110					09/12/21 17:54	10/01/21 02:51	1

Client Sample ID: FSS-148-082521

Lab Sample ID: 160-43220-7

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 95.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	9.2		0.27	0.016	mg/Kg	☼	09/23/21 14:40	09/23/21 22:13	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	68		18	5.9	ug/Kg	☼	09/15/21 15:00	09/15/21 19:55	1

Client Sample ID: FSS-348-082521

Lab Sample ID: 160-43220-8

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.149	U	0.175	0.175	3.00	0.295	pCi/g	09/20/21 16:47	10/07/21 20:42	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-348-082521

Lab Sample ID: 160-43220-8

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	82.0		40 - 110	09/20/21 16:47	10/07/21 20:42	1
Y Carrier	102		40 - 110	09/20/21 16:47	10/07/21 20:42	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.279	U	0.198	0.199	1.00	0.313	pCi/g	09/24/21 17:21	10/02/21 20:09	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0238	U	0.0220	0.0221	1.00	0.0821	pCi/g	09/11/21 14:30	09/22/21 11:30	1
Plutonium-239/240	-0.0159	U	0.0206	0.0206	1.00	0.0744	pCi/g	09/11/21 14:30	09/22/21 11:30	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	102		30 - 110	09/11/21 14:30	09/22/21 11:30	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.263		0.0901	0.0926	1.00	0.0517	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Uranium-235/236	0.0265	U	0.0330	0.0331	1.00	0.0466	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Uranium-238	0.322		0.0996	0.103	1.00	0.0549	pCi/g	09/12/21 17:52	09/22/21 15:44	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	106		30 - 110	09/12/21 17:52	09/22/21 15:44	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.0525	U	0.926	0.926	5.00	1.62	pCi/g	10/04/21 14:52	10/05/21 08:07	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.392		0.297	0.300		0.318	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Bismuth-212	0.000	U	0.659	0.659		1.42	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Bismuth-214	0.324		0.125	0.129		0.135	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Lead-212	0.304		0.0867	0.0921		0.108	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Lead-214	0.308		0.113	0.117		0.122	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Potassium-40	4.19		0.919	1.01		0.386	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Radium-226	0.324		0.125	0.129	1.00	0.135	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Thorium-232	0.392		0.297	0.300		0.318	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Cesium-137	0.0423	U	0.0764	0.0766		0.132	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Europium-152	0.128	U	0.186	0.186		0.165	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Europium-154	0.0148	U	0.0203	0.0203		0.141	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Europium-155	0.0373	U	0.0429	0.0431		0.598	pCi/g	08/31/21 16:48	09/29/21 11:00	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-348-082521

Lab Sample ID: 160-43220-8

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Sodium-22	-0.0218	U	0.0512	0.0513		0.0925	pCi/g	08/31/21 16:48	09/29/21 11:00	1
Zinc-65	0.000	U	0.0557	0.0557		0.279	pCi/g	08/31/21 16:48	09/29/21 11:00	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.55	U	1.28	1.29	5.00	2.14	pCi/g	09/22/21 10:22	09/30/21 04:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	89.9		40 - 110					09/22/21 10:22	09/30/21 04:11	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.17	U	1.28	1.29	5.00	2.42	pCi/g	09/12/21 17:54	10/01/21 03:58	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	102		30 - 110					09/12/21 17:54	10/01/21 03:58	1

Client Sample ID: FSS-348-082521

Lab Sample ID: 160-43220-8

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 96.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.9		0.27	0.017	mg/Kg	☼	09/23/21 14:40	09/23/21 22:16	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	47		18	5.9	ug/Kg	☼	09/15/21 15:00	09/15/21 19:57	1

Client Sample ID: FSS-149-082521

Lab Sample ID: 160-43220-9

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0215	U	0.129	0.129	3.00	0.242	pCi/g	09/20/21 16:47	10/07/21 20:42	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.7		40 - 110					09/20/21 16:47	10/07/21 20:42	1
Y Carrier	101		40 - 110					09/20/21 16:47	10/07/21 20:42	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-149-082521

Lab Sample ID: 160-43220-9

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.236	U	0.194	0.195	1.00	0.314	pCi/g	09/24/21 17:21	10/02/21 20:32	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0110	U	0.0209	0.0209	1.00	0.0409	pCi/g	09/11/21 14:30	09/22/21 11:30	1
Plutonium-239/240	0.00548	U	0.0148	0.0148	1.00	0.0354	pCi/g	09/11/21 14:30	09/22/21 11:30	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110					09/11/21 14:30	09/22/21 11:30	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.383		0.112	0.117	1.00	0.0618	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Uranium-235/236	0.00769	U	0.0207	0.0207	1.00	0.0496	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Uranium-238	0.343		0.106	0.110	1.00	0.0585	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	95.9		30 - 110					09/12/21 17:52	09/22/21 15:44	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.202	U	0.819	0.820	5.00	1.45	pCi/g	10/04/21 14:52	10/05/21 08:30	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.624		0.140	0.153		0.0927	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Bismuth-212	0.221	U	0.526	0.526		0.937	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Bismuth-214	0.355		0.106	0.112		0.103	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Lead-212	0.313		0.0816	0.0877		0.0972	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Lead-214	0.392		0.110	0.117		0.130	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Potassium-40	4.34		0.902	0.999		0.359	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Radium-226	0.355		0.106	0.112	1.00	0.103	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Thorium-232	0.624		0.140	0.153		0.0927	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Cesium-137	-0.00105	U	0.0511	0.0511		0.0949	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Europium-152	-0.0209	U	0.109	0.109		0.191	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Europium-154	0.0291	U	0.0484	0.0485		0.148	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Europium-155	-0.0964	U	0.335	0.335		0.571	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Sodium-22	-0.0468	U	0.0608	0.0610		0.103	pCi/g	08/31/21 16:48	09/29/21 12:47	1
Zinc-65	-0.0486	U	0.159	0.159		0.282	pCi/g	08/31/21 16:48	09/29/21 12:47	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-149-082521

Lab Sample ID: 160-43220-9

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	2.08		1.28	1.30	5.00	2.06	pCi/g	09/22/21 10:22	09/30/21 04:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	87.8		40 - 110					09/22/21 10:22	09/30/21 04:44	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.622	U	1.37	1.37	5.00	2.52	pCi/g	09/12/21 17:54	10/01/21 04:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110					09/12/21 17:54	10/01/21 04:32	1

Client Sample ID: FSS-149-082521

Lab Sample ID: 160-43220-9

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 95.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.5		0.25	0.015	mg/Kg	☼	09/23/21 14:40	09/23/21 22:20	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	33		18	5.9	ug/Kg	☼	09/15/21 15:00	09/15/21 20:00	1

Client Sample ID: FSS-349-082521

Lab Sample ID: 160-43220-10

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0383	U	0.135	0.135	3.00	0.242	pCi/g	09/20/21 16:47	10/07/21 20:42	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.6		40 - 110					09/20/21 16:47	10/07/21 20:42	1
Y Carrier	102		40 - 110					09/20/21 16:47	10/07/21 20:42	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.231	U	0.193	0.195	1.00	0.315	pCi/g	09/24/21 17:21	10/02/21 20:54	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-349-082521

Lab Sample ID: 160-43220-10

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	0.00387	U	0.0161	0.0161	1.00	0.0434	pCi/g	09/11/21 14:30	09/22/21 11:30	1
Plutonium-239/240	0.000	U	0.0170	0.0170	1.00	0.0518	pCi/g	09/11/21 14:30	09/22/21 11:30	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	100		30 - 110					09/11/21 14:30	09/22/21 11:30	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.263		0.0947	0.0971	1.00	0.0776	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Uranium-235/236	-0.0122	U	0.0107	0.0107	1.00	0.0695	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Uranium-238	0.304		0.0960	0.0992	1.00	0.0379	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Uranium-232</i>	85.2		30 - 110					09/12/21 17:52	09/22/21 15:44	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.0113	U	0.791	0.791	5.00	1.38	pCi/g	10/04/21 14:52	10/05/21 08:52	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.422		0.106	0.114		0.0629	pCi/g	08/31/21 16:48	09/29/21 11:38	1
Bismuth-212	0.156	U	0.257	0.258		0.449	pCi/g	08/31/21 16:48	09/29/21 11:38	1
Bismuth-214	0.267		0.0785	0.0831		0.0952	pCi/g	08/31/21 16:48	09/29/21 11:38	1
Lead-212	0.415		0.0664	0.0848		0.0582	pCi/g	08/31/21 16:48	09/29/21 11:38	1
Lead-214	0.324		0.0611	0.0694		0.0782	pCi/g	08/31/21 16:48	09/29/21 11:38	1
Potassium-40	4.51		0.764	0.888		0.248	pCi/g	08/31/21 16:48	09/29/21 11:38	1
Radium-226	0.267		0.0785	0.0831	1.00	0.0952	pCi/g	08/31/21 16:48	09/29/21 11:38	1
Thorium-232	0.422		0.106	0.114		0.0629	pCi/g	08/31/21 16:48	09/29/21 11:38	1
Cesium-137	0.0159	U	0.0411	0.0412		0.0724	pCi/g	08/31/21 16:48	09/29/21 11:38	1
Europium-152	0.0207	U	0.0611	0.0612		0.131	pCi/g	08/31/21 16:48	09/29/21 11:38	1
Europium-154	0.00685	U	0.0141	0.0141		0.0903	pCi/g	08/31/21 16:48	09/29/21 11:38	1
Europium-155	-0.00338	U	0.202	0.202		0.347	pCi/g	08/31/21 16:48	09/29/21 11:38	1
Sodium-22	0.00752	U	0.0234	0.0234		0.0445	pCi/g	08/31/21 16:48	09/29/21 11:38	1
Zinc-65	0.000	U	0.0420	0.0420		0.197	pCi/g	08/31/21 16:48	09/29/21 11:38	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	3.02		1.74	1.77	5.00	2.80	pCi/g	09/22/21 10:22	09/30/21 05:18	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-349-082521

Lab Sample ID: 160-43220-10

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	70.3		40 - 110	09/22/21 10:22	09/30/21 05:18	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.30	U	1.33	1.34	5.00	2.55	pCi/g	09/12/21 17:54	10/01/21 05:05	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	100		30 - 110	09/12/21 17:54	10/01/21 05:05	1

Client Sample ID: FSS-349-082521

Lab Sample ID: 160-43220-10

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 95.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.6		0.31	0.019	mg/Kg	☼	09/23/21 14:40	09/23/21 22:30	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	31		19	6.1	ug/Kg	☼	09/15/21 15:00	09/15/21 20:07	1

Client Sample ID: FSS-150-082521

Lab Sample ID: 160-43220-11

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.171	U	0.149	0.149	3.00	0.298	pCi/g	09/20/21 16:47	10/07/21 20:42	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	82.3		40 - 110	09/20/21 16:47	10/07/21 20:42	1
Y Carrier	101		40 - 110	09/20/21 16:47	10/07/21 20:42	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.115	U	0.183	0.183	1.00	0.321	pCi/g	09/24/21 17:21	10/02/21 21:17	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0135	U	0.0274	0.0274	1.00	0.0547	pCi/g	09/11/21 14:30	09/22/21 11:30	1
Plutonium-239/240	0.0154	U	0.0213	0.0214	1.00	0.0231	pCi/g	09/11/21 14:30	09/22/21 11:30	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	93.3		30 - 110	09/11/21 14:30	09/22/21 11:30	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-150-082521

Lab Sample ID: 160-43220-11

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.278		0.0937	0.0965	1.00	0.0587	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Uranium-235/236	0.0170	U	0.0274	0.0274	1.00	0.0471	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Uranium-238	0.226		0.0841	0.0862	1.00	0.0521	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	89.1		30 - 110					09/12/21 17:52	09/22/21 15:44	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.102	U	0.870	0.870	5.00	1.54	pCi/g	10/04/21 14:52	10/05/21 09:15	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.219	U	0.0914	0.0940		0.265	pCi/g	08/31/21 16:48	09/29/21 12:46	1
Bismuth-212	0.286	U	0.439	0.440		0.752	pCi/g	08/31/21 16:48	09/29/21 12:46	1
Bismuth-214	0.501		0.111	0.122		0.0904	pCi/g	08/31/21 16:48	09/29/21 12:46	1
Lead-212	0.326		0.0653	0.0773		0.0674	pCi/g	08/31/21 16:48	09/29/21 12:46	1
Lead-214	0.506		0.0883	0.102		0.0830	pCi/g	08/31/21 16:48	09/29/21 12:46	1
Potassium-40	3.83		0.783	0.872		0.554	pCi/g	08/31/21 16:48	09/29/21 12:46	1
Radium-226	0.501		0.111	0.122	1.00	0.0904	pCi/g	08/31/21 16:48	09/29/21 12:46	1
Thorium-232	0.219	U	0.0914	0.0940		0.265	pCi/g	08/31/21 16:48	09/29/21 12:46	1
Cesium-137	0.0258	U	0.0484	0.0485		0.0837	pCi/g	08/31/21 16:48	09/29/21 12:46	1
Europium-152	-0.0424	U	0.0812	0.0814		0.139	pCi/g	08/31/21 16:48	09/29/21 12:46	1
Europium-154	0.0599	U	0.0875	0.0877		0.0854	pCi/g	08/31/21 16:48	09/29/21 12:46	1
Europium-155	0.0683	U	0.137	0.137		0.234	pCi/g	08/31/21 16:48	09/29/21 12:46	1
Sodium-22	0.0242	U	0.0296	0.0297		0.0490	pCi/g	08/31/21 16:48	09/29/21 12:46	1
Zinc-65	0.000	U	0.0342	0.0342		0.194	pCi/g	08/31/21 16:48	09/29/21 12:46	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.53	U	1.36	1.37	5.00	2.28	pCi/g	09/22/21 10:22	09/30/21 05:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	81.9		40 - 110					09/22/21 10:22	09/30/21 05:51	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.829	U	1.49	1.49	5.00	2.79	pCi/g	09/12/21 17:54	10/01/21 05:39	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	93.3		30 - 110					09/12/21 17:54	10/01/21 05:39	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-150-082521

Lab Sample ID: 160-43220-11

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 95.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.5		0.31	0.019	mg/Kg	*	09/23/21 14:40	09/23/21 22:34	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	86	J	20	6.6	ug/Kg	*	09/15/21 15:00	09/15/21 20:10	1

Client Sample ID: FSS-350-082521

Lab Sample ID: 160-43220-12

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

alt 10/21/21

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.164	U	0.163	0.163	3.00	0.270	pCi/g	09/20/21 16:47	10/07/21 20:44	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Sr Carrier</i>	80.9		40 - 110					09/20/21 16:47	10/07/21 20:44	1
<i>Y Carrier</i>	102		40 - 110					09/20/21 16:47	10/07/21 20:44	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.206	U	0.193	0.194	1.00	0.320	pCi/g	09/24/21 17:21	10/02/21 21:39	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0136	U	0.0191	0.0191	1.00	0.0420	pCi/g	09/11/21 14:30	09/23/21 20:03	1
Plutonium-239/240	-0.0195	U	0.0143	0.0144	1.00	0.0372	pCi/g	09/11/21 14:30	09/23/21 20:03	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	103		30 - 110					09/11/21 14:30	09/23/21 20:03	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.311		0.0965	0.0998	1.00	0.0430	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Uranium-235/236	0.00955	U	0.0187	0.0187	1.00	0.0287	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Uranium-238	0.368		0.104	0.108	1.00	0.0230	pCi/g	09/12/21 17:52	09/22/21 15:44	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Uranium-232</i>	88.5		30 - 110					09/12/21 17:52	09/22/21 15:44	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.399	U	0.805	0.806	5.00	1.37	pCi/g	10/04/21 14:52	10/05/21 09:38	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-350-082521

Lab Sample ID: 160-43220-12

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium-228	0.438		0.127	0.134		0.152	pCi/g	08/31/21 16:48	09/29/21 11:36	1
Bismuth-212	0.181	U	0.527	0.528		0.941	pCi/g	08/31/21 16:48	09/29/21 11:36	1
Bismuth-214	0.399		0.108	0.116		0.0894	pCi/g	08/31/21 16:48	09/29/21 11:36	1
Lead-212	0.376		0.0818	0.0947		0.0938	pCi/g	08/31/21 16:48	09/29/21 11:36	1
Lead-214	0.338		0.0897	0.0961		0.0826	pCi/g	08/31/21 16:48	09/29/21 11:36	1
Potassium-40	4.39		0.909	1.01		0.673	pCi/g	08/31/21 16:48	09/29/21 11:36	1
Radium-226	0.399		0.108	0.116	1.00	0.0894	pCi/g	08/31/21 16:48	09/29/21 11:36	1
Thorium-232	0.438		0.127	0.134		0.152	pCi/g	08/31/21 16:48	09/29/21 11:36	1
Cesium-137	0.0203	U	0.0369	0.0369		0.0645	pCi/g	08/31/21 16:48	09/29/21 11:36	1
Europium-152	0.00595	U	0.0117	0.0117		0.141	pCi/g	08/31/21 16:48	09/29/21 11:36	1
Europium-154	0.0727	U	0.108	0.108		0.107	pCi/g	08/31/21 16:48	09/29/21 11:36	1
Europium-155	0.000	U	0.0594	0.0594		0.300	pCi/g	08/31/21 16:48	09/29/21 11:36	1
Sodium-22	-0.0176	U	0.0413	0.0413		0.0745	pCi/g	08/31/21 16:48	09/29/21 11:36	1
Zinc-65	-0.0734	U	0.139	0.139		0.241	pCi/g	08/31/21 16:48	09/29/21 11:36	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.90	U	2.09	2.10	5.00	3.52	pCi/g	09/22/21 10:22	09/30/21 06:25	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	50.0		40 - 110					09/22/21 10:22	09/30/21 06:25	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-1.60	U	1.20	1.21	5.00	2.31	pCi/g	09/12/21 17:54	10/01/21 06:12	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	103		30 - 110					09/12/21 17:54	10/01/21 06:12	1

Client Sample ID: FSS-350-082521

Lab Sample ID: 160-43220-12

Date Collected: 08/25/21 09:15

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 92.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.8		0.29	0.018	mg/Kg	☆	09/23/21 14:40	09/23/21 22:37	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	42	J	20	6.4	ug/Kg	☆	09/15/21 15:00	09/15/21 20:13	1

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10/21/21

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-151-082521

Lab Sample ID: 160-43220-13

Date Collected: 08/25/21 09:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.365		0.205	0.207	3.00	0.320	pCi/g	09/20/21 16:47	10/07/21 20:44	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.7		40 - 110					09/20/21 16:47	10/07/21 20:44	1
Y Carrier	100		40 - 110					09/20/21 16:47	10/07/21 20:44	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.161	U	0.185	0.185	1.00	0.313	pCi/g	09/24/21 17:21	10/02/21 22:02	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0286	U	0.0314	0.0315	1.00	0.100	pCi/g	09/11/21 14:30	09/22/21 11:30	1
Plutonium-239/240	0.00660	U	0.0326	0.0326	1.00	0.0750	pCi/g	09/11/21 14:30	09/22/21 11:30	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	94.0		30 - 110					09/11/21 14:30	09/22/21 11:30	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.309		0.101	0.104	1.00	0.0474	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Uranium-235/236	0.0105	U	0.0206	0.0207	1.00	0.0316	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Uranium-238	0.312		0.101	0.104	1.00	0.0253	pCi/g	09/12/21 17:52	09/22/21 15:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.9		30 - 110					09/12/21 17:52	09/22/21 15:44	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.365	U	0.928	0.929	5.00	1.59	pCi/g	10/04/21 14:52	10/05/21 10:00	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.387		0.113	0.120		0.0634	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Bismuth-212	0.131	U	0.767	0.767		1.35	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Bismuth-214	0.367		0.0776	0.0861		0.0294	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Lead-212	0.413		0.0665	0.0846		0.0586	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Lead-214	0.387		0.103	0.110		0.0868	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Potassium-40	4.38		0.756	0.875		0.250	pCi/g	08/31/21 16:48	09/29/21 13:21	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-151-082521

Lab Sample ID: 160-43220-13

Date Collected: 08/25/21 09:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Radium-226	0.367		0.0776	0.0861	1.00	0.0294	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Thorium-232	0.387		0.113	0.120		0.0634	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Cesium-137	0.450		0.0673	0.0815		0.0297	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Europium-152	0.0467	U	0.0431	0.0434		0.151	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Europium-154	0.0488	U	0.0833	0.0834		0.104	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Europium-155	0.000	U	0.0754	0.0754		0.445	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Sodium-22	-0.00650	U	0.0382	0.0382		0.0713	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Zinc-65	0.000	U	0.0620	0.0620		0.140	pCi/g	08/31/21 16:48	09/29/21 13:21	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	1.83	U	1.29	1.31	5.00	2.11	pCi/g	09/22/21 10:22	09/30/21 06:58	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	85.4		40 - 110					09/22/21 10:22	09/30/21 06:58	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-0.943	U	1.41	1.41	5.00	2.62	pCi/g	09/12/21 17:54	10/01/21 06:46	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	94.0		30 - 110					09/12/21 17:54	10/01/21 06:46	1

Client Sample ID: FSS-151-082521

Lab Sample ID: 160-43220-13

Date Collected: 08/25/21 09:45

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 94.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	9.7		0.25	0.015	mg/Kg	☼	09/23/21 14:40	09/23/21 22:41	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	46		20	6.4	ug/Kg	☼	09/15/21 15:00	09/15/21 20:15	1

Client Sample ID: FSS-152-082521

Lab Sample ID: 160-43220-14

Date Collected: 08/25/21 09:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Strontium-90	0.0976	U	0.154	0.154	3.00	0.266	pCi/g	09/20/21 16:47	10/07/21 20:44	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-152-082521

Lab Sample ID: 160-43220-14

Date Collected: 08/25/21 09:45

Matrix: Solid

Date Received: 08/26/21 09:00

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	80.4		40 - 110	09/20/21 16:47	10/07/21 20:44	1
Y Carrier	100		40 - 110	09/20/21 16:47	10/07/21 20:44	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0992	U	0.176	0.176	1.00	0.309	pCi/g	09/24/21 17:21	10/02/21 22:25	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00397	U	0.0240	0.0240	1.00	0.0595	pCi/g	09/11/21 14:30	09/22/21 11:30	1
Plutonium-239/240	0.0377	U	0.0350	0.0352	1.00	0.0384	pCi/g	09/11/21 14:30	09/22/21 11:30	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	106		30 - 110	09/11/21 14:30	09/22/21 11:30	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.284		0.0974	0.100	1.00	0.0666	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-235/236	0.0454	U	0.0448	0.0450	1.00	0.0566	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-238	0.283		0.0972	0.100	1.00	0.0664	pCi/g	09/12/21 17:52	09/22/21 15:46	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	84.7		30 - 110	09/12/21 17:52	09/22/21 15:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.384	U	0.615	0.616	5.00	1.12	pCi/g	10/04/21 14:52	10/05/21 10:23	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.385		0.172	0.176		0.295	pCi/g	08/31/21 16:48	09/30/21 09:40	1
Bismuth-212	-0.242	U	0.733	0.733		1.29	pCi/g	08/31/21 16:48	09/30/21 09:40	1
Bismuth-214	0.296		0.0955	0.100		0.0884	pCi/g	08/31/21 16:48	09/30/21 09:40	1
Lead-212	0.412		0.0887	0.103		0.104	pCi/g	08/31/21 16:48	09/30/21 09:40	1
Lead-214	0.290		0.101	0.105		0.112	pCi/g	08/31/21 16:48	09/30/21 09:40	1
Potassium-40	3.64		0.997	1.06		0.885	pCi/g	08/31/21 16:48	09/30/21 09:40	1
Radium-226	0.296		0.0955	0.100	1.00	0.0884	pCi/g	08/31/21 16:48	09/30/21 09:40	1
Thorium-232	0.385		0.172	0.176		0.295	pCi/g	08/31/21 16:48	09/30/21 09:40	1
Cesium-137	0.537		0.0787	0.0958		0.0221	pCi/g	08/31/21 16:48	09/30/21 09:40	1
Europium-152	0.138	U	0.0995	0.100		0.170	pCi/g	08/31/21 16:48	09/30/21 09:40	1
Europium-154	0.0578	U	0.0930	0.0932		0.118	pCi/g	08/31/21 16:48	09/30/21 09:40	1
Europium-155	0.000	U	0.0801	0.0801		0.342	pCi/g	08/31/21 16:48	09/30/21 09:40	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-152-082521

Lab Sample ID: 160-43220-14

Date Collected: 08/25/21 09:45

Matrix: Solid

Date Received: 08/26/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Sodium-22	0.0252	U	0.0202	0.0204		0.0310	pCi/g	08/31/21 16:48	09/30/21 09:40	1
Zinc-65	0.0187	U	0.145	0.145		0.261	pCi/g	08/31/21 16:48	09/30/21 09:40	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	2.79		1.60	1.62	5.00	2.55	pCi/g	09/22/21 10:22	09/30/21 07:32	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ni	74.2		40 - 110					09/22/21 10:22	09/30/21 07:32	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.518	U	1.16	1.16	5.00	2.15	pCi/g	09/12/21 17:54	10/02/21 13:51	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Pu-242 (T)	106		30 - 110					09/12/21 17:54	10/02/21 13:51	1

Client Sample ID: FSS-152-082521

Lab Sample ID: 160-43220-14

Date Collected: 08/25/21 09:45

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 94.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	8.4		0.28	0.017	mg/Kg	☼	09/23/21 14:40	09/23/21 22:44	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	37		18	5.9	ug/Kg	☼	09/15/21 15:00	09/15/21 20:18	1

Client Sample ID: FSS-088-081921

Lab Sample ID: 160-43220-15

Date Collected: 08/25/21 14:00

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0643	U	0.154	0.154	3.00	0.271	pCi/g	09/20/21 16:47	10/07/21 20:45	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Sr Carrier	82.1		40 - 110					09/20/21 16:47	10/07/21 20:45	1
Y Carrier	101		40 - 110					09/20/21 16:47	10/07/21 20:45	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-088-081921

Lab Sample ID: 160-43220-15

Date Collected: 08/25/21 14:00

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.253	U	0.196	0.197	1.00	0.314	pCi/g	09/24/21 17:21	10/02/21 22:47	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0210	U	0.0311	0.0312	1.00	0.0544	pCi/g	09/11/21 14:30	09/22/21 11:31	1
Plutonium-239/240	0.00957	U	0.0222	0.0222	1.00	0.0474	pCi/g	09/11/21 14:30	09/22/21 11:31	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	94.6		30 - 110					09/11/21 14:30	09/22/21 11:31	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.383		0.108	0.113	1.00	0.0643	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-235/236	0.0352	U	0.0371	0.0372	1.00	0.0455	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-238	0.356		0.103	0.107	1.00	0.0466	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	88.6		30 - 110					09/12/21 17:52	09/22/21 15:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.0445	U	0.595	0.595	5.00	1.04	pCi/g	10/04/21 14:52	10/05/21 10:46	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.301	U	0.157	0.160		0.316	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Bismuth-212	0.000	U	0.619	0.619		1.36	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Bismuth-214	0.371		0.122	0.127		0.124	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Lead-212	0.391		0.0898	0.0983		0.0999	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Lead-214	0.502		0.131	0.140		0.134	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Potassium-40	6.98		1.18	1.37		0.384	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Radium-226	0.371		0.122	0.127	1.00	0.124	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Thorium-232	0.301	U	0.157	0.160		0.316	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Cesium-137	0.149		0.0455	0.0479		0.0267	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Europium-152	0.0744	U	0.0829	0.0832		0.191	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Europium-154	0.0334	U	0.0801	0.0801		0.140	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Europium-155	-0.0883	U	0.357	0.357		0.609	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Sodium-22	0.0344	U	0.0418	0.0419		0.0690	pCi/g	08/31/21 16:48	09/29/21 11:35	1
Zinc-65	0.0330	U	0.142	0.142		0.257	pCi/g	08/31/21 16:48	09/29/21 11:35	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-088-081921

Lab Sample ID: 160-43220-15

Date Collected: 08/25/21 14:00

Matrix: Solid

Date Received: 08/26/21 09:00

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.46	U	1.11	1.12	5.00	1.85	pCi/g	09/22/21 10:22	09/30/21 08:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	104		40 - 110					09/22/21 10:22	09/30/21 08:05	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.950	U	1.40	1.40	5.00	2.59	pCi/g	09/12/21 17:54	10/01/21 07:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	94.6		30 - 110					09/12/21 17:54	10/01/21 07:20	1

Client Sample ID: FSS-088-081921

Lab Sample ID: 160-43220-15

Date Collected: 08/25/21 14:00

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 93.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	42		0.30	0.018	mg/Kg	☼	09/23/21 14:40	09/23/21 22:48	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	49		19	6.0	ug/Kg	☼	09/15/21 15:00	09/15/21 20:20	1

Client Sample ID: FSS-089-081921

Lab Sample ID: 160-43220-16

Date Collected: 08/25/21 14:00

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.285		0.161	0.163	3.00	0.247	pCi/g	09/20/21 16:47	10/07/21 20:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.0		40 - 110					09/20/21 16:47	10/07/21 20:45	1
Y Carrier	101		40 - 110					09/20/21 16:47	10/07/21 20:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.233	U	0.196	0.197	1.00	0.322	pCi/g	09/24/21 17:21	10/02/21 23:10	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-089-081921

Lab Sample ID: 160-43220-16

Date Collected: 08/25/21 14:00

Matrix: Solid

Date Received: 08/26/21 09:00

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	0.00567	U	0.00981	0.00982	1.00	0.0181	pCi/g	09/11/21 14:30	09/23/21 20:03	1
Plutonium-239/240	0.00757	U	0.00909	0.00911	1.00	0.0145	pCi/g	09/11/21 14:30	09/23/21 20:03	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	92.5		30 - 110					09/11/21 14:30	09/23/21 20:03	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.188		0.0746	0.0762	1.00	0.0368	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-235/236	0.00710	U	0.0191	0.0191	1.00	0.0458	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-238	0.150		0.0687	0.0697	1.00	0.0540	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Uranium-232</i>	86.1		30 - 110					09/12/21 17:52	09/22/21 15:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.0959	U	0.909	0.909	5.00	1.59	pCi/g	10/04/21 14:52	10/05/21 11:08	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.352		0.121	0.126		0.0784	pCi/g	08/31/21 16:48	09/29/21 12:48	1
Bismuth-212	-0.299	U	0.734	0.735		1.28	pCi/g	08/31/21 16:48	09/29/21 12:48	1
Bismuth-214	0.0765	U	0.0735	0.0739		0.203	pCi/g	08/31/21 16:48	09/29/21 12:48	1
Lead-212	0.371		0.0742	0.0879		0.0738	pCi/g	08/31/21 16:48	09/29/21 12:48	1
Lead-214	0.112	U	0.0634	0.0645		0.175	pCi/g	08/31/21 16:48	09/29/21 12:48	1
Potassium-40	3.04		1.03	1.08		0.982	pCi/g	08/31/21 16:48	09/29/21 12:48	1
Radium-226	0.0765	U	0.0735	0.0739	1.00	0.203	pCi/g	08/31/21 16:48	09/29/21 12:48	1
Thorium-232	0.352		0.121	0.126		0.0784	pCi/g	08/31/21 16:48	09/29/21 12:48	1
Cesium-137	-0.0323	U	0.0547	0.0548		0.0941	pCi/g	08/31/21 16:48	09/29/21 12:48	1
Europium-152	0.0699	U	0.138	0.139		0.137	pCi/g	08/31/21 16:48	09/29/21 12:48	1
Europium-154	0.0407	U	0.0715	0.0716		0.0924	pCi/g	08/31/21 16:48	09/29/21 12:48	1
Europium-155	0.000	U	0.0679	0.0679		0.271	pCi/g	08/31/21 16:48	09/29/21 12:48	1
Sodium-22	-0.0614	U	0.0665	0.0668		0.110	pCi/g	08/31/21 16:48	09/29/21 12:48	1
Zinc-65	0.000	U	0.0140	0.0140		0.221	pCi/g	08/31/21 16:48	09/29/21 12:48	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	2.59		1.52	1.55	5.00	2.45	pCi/g	09/22/21 10:22	09/30/21 08:39	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-089-081921

Lab Sample ID: 160-43220-16

Date Collected: 08/25/21 14:00

Matrix: Solid

Date Received: 08/26/21 09:00

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	78.1		40 - 110	09/22/21 10:22	09/30/21 08:39	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.642	U	1.41	1.41	5.00	2.58	pCi/g	09/12/21 17:54	10/01/21 07:53	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	92.5		30 - 110	09/12/21 17:54	10/01/21 07:53	1

Client Sample ID: FSS-089-081921

Lab Sample ID: 160-43220-16

Date Collected: 08/25/21 14:00

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 96.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.9		0.31	0.019	mg/Kg	☼	09/23/21 14:40	09/23/21 22:51	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.2	ug/Kg	☼	09/15/21 15:00	09/15/21 20:23	1

Client Sample ID: FSS-090-081921

Lab Sample ID: 160-43220-17

Date Collected: 08/19/21 14:00

Matrix: Solid

Date Received: 08/26/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0729	U	0.125	0.126	3.00	0.218	pCi/g	09/20/21 16:47	10/07/21 20:45	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	86.3		40 - 110	09/20/21 16:47	10/07/21 20:45	1
Y Carrier	98.7		40 - 110	09/20/21 16:47	10/07/21 20:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.260	U	0.199	0.200	1.00	0.320	pCi/g	09/24/21 17:21	10/02/21 23:33	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0121	U	0.0339	0.0339	1.00	0.0709	pCi/g	09/11/21 14:30	09/22/21 11:31	1
Plutonium-239/240	-0.00603	U	0.00683	0.00685	1.00	0.0498	pCi/g	09/11/21 14:30	09/22/21 11:31	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	83.9		30 - 110	09/11/21 14:30	09/22/21 11:31	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-090-081921

Lab Sample ID: 160-43220-17

Date Collected: 08/19/21 14:00

Matrix: Solid

Date Received: 08/26/21 09:00

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Uranium-233/234	0.135	U	0.107	0.108	1.00	0.167	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-235/236	0.0258	U	0.0530	0.0531	1.00	0.102	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-238	0.203		0.0871	0.0887	1.00	0.0818	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	77.5		30 - 110					09/12/21 17:52	09/22/21 15:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Carbon-14	0.167	U	0.921	0.921	5.00	1.60	pCi/g	10/04/21 14:52	10/05/21 11:31	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Actinium 228	0.280		0.118	0.121		0.0888	pCi/g	08/31/21 16:48	09/29/21 11:03	1
Bismuth-212	-0.453	U	0.765	0.767		1.32	pCi/g	08/31/21 16:48	09/29/21 11:03	1
Bismuth-214	0.337		0.119	0.124		0.113	pCi/g	08/31/21 16:48	09/29/21 11:03	1
Lead-212	0.350		0.0824	0.0936		0.0934	pCi/g	08/31/21 16:48	09/29/21 11:03	1
Lead-214	0.377		0.0975	0.105		0.111	pCi/g	08/31/21 16:48	09/29/21 11:03	1
Potassium-40	4.62		0.989	1.09		0.752	pCi/g	08/31/21 16:48	09/29/21 11:03	1
Radium-226	0.337		0.119	0.124	1.00	0.113	pCi/g	08/31/21 16:48	09/29/21 11:03	1
Thorium-232	0.280		0.118	0.121		0.0888	pCi/g	08/31/21 16:48	09/29/21 11:03	1
Cesium-137	-0.0419	U	0.0705	0.0706		0.121	pCi/g	08/31/21 16:48	09/29/21 11:03	1
Europium-152	0.207		0.0910	0.0935		0.140	pCi/g	08/31/21 16:48	09/29/21 11:03	1
Europium-154	0.0386	U	0.0909	0.0909		0.106	pCi/g	08/31/21 16:48	09/29/21 11:03	1
Europium-155	0.0579	U	0.179	0.179		0.309	pCi/g	08/31/21 16:48	09/29/21 11:03	1
Sodium-22	-0.00603	U	0.0434	0.0435		0.0832	pCi/g	08/31/21 16:48	09/29/21 11:03	1
Zinc-65	0.000	U	0.0547	0.0547		0.217	pCi/g	08/31/21 16:48	09/29/21 11:03	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	2.06	U	1.35	1.36	5.00	2.16	pCi/g	09/22/21 10:22	09/30/21 09:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	80.1		40 - 110					09/22/21 10:22	09/30/21 09:12	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-0.519	U	1.69	1.69	5.00	3.11	pCi/g	09/12/21 17:54	10/01/21 08:27	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	83.9		30 - 110					09/12/21 17:54	10/01/21 08:27	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43220-1

Client Sample ID: FSS-090-081921

Lab Sample ID: 160-43220-17

Date Collected: 08/19/21 14:00

Matrix: Solid

Date Received: 08/26/21 09:00

Percent Solids: 94.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	1.6		0.26	0.016	mg/Kg	☼	09/23/21 14:40	09/23/21 22:55	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.0	ug/Kg	☼	09/15/21 15:00	09/15/21 20:25	1

Laboratory Report

Eurofins TestAmerica, St. Louis
13715 Rider Trail North
Earth City, MO 63045
United States
Attention: Ivan H Vania
Telephone: 314-298-8566

Report Date 10/11/2021
Sample Receipt Date 08/27/2021
RJ Lee Group Job No. AOH1063281-0
Authorization/P.O. No.
Client Job No./Name 160-43220-1

Analysis: Asbestos in Bulk Samples by Point Count

Method: NYELAP Method 198.1

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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546795.HPL	FSS-136-082521 (160-43220-1)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/11/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546796.HPL	FSS-137-082521 (160-43220-2)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546797.HPL	FSS-138-082521 (160-43220-3)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43220-1

RJ Lee Group Job No: AOH1063281-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546798.HPL	FSS-145-082521 (160-43220-4)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546799.HPL	FSS-146-082521 (160-43220-5)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546800.HPL	FSS-147-082521 (160-43220-6)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546801.HPL	FSS-148-082521 (160-43220-7)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546802.HPL	FSS-348-082521 (160-43220-8)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43220-1

RJ Lee Group Job No: AOH1063281-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546803.HPL	FSS-149-082521 (160-43220-9)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546804.HPL	FSS-349-082521 (160-43220-10)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546805.HPL	FSS-150-082521 (160-43220-11)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546806.HPL	FSS-350-082521 (160-43220-12)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546807.HPL	FSS-151-082521 (160-43220-13)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

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Client Job No./Name: 160-43220-1

RJ Lee Group Job No: AOH1063281-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546808.HPL	FSS-152-082521 (160-43220-14)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546809.HPL	FSS-088-082521 (160-43220-15)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546810.HPL	FSS-089-082521 (160-43220-16)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546811.HPL	FSS-090-082521 (160-43220-17)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/09/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43220-1

RJ Lee Group Job No: AOH1063281-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
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Authorized Signature: _____

Elizabeth Fischer, Microscopist

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ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- AM = Amphibole
- B = Binder
- CA = Carbonates
- CL = Clay
- F = Feldspar
- G = Gypsum
- HY = Hydromagnesite
- M = Miscellaneous
- MI = Mica
- OP = Opaque
- OR = Organic
- P = Perlite
- Q = Quartz
- T = Tar
- V = Vermiculite

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43229-1

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Collected</u>	<u>Received</u>
160-43229-1	Rinsate-082621	Water	08/26/21 16:15	08/27/21 10:15

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43229-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/27/2021 10:15 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 3.3° C, 10.5° C, 25.6° C and 35.6° C.

TOTAL METALS (ICP/MS)

Sample Rinsate-082621 (160-43229-1) was analyzed for total metals (ICP/MS) in accordance with 6020A. The samples were prepared on 09/03/2021 and analyzed on 09/07/2021.

For ICPMS Metals, a 2X dilution was performed. This is a standard dilution that is performed by TestAmerica St. Louis on all samples analyzed by method SW-846 6020A. The dilution is performed in order to have the matrix of the samples (i.e. the concentration of acids) match the matrix of the standards used for calibration and instrument quality control purposes. The MDL studies analyzed by this method undergo the same 2X dilution, and all detection limits are based on this. As such, MDL's and RL's are not affected by the dilution.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Sample Rinsate-082621 (160-43229-1) was analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7470A. The samples

were prepared on 09/03/2021 and analyzed on 09/04/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 (GFPC)

Sample Rinsate-082621 (160-43229-1) was analyzed for Radium-226 (GFPC) in accordance with EPA Method 903.0. The samples were prepared on 09/02/2021 and analyzed on 09/30/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Sample Rinsate-082621 (160-43229-1) was analyzed for Strontium-90 (GFPC) in accordance with EPA 905.0. The samples were prepared on 10/05/2021 and analyzed on 10/13/2021.

Preparation Batch 160-527654:

Insufficient sample volume was available to prepare a sample duplicate. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared to demonstrate batch precision: Rinsate-082621 (160-43229-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM, TOTAL (LSC)

Sample Rinsate-082621 (160-43229-1) was analyzed for Tritium, Total (LSC) in accordance with USEPA 906.0. The samples were prepared on 09/21/2021 and analyzed on 09/23/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Sample Rinsate-082621 (160-43229-1) was analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with USDOE. The samples were prepared on 09/12/2021 and analyzed on 09/23/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Sample Rinsate-082621 (160-43229-1) was analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were prepared on 09/13/2021 and analyzed on 09/23/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Sample Rinsate-082621 (160-43229-1) was analyzed for Carbon-14 by LSC in accordance with EERF. The samples were prepared on 09/28/2021 and analyzed on 09/29/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 & OTHER GAMMA EMITTERS (GS)-21 DAY INGROWTH

Sample Rinsate-082621 (160-43229-1) was analyzed for Radium-226 & other gamma emitters (GS)-21 day ingrowth in accordance with GA-01-R. The samples were prepared on 08/30/2021 and analyzed on 09/30/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Sample Rinsate-082621 (160-43229-1) was analyzed for Nickel 59/63 in accordance with LSC-Nickel. The samples were prepared on 10/07/2021 and analyzed on 10/10/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Sample Rinsate-082621 (160-43229-1) was analyzed for Plutonium 241 in accordance with LSC-Pu241. The samples were prepared on 09/13/2021 and analyzed on 10/02/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43229-1

Client Sample ID: Rinsate-082621

Lab Sample ID: 160-43229-1

Date Collected: 08/26/21 16:15

Matrix: Water

Date Received: 08/27/21 10:15

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.70	U	3.0	0.18	ug/L		09/03/21 14:26	09/07/21 20:57	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.027	ug/L		09/03/21 14:30	09/04/21 13:33	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.185	U	0.198	0.199	1.00	0.328	pCi/L	09/02/21 10:54	09/30/21 09:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba	92.1		40 - 110					09/02/21 10:54	09/30/21 09:48	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.255	U	0.183	0.184	3.00	0.293	pCi/L	10/05/21 10:43	10/13/21 13:31	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	88.0		40 - 110					10/05/21 10:43	10/13/21 13:31	1
Y Carrier	93.8		40 - 110					10/05/21 10:43	10/13/21 13:31	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-103	U	187	187	500	367	pCi/L	09/21/21 10:22	09/23/21 00:56	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0238	U	0.0669	0.0670	1.00	0.140	pCi/L	09/12/21 18:07	09/23/21 10:26	1
Plutonium-239/240	0.00795	U	0.0480	0.0480	1.00	0.119	pCi/L	09/12/21 18:07	09/23/21 10:26	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	100		30 - 110					09/12/21 18:07	09/23/21 10:26	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	-0.0232	U	0.0514	0.0514	1.00	0.153	pCi/L	09/13/21 08:02	09/23/21 10:30	1
Uranium-235	-0.00481	U	0.0432	0.0432	1.00	0.137	pCi/L	09/13/21 08:02	09/23/21 10:30	1
Uranium-238	0.0116	U	0.0312	0.0312	1.00	0.0747	pCi/L	09/13/21 08:02	09/23/21 10:30	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	87.6		30 - 110					09/13/21 08:02	09/23/21 10:30	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43229-1

Client Sample ID: Rinsate-082621

Lab Sample ID: 160-43229-1

Date Collected: 08/26/21 16:15

Matrix: Water

Date Received: 08/27/21 10:15

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	6.24	U	7.55	7.58	20.0	12.7	pCi/L	09/28/21 09:03	09/29/21 14:40	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	16.2	U	26.3	26.4		34.0	pCi/L	08/30/21 11:04	09/30/21 15:57	1
Americium-241	1.01	U	14.2	14.2		24.4	pCi/L	08/30/21 11:04	09/30/21 15:57	1
Bismuth-212	67.9	U	129	129		219	pCi/L	08/30/21 11:04	09/30/21 15:57	1
Bismuth-214	21.8		16.2	16.4		18.9	pCi/L	08/30/21 11:04	09/30/21 15:57	1
Cesium-137	-1.72	U	6.50	6.50	20.0	11.4	pCi/L	08/30/21 11:04	09/30/21 15:57	1
Cobalt-60	1.99	U	5.91	5.91		9.01	pCi/L	08/30/21 11:04	09/30/21 15:57	1
Europium-152	1.21	U	1.71	1.72		29.7	pCi/L	08/30/21 11:04	09/30/21 15:57	1
Europium-154	-1.72	U	12.3	12.3		17.2	pCi/L	08/30/21 11:04	09/30/21 15:57	1
Europium-155	-4.62	U	36.0	36.0		61.4	pCi/L	08/30/21 11:04	09/30/21 15:57	1
Lead-212	-15.2	U	14.3	14.4		20.5	pCi/L	08/30/21 11:04	09/30/21 15:57	1
Lead-214	10.9	U	14.0	14.1		18.3	pCi/L	08/30/21 11:04	09/30/21 15:57	1
Potassium-40	112		56.9	58.3		51.1	pCi/L	08/30/21 11:04	09/30/21 15:57	1
Radium-226	21.8		16.2	16.4	50.0	18.9	pCi/L	08/30/21 11:04	09/30/21 15:57	1
Radium-228	16.2	U	26.3	26.4	50.0	34.0	pCi/L	08/30/21 11:04	09/30/21 15:57	1
Sodium-22	6.48		4.49	4.55		6.24	pCi/L	08/30/21 11:04	09/30/21 15:57	1
Zinc-65	0.000	U	3.08	3.08		26.8	pCi/L	08/30/21 11:04	09/30/21 15:57	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.708	U	1.44	1.44	5.00	2.53	pCi/L	10/07/21 12:39	10/10/21 16:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	101		40 - 110					10/07/21 12:39	10/10/21 16:43	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	2.46	U J	2.58	2.59	5.00	4.40	pCi/L	09/13/21 08:05	10/02/21 11:40	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	100		30 - 110					09/13/21 08:05	10/02/21 11:40	1

Tracer/Carrier Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43229-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (40-110)	
160-43229-1	Rinsate-082621	92.1	
500-204225-K-12-A DU	Duplicate	90.0	
LCS 160-525242/1-A	Lab Control Sample	74.9	
MB 160-525242/25-A	Method Blank	85.4	
Tracer/Carrier Legend			
Ba = Ba			

Method: 905 - Strontium-90 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Sr (40-110)	Y (40-110)
160-43229-1	Rinsate-082621	88.0	93.8
LCS 160-530106/1-A	Lab Control Sample	82.3	89.7
MB 160-530106/21-A	Method Blank	82.8	89.7
Tracer/Carrier Legend			
Sr = Sr Carrier			
Y = Y Carrier			

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Pu-242 (T) (30-110)	
160-43229-1	Rinsate-082621	100	
160-43229-1 DU	Rinsate-082621	107	
LCS 160-526538/2-A	Lab Control Sample	88.4	
MB 160-526538/1-A	Method Blank	99.4	
Tracer/Carrier Legend			
Pu-242 (T) = Pu-242 (T)			

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	U-232 (30-110)	
160-43229-1	Rinsate-082621	87.6	
160-43229-1 DU	Rinsate-082621	90.2	
LCS 160-526595/2-A	Lab Control Sample	97.2	
MB 160-526595/1-A	Method Blank	99.5	
Tracer/Carrier Legend			
U-232 = Uranium-232			

Tracer/Carrier Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43229-1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)		
		Ni		
Lab Sample ID	Client Sample ID	(40-110)		
160-43229-1	Rinsate-082621	101		
160-43375-J-2-B DU	Duplicate	104		
LCS 160-530499/2-A	Lab Control Sample	99.0		
MB 160-530499/1-A	Method Blank	100		

Tracer/Carrier Legend

Ni = Ni

Method: ST-RC-0245 - Plutonium-241 (LSC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)		
		Pu-242 (T)		
Lab Sample ID	Client Sample ID	(30-110)		
160-43229-1	Rinsate-082621	100		
160-43229-1 DU	Rinsate-082621	107		
LCS 160-526596/2-A	Lab Control Sample	88.4		
MB 160-526596/1-A	Method Blank	99.4		

Tracer/Carrier Legend

Pu-242 (T) = Pu-242 (T)

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43230-1	FSS-153-082621	Solid	08/26/21 10:30	08/27/21 10:15
160-43230-2	FSS-154-082621	Solid	08/26/21 10:30	08/27/21 10:15
160-43230-3	FSS-155-082621	Solid	08/26/21 10:30	08/27/21 10:15
160-43230-4	FSS-156-082621	Solid	08/26/21 11:30	08/27/21 10:15
160-43230-5	FSS-157-082621	Solid	08/26/21 11:30	08/27/21 10:15
160-43230-6	FSS-158-082621	Solid	08/26/21 11:30	08/27/21 10:15
160-43230-7	FSS-159-082621	Solid	08/26/21 13:15	08/27/21 10:15
160-43230-8	FSS-160-082621	Solid	08/26/21 13:15	08/27/21 10:15
160-43230-9	FSS-161-082621	Solid	08/26/21 13:15	08/27/21 10:15
160-43230-10	FSS-162-082621	Solid	08/26/21 13:45	08/27/21 10:15
160-43230-11	FSS-163-082621	Solid	08/26/21 13:45	08/27/21 10:15
160-43230-12	FSS-164-082621	Solid	08/26/21 13:45	08/27/21 10:15
160-43230-13	FSS-165-082621	Solid	08/26/21 14:30	08/27/21 10:15
160-43230-14	FSS-166-082621	Solid	08/26/21 14:30	08/27/21 10:15
160-43230-15	FSS-167-082621	Solid	08/26/21 14:30	08/27/21 10:15
160-43230-16	FSS-168-082621	Solid	08/26/21 14:45	08/27/21 10:15
160-43230-17	FSS-169-082621	Solid	08/26/21 14:45	08/27/21 10:15
160-43230-18	FSS-170-082621	Solid	08/26/21 14:45	08/27/21 10:15



Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

TestAmerica Laboratories, Inc. db/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Project Manager: Dan Ours
Email: d.ours@pm-remediations.com
Tel/Fax: (315) 336-7721 ext. 218

Client Contact
Address 181 Kenwood Avenue
Oneida, NY 13421
(315) 336-7721 ext. 218 Phone
Fax (315) 336-7722 FAX
Project Name: BNL 705 Stack Demo
Site: BNL
P O # 1085-20-01

Site Contact: Doug Beard
Lab Contact: Ivan Vanila

Date: 08-26-21
Carrier: Fed Ex

COC No: 1 of 2 COCs

Sampler: B. Gaudette

For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (C-Comp, G-Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Gamma Spec: Ra-226+delects	Strontium-90 (G/PC)	Asbestos - EPA600 R-93	Lead (ICP/MS) - 6020B	Mercury - EPA 7470A	Ni-63	C-14	Alpha Spec Pu 238, 239, 240	Alpha Spec U 234, 235, 238	Pu 241 by LSC	Sample Specific Notes:
FSS-153-082621	26-Aug	10:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7D - SS005 0"-6"
FSS-154-082621	26-Aug	10:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7D - SS005 6"-12"
FSS-155-082621	26-Aug	10:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7D - SS005 18"-24"
FSS-156-082621	26-Aug	11:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - Bias 1 0"-6"
FSS-157-082621	26-Aug	11:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - BIAS 1 6"-12"
FSS-158-082621	26-Aug	11:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - Bias 1 18"-24"
FSS-159-082621	26-Aug	13:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7D - Bias 1 0"-6"
FSS-160-082621	26-Aug	13:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7D - BIAS 1 6"-12"
FSS-161-082621	26-Aug	13:15	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7D - Bias 1 18"-24"
FSS-162-082621	26-Aug	13:45	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - Bias 2 0"-6"
FSS-163-082621	26-Aug	13:45	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - BIAS 2 6"-12"
FSS-164-082621	26-Aug	13:45	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7B - Bias 2 18"-24"
FSS-165-082621	26-Aug	14:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7C - Bias 1 0"-6"
FSS-166-082621	26-Aug	14:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7C - BIAS 1 6"-12"
FSS-167-082621	26-Aug	14:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	SU 7C - Bias 1 18"-24"



160-43230 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu154, Eu155

Return to Client Disposal by Lab Archive for _____ Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Therm ID No.:	_____
Company:	_____
Date/Time:	_____
Received by:	_____
Company:	_____
Date/Time:	_____
Received in Laboratory by:	_____
Company:	_____
Date/Time:	_____

Cooler Temp. (°C): Obs'd: _____ Cor'd: _____

Custody Seal No.: _____

Relinquished by: Douglas Beard
Company: Cabrera Services, Inc.

Relinquished by: FE
Company: _____

Relinquished by: _____
Company: _____

Regulatory Program: DW NPDES RCRA Other:

Client Contact FPM Address 181 Kenwood Avenue Oneida, NY 13421 (315) 336-7721 ext. 218 Phone Fax (315) 336-7722 FAX Project Name: BNL 705 Stack Demo Site: BNL P O # 1085-20-01-01		Project Manager: Dan Ours Email: d.ours@fpm-remediations.com Tel/Fax: (315) 336-7721 ext. 218 <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS Analysis Turnaround Time TAT if different from Below 30 Days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: Doug Beard Lab Contact: Ivan Vania Date: 08-26-21 Carrier: Fed Ex COC No: 2 of 2 COCs																																																															
Sample Identification FSS-168-082621 FSS-169-082621 FSS-170-082621		Sample Date 26-Aug 26-Aug 26-Aug		Sample Time 14:45 14:45 14:45		Sample Type (C=Comp, G=Grab) C C C		Matrix S S S		# of Cont. 3 3 3																																																									
Preservation Used: 1= Ice, 2= HCl, 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.																																																																			
Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu164, Eu155																																																																			
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)																																																																			
<table border="1"> <thead> <tr> <th>Sample Specific Notes:</th> <th>Alpha Spec Pu 238,239,240</th> <th>Alpha Spec U 234,235,238</th> <th>Pu 241 by LSC</th> <th>Filtered Sample (Y/N)</th> <th>Perform MS/MSD (Y/N)</th> <th>Gamma Spec: Ra-226+detects</th> <th>Strontium-90 (GFC)</th> <th>Asbestos - EPA600 R-93</th> <th>Lead (CPMS) - 6020B</th> <th>Mercury - EPA 7470A</th> <th>Ni-63</th> <th>Tritium</th> <th>C-14</th> </tr> </thead> <tbody> <tr> <td>SU 7C - Bias 2 0"-6"</td> <td>1</td> <td>1</td> <td>1</td> <td>N</td> <td>N</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>SU 7C - BIAS 2 6"-12"</td> <td>1</td> <td>1</td> <td>1</td> <td>N</td> <td>N</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>SU 7C - Bias 2 18"-24"</td> <td>1</td> <td>1</td> <td>1</td> <td>N</td> <td>N</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table>												Sample Specific Notes:	Alpha Spec Pu 238,239,240	Alpha Spec U 234,235,238	Pu 241 by LSC	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Gamma Spec: Ra-226+detects	Strontium-90 (GFC)	Asbestos - EPA600 R-93	Lead (CPMS) - 6020B	Mercury - EPA 7470A	Ni-63	Tritium	C-14	SU 7C - Bias 2 0"-6"	1	1	1	N	N	1	1	1	1	1	1	1	1	SU 7C - BIAS 2 6"-12"	1	1	1	N	N	1	1	1	1	1	1	1	1	SU 7C - Bias 2 18"-24"	1	1	1	N	N	1	1	1	1	1	1	1	1
Sample Specific Notes:	Alpha Spec Pu 238,239,240	Alpha Spec U 234,235,238	Pu 241 by LSC	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Gamma Spec: Ra-226+detects	Strontium-90 (GFC)	Asbestos - EPA600 R-93	Lead (CPMS) - 6020B	Mercury - EPA 7470A	Ni-63	Tritium	C-14																																																						
SU 7C - Bias 2 0"-6"	1	1	1	N	N	1	1	1	1	1	1	1	1																																																						
SU 7C - BIAS 2 6"-12"	1	1	1	N	N	1	1	1	1	1	1	1	1																																																						
SU 7C - Bias 2 18"-24"	1	1	1	N	N	1	1	1	1	1	1	1	1																																																						
Sampler: B. Gaudette For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:																																																																			
Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for Months Poison B <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Flammable <input type="checkbox"/> Non-Hazard <input type="checkbox"/>																																																																			
Relinquished by: FE				Relinquished by: Dougias Beard				Relinquished by: FE				Relinquished by: FE																																																							
Date/Time: 8/27/21 10:15				Date/Time: 8/27/21 10:15				Date/Time: 8/27/21 10:15				Date/Time: 8/27/21 10:15																																																							

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Vania, Ivan H	Carrier Tracking No(s): 160-218293-1
Client Contact: Shipping/Receiving		Lab PM: Vania, Ivan H	COC No: 160-218293-1
Company: TestAmerica Laboratories, Inc.		E-Mail: Ivan.Vania@Eurofinset.com	Page: Page 1 of 2
Address: 4955 Yarrow Street, Arvada, CO, 80002		State of Origin: New York	Job #: 160-43230-1
Phone: 303-736-0100 (Tel) 303-431-7171 (Fax)		Accreditations Required (See note): DoD - AZLA; DoD - ANAB; NELAP - New York	Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:
Due Date Requested: 10/10/2021		Analysis Requested	
TAT Requested (days):		Total Number of Containers	
PO #:		7471B_DODS/7471B_Prep Mercury	
WO #:		6020B_DODS/3050B (MOD) ICPMS Metals Pb Only	
Project #:		Moisture	
SSOW#:		Perform MS/MSD (Yes or No)	
BNI Decommissioning Project		Field Filtered Sample (Yes or No)	
Site:		Preservation Code:	
Sample Identification - Client ID (Lab ID)		Sample Date	
FSS-153-082621 (160-43230-1)		8/26/21	
FSS-154-082621 (160-43230-2)		8/26/21	
FSS-155-082621 (160-43230-3)		8/26/21	
FSS-156-082621 (160-43230-4)		8/26/21	
FSS-157-082621 (160-43230-5)		8/26/21	
FSS-158-082621 (160-43230-6)		8/26/21	
FSS-159-082621 (160-43230-7)		8/26/21	
FSS-160-082621 (160-43230-8)		8/26/21	
FSS-161-082621 (160-43230-9)		8/26/21	
Special Instructions/Note:		Special Instructions/Note:	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) _____
 Primary Deliverable Rank: 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements:

Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: *Michelle Keninings* Date: 8/27/2021 19:00
 Relinquished by: _____ Date/Time: _____
 Relinquished by: _____ Date/Time: _____
 Relinquished by: _____ Date/Time: _____
 Custody Seals Intact: Yes No
 Custody Seal No.: _____
 Cooler Temperature(s) °C and Other Remarks: 4.6 IZIL 1.0

Chain of Custody Record

Client Information (Sub Contract Lab)		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:
Client Contact: Shipping/Receiving		Phone:	Vania, Ivan H		160-218293.2
Company: TestAmerica Laboratories, Inc.		E-Mail:	Ivan.Vania@Eurofinset.com	State of Origin:	Page
Address: 4955 Yarrow Street,				New York	Page 2 of 2
City: Arvada		Due Date Requested:	Accreditations Required (See note):		
State, Zip CO, 80002		10/10/2021	DoD - A2LA, DoD - ANAB, NELAP - New York		
Phone: 303-736-0100(Tel) 303-431-7171(Fax)		TAT Requested (days):	Preservation Codes:		
Email:			A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:		
Project Name: BNL Decommissioning Project		Project #: 16009147	Analysis Requested		
Site:		SSOW#:	M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specif./)		

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=organic)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Moisture	60208_DOD5/30508 (MOD) ICPMS Metals Pb Only	74718_DOD5/74718_Prep Mercury	Total Number of containers	Special Instructions/Note:
FSS-162-082621 (160-43230-10)	8/26/21	13:45 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-163-082621 (160-43230-11)	8/26/21	13:45 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-164-082621 (160-43230-12)	8/26/21	13:45 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-165-082621 (160-43230-13)	8/26/21	14:30 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-166-082621 (160-43230-14)	8/26/21	14:30 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-167-082621 (160-43230-15)	8/26/21	14:30 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-168-082621 (160-43230-16)	8/26/21	14:45 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-169-082621 (160-43230-17)	8/26/21	14:45 Eastern	Solid	Solid	X	X	X	X	X	1	
FSS-170-082621 (160-43230-18)	8/26/21	14:45 Eastern	Solid	Solid	X	X	X	X	X	1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification

Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) _____
 Primary Deliverable Rank: 2
 Empty Kit Relinquished by: _____
 Relinquished by: _____
 Relinquished by: _____
 Relinquished by: _____
 Custody Seals Intact: _____
 Custody Seal No.: _____

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements: _____

Received by: _____ Date: 8/27/2021 19:00
 Received by: _____ Date: 05/22/2021 0930
 Received by: _____ Date: _____
 Received by: _____ Date: _____
 Cooler Temperature(s) °C and Other Remarks: _____

A0H1063332-0

Chain of Custody Record



Environment Testing
 America

Client Information (Sub Contract Lab)		Lab Pk: Vanina, Ivan H	Carrier Tracking No(s): 180-218291.1				
Client Contact: Shipping/Receiving		E-Mail: ivan.vania@eurofins.com	Page: Page 1 of 2				
Company: RJ Lee Group, Inc		Site of Origin: New York	Job #: 180-43230-1				
Address: 350 Hochberg Rd, Monroeville State, Zip: PA, 15146 Phone: Email:		Accreditations Required (See note): DoD - A2LA; DoD - ANAB; NELAP - New York	Preservation Codes: M - Hexane N - None O - AsHxO2 P - NiCO4S Q - Ni2SO3 R - Ni2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA Y - EDA Z - other (specify) Other:				
Due Date Requested: 10/11/2021 TAT Requested (days):		Analysis Requested					
PO #:	WO #:						
Project #: 16009147	SSOW#:						
BNL Decommissioning Project							
Site:							
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C-Comp, G-grab)	Matrix (Wet, Solid, Swab, etc)	Preservation Code	Field Filtered Sample (Yes or No)	Sub (Asbestos - PLM-EPA800-R-93/LAP-080.03)
FSS-153-082621 (160-43230-1)	8/26/21	10:30 Eastern		Solid		X	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-154-082621 (160-43230-2)	8/26/21	10:30 Eastern		Solid		X	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-155-082621 (160-43230-3)	8/26/21	10:30 Eastern		Solid		X	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-156-082621 (160-43230-4)	8/26/21	11:30 Eastern		Solid		X	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-157-082621 (160-43230-5)	8/26/21	11:30 Eastern		Solid		X	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-158-082621 (160-43230-6)	8/26/21	11:30 Eastern		Solid		X	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-159-082621 (160-43230-7)	8/26/21	13:15 Eastern		Solid		X	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-160-082621 (160-43230-8)	8/26/21	13:15 Eastern		Solid		X	Asbestos - PLM-EPA800-R-93/LAP-080.03
FSS-161-082621 (160-43230-9)	8/26/21	13:15 Eastern		Solid		X	Asbestos - PLM-EPA800-R-93/LAP-080.03

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify)
 Primary Deliverable Rank: 2
 Empty Kit Relinquished by:
 Date: 8/27/2021 19:00
 Company: ENA SM Company
 Relinquished by: M. Casale
 Date/Time: 08-29-21 18:07
 Company: RJ Lee Group
 Relinquished by:
 Date/Time:
 Company:

Custody Seals Intact: Custody Seal No.:
 A Yes A No

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For Months

Special Instructions/QC Requirements:
 Method of Shipment:
 Date/Time: 08-29-21 18:07
 Date/Time: 08-29-21 18:07
 Date/Time:
 Cooler Temperature(s) °C and Other Remarks:
 Ver: 06/08/2021

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43230-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 8/27/2021 10:15 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 3.3° C, 10.5° C, 25.6° C and 25.6° C.

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis.

METALS (ICP/MS)

Samples FSS-153-082621 (160-43230-1), FSS-154-082621 (160-43230-2), FSS-155-082621 (160-43230-3), FSS-156-082621 (160-43230-4), FSS-157-082621 (160-43230-5), FSS-158-082621 (160-43230-6), FSS-159-082621 (160-43230-7), FSS-160-082621 (160-43230-8), FSS-161-082621 (160-43230-9), FSS-162-082621 (160-43230-10), FSS-163-082621 (160-43230-11), FSS-164-082621 (160-43230-12), FSS-165-082621 (160-43230-13), FSS-166-082621 (160-43230-14), FSS-167-082621 (160-43230-15), FSS-168-082621 (160-43230-16), FSS-169-082621 (160-43230-17) and FSS-170-082621 (160-43230-18) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 09/27/2021 and analyzed on 09/28/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-153-082621 (160-43230-1), FSS-154-082621 (160-43230-2), FSS-155-082621 (160-43230-3), FSS-156-082621 (160-43230-4), FSS-157-082621 (160-43230-5), FSS-158-082621 (160-43230-6), FSS-159-082621 (160-43230-7), FSS-160-082621 (160-43230-8), FSS-161-082621 (160-43230-9), FSS-162-082621 (160-43230-10), FSS-163-082621 (160-43230-11), FSS-164-082621 (160-43230-12), FSS-165-082621 (160-43230-13), FSS-166-082621 (160-43230-14), FSS-167-082621 (160-43230-15), FSS-168-082621 (160-43230-16), FSS-169-082621 (160-43230-17) and FSS-170-082621 (160-43230-18) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B_ DoD5. The samples were prepared on 09/21/2021 and analyzed on 09/22/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS

Samples FSS-153-082621 (160-43230-1), FSS-154-082621 (160-43230-2), FSS-155-082621 (160-43230-3), FSS-156-082621 (160-43230-4), FSS-157-082621 (160-43230-5), FSS-158-082621 (160-43230-6), FSS-159-082621 (160-43230-7), FSS-160-082621 (160-43230-8), FSS-161-082621 (160-43230-9), FSS-162-082621 (160-43230-10), FSS-163-082621 (160-43230-11), FSS-164-082621 (160-43230-12), FSS-165-082621 (160-43230-13), FSS-166-082621 (160-43230-14), FSS-167-082621 (160-43230-15), FSS-168-082621 (160-43230-16), FSS-169-082621 (160-43230-17) and FSS-170-082621 (160-43230-18) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 09/02/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-153-082621 (160-43230-1), FSS-154-082621 (160-43230-2), FSS-155-082621 (160-43230-3), FSS-156-082621 (160-43230-4), FSS-157-082621 (160-43230-5), FSS-158-082621 (160-43230-6), FSS-159-082621 (160-43230-7), FSS-160-082621 (160-43230-8), FSS-161-082621 (160-43230-9), FSS-162-082621 (160-43230-10), FSS-163-082621 (160-43230-11), FSS-164-082621 (160-43230-12), FSS-165-082621 (160-43230-13), FSS-166-082621 (160-43230-14), FSS-167-082621 (160-43230-15), FSS-168-082621 (160-43230-16), FSS-169-082621 (160-43230-17) and FSS-170-082621 (160-43230-18) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 08/27/2021, prepared on 09/20/2021 and 09/21/2021 and analyzed on 10/07/2021 and 10/08/2021.

Preparation Batch 160-527864:

The detection goal was not met for the sample. There was physical evidence of matrix interference apparent during the initial preparation of the sample. The QC samples associated with the batch met the detection goal indicating the presence of matrix interference. Analytical results were reported with the detection limit achieved: FSS-161-082621 (160-43230-9).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-153-082621 (160-43230-1), FSS-154-082621 (160-43230-2), FSS-155-082621 (160-43230-3), FSS-156-082621 (160-43230-4), FSS-157-082621 (160-43230-5), FSS-158-082621 (160-43230-6), FSS-159-082621 (160-43230-7), FSS-160-082621 (160-43230-8), FSS-161-082621 (160-43230-9), FSS-162-082621 (160-43230-10), FSS-163-082621 (160-43230-11), FSS-164-082621 (160-43230-12), FSS-165-082621 (160-43230-13), FSS-166-082621 (160-43230-14), FSS-167-082621 (160-43230-15), FSS-168-082621 (160-43230-16), FSS-169-082621 (160-43230-17) and FSS-170-082621 (160-43230-18) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 09/26/2021 and analyzed on 09/28/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-153-082621 (160-43230-1), FSS-154-082621 (160-43230-2), FSS-155-082621 (160-43230-3), FSS-156-082621 (160-43230-4), FSS-157-082621 (160-43230-5), FSS-158-082621 (160-43230-6), FSS-159-082621 (160-43230-7), FSS-160-082621 (160-43230-8), FSS-161-082621 (160-43230-9), FSS-162-082621 (160-43230-10), FSS-163-082621 (160-43230-11), FSS-164-082621 (160-43230-12), FSS-165-082621 (160-43230-13), FSS-166-082621 (160-43230-14), FSS-167-082621 (160-43230-15), FSS-168-082621 (160-43230-16), FSS-169-082621 (160-43230-17) and FSS-170-082621 (160-43230-18) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 08/27/2021, prepared on 09/11/2021 and analyzed on 09/22/2021 and 09/23/2021.

Preparation Batch 160-526443:

The following sample had tracer recovery below the QC limit of 30% indicating a potential increase in the stated uncertainty. Plutonium-238 and Plutonium-239/240 were not detected in the samples, and the sample count achieved 400 tracer counts; therefore, the results were reported: FSS-168-082621 (160-43230-16).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-153-082621 (160-43230-1), FSS-154-082621 (160-43230-2), FSS-155-082621 (160-43230-3), FSS-156-082621 (160-43230-4), FSS-157-082621 (160-43230-5), FSS-158-082621 (160-43230-6), FSS-159-082621 (160-43230-7), FSS-160-082621 (160-43230-8), FSS-161-082621 (160-43230-9), FSS-162-082621 (160-43230-10), FSS-163-082621 (160-43230-11), FSS-164-082621 (160-43230-12), FSS-165-082621 (160-43230-13), FSS-166-082621 (160-43230-14), FSS-167-082621 (160-43230-15),

FSS-168-082621 (160-43230-16), FSS-169-082621 (160-43230-17) and FSS-170-082621 (160-43230-18) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 08/27/2021, prepared on 09/12/2021 and analyzed on 09/22/2021, 09/23/2021 and 09/24/2021.

Preparation Batch 160-526530:

The following sample had tracer recovery below the QC limit of 30% indicating a potential increase in the stated uncertainty. Uranium-234, Uranium-235, and Uranium-238 were not detected above the RL in the samples; therefore, the results were reported: FSS-168-082621 (160-43230-16).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-153-082621 (160-43230-1), FSS-154-082621 (160-43230-2), FSS-155-082621 (160-43230-3), FSS-156-082621 (160-43230-4), FSS-157-082621 (160-43230-5), FSS-158-082621 (160-43230-6), FSS-159-082621 (160-43230-7), FSS-160-082621 (160-43230-8), FSS-161-082621 (160-43230-9), FSS-162-082621 (160-43230-10), FSS-163-082621 (160-43230-11), FSS-164-082621 (160-43230-12), FSS-165-082621 (160-43230-13), FSS-166-082621 (160-43230-14), FSS-167-082621 (160-43230-15), FSS-168-082621 (160-43230-16), FSS-169-082621 (160-43230-17) and FSS-170-082621 (160-43230-18) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 09/27/2021 and 09/28/2021 and analyzed on 09/29/2021.

Preparation Batch 160-529126:

The samples did not meet the requested limit. While the MDC is slightly above the requested limit, all batch QC was within parameters and instrument performance was demonstrated by acceptable daily checks. Analytical results were reported with the detection limit achieved: (160-43414-A-2-B).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-153-082621 (160-43230-1), FSS-154-082621 (160-43230-2), FSS-155-082621 (160-43230-3), FSS-156-082621 (160-43230-4), FSS-157-082621 (160-43230-5), FSS-158-082621 (160-43230-6), FSS-159-082621 (160-43230-7), FSS-160-082621 (160-43230-8), FSS-161-082621 (160-43230-9), FSS-162-082621 (160-43230-10), FSS-163-082621 (160-43230-11), FSS-164-082621 (160-43230-12), FSS-165-082621 (160-43230-13), FSS-166-082621 (160-43230-14), FSS-167-082621 (160-43230-15), FSS-168-082621 (160-43230-16), FSS-169-082621 (160-43230-17) and FSS-170-082621 (160-43230-18) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 08/27/2021, prepared on 08/31/2021 and 09/02/2021 and analyzed on 09/24/2021, 09/29/2021 and 09/30/2021.

Preparation Batches 160-524364 and 160-525251:

The replicate precision for Eu-152 did not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (160-43230-A-18-D DU).

Preparation Batch 160-525244:

For samples FSS-153-082621 (160-43230-1), FSS-154-082621 (160-43230-2), FSS-155-082621 (160-43230-3), FSS-156-082621 (160-43230-4), FSS-157-082621 (160-43230-5), FSS-158-082621 (160-43230-6), FSS-159-082621 (160-43230-7), (LCS 160-525244/2-A), (MB 160-525244/1-A), and (160-43230-A-7-D DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232

Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

Preparation Batch 160-525251:

For samples FSS-161-082621 (160-43230-9), FSS-162-082621 (160-43230-10), FSS-163-082621 (160-43230-11), FSS-164-082621 (160-43230-12), FSS-166-082621 (160-43230-14), FSS-167-082621 (160-43230-15), FSS-168-082621 (160-43230-16), FSS-170-082621 (160-43230-18), and (160-43230-A-18-D DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

Preparation Batch 160-525011:

For samples FSS-160-082621 (160-43230-8), FSS-165-082621 (160-43230-13), FSS-169-082621 (160-43230-17), and (160-43230-A-8-D DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231

Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-153-082621 (160-43230-1), FSS-154-082621 (160-43230-2), FSS-155-082621 (160-43230-3), FSS-156-082621 (160-43230-4), FSS-157-082621 (160-43230-5), FSS-158-082621 (160-43230-6), FSS-159-082621 (160-43230-7), FSS-160-082621 (160-43230-8), FSS-161-082621 (160-43230-9), FSS-162-082621 (160-43230-10), FSS-163-082621 (160-43230-11), FSS-164-082621 (160-43230-12), FSS-165-082621 (160-43230-13), FSS-166-082621 (160-43230-14), FSS-167-082621 (160-43230-15), FSS-168-082621 (160-43230-16), FSS-169-082621 (160-43230-17) and FSS-170-082621 (160-43230-18) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 08/27/2021, prepared on 09/22/2021 and 09/29/2021 and analyzed on 09/30/2021, 10/01/2021 and 10/05/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-153-082621 (160-43230-1), FSS-154-082621 (160-43230-2), FSS-155-082621 (160-43230-3), FSS-156-082621 (160-43230-4), FSS-157-082621 (160-43230-5), FSS-158-082621 (160-43230-6), FSS-159-082621 (160-43230-7), FSS-160-082621 (160-43230-8), FSS-161-082621 (160-43230-9), FSS-162-082621 (160-43230-10), FSS-163-082621 (160-43230-11), FSS-164-082621 (160-43230-12), FSS-165-082621 (160-43230-13), FSS-166-082621 (160-43230-14), FSS-167-082621 (160-43230-15), FSS-168-082621 (160-43230-16), FSS-169-082621 (160-43230-17) and FSS-170-082621 (160-43230-18) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared on 09/12/2021 and analyzed on 09/30/2021 and 10/01/2021.

Preparation Batch 160-526531:

The sample had carrier recovery that failed below the lower QC limit at 1.5% (30%). Matrix interferences were noted during initial preparation: FSS-168-082621 (160-43230-16).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-153-082621

Lab Sample ID: 160-43230-1

Date Collected: 08/26/21 10:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0463	U	0.151	0.151	3.00	0.284	pCi/g	09/20/21 16:47	10/07/21 20:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	77.2		40 - 110					09/20/21 16:47	10/07/21 20:45	1
Y Carrier	101		40 - 110					09/20/21 16:47	10/07/21 20:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0329	U	0.227	0.227	1.00	0.427	pCi/g	09/26/21 17:58	09/28/21 15:03	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0102	U	0.0297	0.0297	1.00	0.0643	pCi/g	09/11/21 14:30	09/22/21 11:31	1
Plutonium-239/240	0.00613	U	0.0165	0.0165	1.00	0.0396	pCi/g	09/11/21 14:30	09/22/21 11:31	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	82.1		30 - 110					09/11/21 14:30	09/22/21 11:31	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.194		0.0804	0.0820	1.00	0.0516	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-235/236	0.0311		0.0352	0.0353	1.00	0.0311	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-238	0.239		0.0879	0.0901	1.00	0.0403	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	79.2		30 - 110					09/12/21 17:52	09/22/21 15:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.610	U	0.661	0.664	5.00	1.11	pCi/g	09/27/21 10:38	09/29/21 06:56	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.512		0.132	0.141		0.128	pCi/g	09/02/21 11:05	09/24/21 10:34	1
Bismuth-212	0.205	U	0.537	0.537		0.948	pCi/g	09/02/21 11:05	09/24/21 10:34	1
Bismuth-214	0.444		0.129	0.137		0.109	pCi/g	09/02/21 11:05	09/24/21 10:34	1
Lead-212	0.421		0.0797	0.0959		0.0879	pCi/g	09/02/21 11:05	09/24/21 10:34	1
Lead-214	0.416		0.0913	0.101		0.117	pCi/g	09/02/21 11:05	09/24/21 10:34	1
Potassium-40	3.11		0.750	0.812		0.619	pCi/g	09/02/21 11:05	09/24/21 10:34	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-153-082621

Lab Sample ID: 160-43230-1

Date Collected: 08/26/21 10:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.444		0.129	0.137	1.00	0.109	pCi/g	09/02/21 11:05	09/24/21 10:34	1
Thorium-232	0.512		0.132	0.141		0.128	pCi/g	09/02/21 11:05	09/24/21 10:34	1
Americium-241	-0.0739	U	0.0600	0.0605		0.193	pCi/g	09/02/21 11:05	09/24/21 10:34	1
Cesium-137	0.0313	U	0.0533	0.0534		0.0916	pCi/g	09/02/21 11:05	09/24/21 10:34	1
Cobalt-60	-0.0544	U	0.0882	0.0884		0.0951	pCi/g	09/02/21 11:05	09/24/21 10:34	1
Europium-152	0.0619	U	0.146	0.146		0.144	pCi/g	09/02/21 11:05	09/24/21 10:34	1
Europium-154	0.0522	U	0.0854	0.0856		0.0985	pCi/g	09/02/21 11:05	09/24/21 10:34	1
Europium-155	0.0795	U	0.288	0.288		0.491	pCi/g	09/02/21 11:05	09/24/21 10:34	1
Sodium-22	-0.0504	U	0.0555	0.0557		0.0918	pCi/g	09/02/21 11:05	09/24/21 10:34	1
Zinc-65	0.000	U	0.0182	0.0182		0.194	pCi/g	09/02/21 11:05	09/24/21 10:34	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.965	U	1.23	1.24	5.00	2.17	pCi/g	09/22/21 12:05	09/30/21 15:59	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ni	94.6		40 - 110					09/22/21 12:05	09/30/21 15:59	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.72	U	1.56	1.57	5.00	2.99	pCi/g	09/12/21 17:54	10/01/21 09:00	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Pu-242 (T)	82.1		30 - 110					09/12/21 17:54	10/01/21 09:00	1

Client Sample ID: FSS-153-082621

Lab Sample ID: 160-43230-1

Date Collected: 08/26/21 10:30

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 94.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.6		0.27	0.016	mg/Kg	☼	09/27/21 14:42	09/28/21 14:24	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	64		20	6.6	ug/Kg	☼	09/21/21 16:50	09/22/21 13:12	1

Client Sample ID: FSS-154-082621

Lab Sample ID: 160-43230-2

Date Collected: 08/26/21 10:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0308	U	0.135	0.135	3.00	0.243	pCi/g	09/20/21 16:47	10/07/21 20:45	1

Euofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-154-082621

Lab Sample ID: 160-43230-2

Date Collected: 08/26/21 10:30

Matrix: Solid

Date Received: 08/27/21 10:15

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	83.0		40 - 110	09/20/21 16:47	10/07/21 20:45	1
Y Carrier	102		40 - 110	09/20/21 16:47	10/07/21 20:45	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.150	U	0.208	0.208	1.00	0.410	pCi/g	09/26/21 17:58	09/28/21 15:26	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.000	U	0.0173	0.0173	1.00	0.0527	pCi/g	09/11/21 14:30	09/22/21 11:31	1
Plutonium-239/240	0.00593	U	0.0160	0.0160	1.00	0.0383	pCi/g	09/11/21 14:30	09/22/21 11:31	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.8		30 - 110	09/11/21 14:30	09/22/21 11:31	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.255		0.0879	0.0904	1.00	0.0475	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-235/236	0.0167	U	0.0269	0.0269	1.00	0.0462	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-238	0.195		0.0767	0.0784	1.00	0.0429	pCi/g	09/12/21 17:52	09/22/21 15:46	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	89.2		30 - 110	09/12/21 17:52	09/22/21 15:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.501	U	0.786	0.788	5.00	1.34	pCi/g	09/27/21 10:38	09/29/21 08:04	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.505		0.140	0.149		0.135	pCi/g	09/02/21 11:05	09/24/21 10:35	1
Bismuth-212	-0.129	U	0.817	0.818		1.46	pCi/g	09/02/21 11:05	09/24/21 10:35	1
Bismuth-214	0.330		0.115	0.120		0.114	pCi/g	09/02/21 11:05	09/24/21 10:35	1
Lead-212	0.394		0.0890	0.0977		0.102	pCi/g	09/02/21 11:05	09/24/21 10:35	1
Lead-214	0.391		0.134	0.140		0.136	pCi/g	09/02/21 11:05	09/24/21 10:35	1
Potassium-40	4.58		0.926	1.03		0.359	pCi/g	09/02/21 11:05	09/24/21 10:35	1
Radium-226	0.330		0.115	0.120	1.00	0.114	pCi/g	09/02/21 11:05	09/24/21 10:35	1
Thorium-232	0.505		0.140	0.149		0.135	pCi/g	09/02/21 11:05	09/24/21 10:35	1
Americium-241	0.0601	U	0.156	0.156		0.268	pCi/g	09/02/21 11:05	09/24/21 10:35	1
Cesium-137	0.146		0.0436	0.0460		0.0250	pCi/g	09/02/21 11:05	09/24/21 10:35	1
Cobalt-60	-0.0355	U	0.0791	0.0792		0.0890	pCi/g	09/02/21 11:05	09/24/21 10:35	1
Europium-152	0.0605	U	0.101	0.102		0.167	pCi/g	09/02/21 11:05	09/24/21 10:35	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-154-082621

Lab Sample ID: 160-43230-2

Date Collected: 08/26/21 10:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0741	U	0.136	0.136		0.118	pCi/g	09/02/21 11:05	09/24/21 10:35	1
Europium-155	-0.0964	U	0.334	0.334		0.570	pCi/g	09/02/21 11:05	09/24/21 10:35	1
Sodium-22	-0.00312	U	0.0317	0.0317		0.0645	pCi/g	09/02/21 11:05	09/24/21 10:35	1
Zinc-65	0.000	U	0.0164	0.0164		0.236	pCi/g	09/02/21 11:05	09/24/21 10:35	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.13	U	1.21	1.22	5.00	2.09	pCi/g	09/22/21 12:05	09/30/21 16:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	91.4		40 - 110					09/22/21 12:05	09/30/21 16:32	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.11	U	1.52	1.52	5.00	2.85	pCi/g	09/12/21 17:54	10/01/21 09:34	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.8		30 - 110					09/12/21 17:54	10/01/21 09:34	1

Client Sample ID: FSS-154-082621

Lab Sample ID: 160-43230-2

Date Collected: 08/26/21 10:30

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 92.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.1		0.28	0.017	mg/Kg	☼	09/27/21 14:42	09/28/21 14:42	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	87		20	6.6	ug/Kg	☼	09/21/21 16:50	09/22/21 13:19	1

Client Sample ID: FSS-155-082621

Lab Sample ID: 160-43230-3

Date Collected: 08/26/21 10:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.124	U	0.148	0.149	3.00	0.250	pCi/g	09/20/21 16:47	10/07/21 20:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.4		40 - 110					09/20/21 16:47	10/07/21 20:45	1
Y Carrier	102		40 - 110					09/20/21 16:47	10/07/21 20:45	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-155-082621

Lab Sample ID: 160-43230-3

Date Collected: 08/26/21 10:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.138	U	0.236	0.236	1.00	0.409	pCi/g	09/26/21 17:58	09/28/21 15:48	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00202	U	0.0248	0.0248	1.00	0.0637	pCi/g	09/11/21 14:30	09/22/21 11:30	1
Plutonium-239/240	0.00608	U	0.0164	0.0164	1.00	0.0392	pCi/g	09/11/21 14:30	09/22/21 11:30	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	85.7		30 - 110					09/11/21 14:30	09/22/21 11:30	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.398		0.114	0.118	1.00	0.0755	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-235/236	0.0122	U	0.0283	0.0283	1.00	0.0604	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-238	0.292		0.0964	0.0993	1.00	0.0616	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.9		30 - 110					09/12/21 17:52	09/22/21 15:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.577	U	0.522	0.526	5.00	0.866	pCi/g	09/27/21 10:38	09/29/21 08:27	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.470		0.120	0.129		0.0587	pCi/g	09/02/21 11:05	09/24/21 10:36	1
Bismuth-212	0.206	U	0.432	0.432		0.755	pCi/g	09/02/21 11:05	09/24/21 10:36	1
Bismuth-214	0.249		0.0814	0.0853		0.0858	pCi/g	09/02/21 11:05	09/24/21 10:36	1
Lead-212	0.450		0.0634	0.0853		0.0446	pCi/g	09/02/21 11:05	09/24/21 10:36	1
Lead-214	0.192		0.0680	0.0708		0.150	pCi/g	09/02/21 11:05	09/24/21 10:36	1
Potassium-40	4.62		0.747	0.879		0.232	pCi/g	09/02/21 11:05	09/24/21 10:36	1
Radium-226	0.249		0.0814	0.0853	1.00	0.0858	pCi/g	09/02/21 11:05	09/24/21 10:36	1
Thorium-232	0.470		0.120	0.129		0.0587	pCi/g	09/02/21 11:05	09/24/21 10:36	1
Americium-241	-0.0292	U	0.104	0.104		0.179	pCi/g	09/02/21 11:05	09/24/21 10:36	1
Cesium-137	0.0832		0.0316	0.0327		0.0251	pCi/g	09/02/21 11:05	09/24/21 10:36	1
Cobalt-60	0.0343		0.0203	0.0205		0.0230	pCi/g	09/02/21 11:05	09/24/21 10:36	1
Europium-152	0.00143	U	0.00245	0.00245		0.154	pCi/g	09/02/21 11:05	09/24/21 10:36	1
Europium-154	0.0671	U	0.0682	0.0686		0.0986	pCi/g	09/02/21 11:05	09/24/21 10:36	1
Europium-155	0.000	U	0.0629	0.0629		0.223	pCi/g	09/02/21 11:05	09/24/21 10:36	1
Sodium-22	0.0181	U	0.0144	0.0146		0.0222	pCi/g	09/02/21 11:05	09/24/21 10:36	1
Zinc-65	0.000	U	0.0148	0.0148		0.182	pCi/g	09/02/21 11:05	09/24/21 10:36	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-155-082621

Lab Sample ID: 160-43230-3

Date Collected: 08/26/21 10:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.35	U	1.26	1.27	5.00	2.17	pCi/g	09/22/21 12:05	09/30/21 17:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	88.0		40 - 110					09/22/21 12:05	09/30/21 17:06	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.825	U	1.61	1.61	5.00	2.98	pCi/g	09/12/21 17:54	10/01/21 10:07	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	85.7		30 - 110					09/12/21 17:54	10/01/21 10:07	1

Client Sample ID: FSS-155-082621

Lab Sample ID: 160-43230-3

Date Collected: 08/26/21 10:30

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 93.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	7.9		0.23	0.014	mg/Kg	☼	09/27/21 14:42	09/28/21 14:45	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	49		19	6.2	ug/Kg	☼	09/21/21 16:50	09/22/21 13:22	1

Client Sample ID: FSS-156-082621

Lab Sample ID: 160-43230-4

Date Collected: 08/26/21 11:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.616		0.194	0.200	3.00	0.256	pCi/g	09/20/21 16:47	10/07/21 20:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	76.7		40 - 110					09/20/21 16:47	10/07/21 20:36	1
Y Carrier	102		40 - 110					09/20/21 16:47	10/07/21 20:36	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.162	U	0.203	0.203	1.00	0.403	pCi/g	09/26/21 17:58	09/28/21 16:11	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-156-082621

Lab Sample ID: 160-43230-4

Date Collected: 08/26/21 11:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	-0.00620	U	0.0266	0.0266	1.00	0.0752	pCi/g	09/11/21 14:30	09/22/21 22:29	1
Plutonium-239/240	0.0207	U	0.0287	0.0287	1.00	0.0463	pCi/g	09/11/21 14:30	09/22/21 22:29	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	85.3		30 - 110					09/11/21 14:30	09/22/21 22:29	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.637		0.153	0.162	1.00	0.0853	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-235/236	0.0566		0.0496	0.0498	1.00	0.0340	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-238	0.745		0.162	0.174	1.00	0.0607	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	72.8		30 - 110					09/12/21 17:52	09/22/21 15:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	1.06	U	0.870	0.878	5.00	1.43	pCi/g	09/27/21 10:38	09/29/21 08:49	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	1.24		0.323	0.346		0.333	pCi/g	09/02/21 11:05	09/24/21 10:37	1
Bismuth-212	2.20		0.673	0.709		0.395	pCi/g	09/02/21 11:05	09/24/21 10:37	1
Bismuth-214	1.06		0.206	0.233		0.150	pCi/g	09/02/21 11:05	09/24/21 10:37	1
Lead-212	1.23		0.157	0.222		0.126	pCi/g	09/02/21 11:05	09/24/21 10:37	1
Lead-214	1.12		0.220	0.248		0.191	pCi/g	09/02/21 11:05	09/24/21 10:37	1
Potassium-40	10.4		1.69	1.99		0.997	pCi/g	09/02/21 11:05	09/24/21 10:37	1
Radium-226	1.06		0.206	0.233	1.00	0.150	pCi/g	09/02/21 11:05	09/24/21 10:37	1
Thorium-232	1.24		0.323	0.346		0.333	pCi/g	09/02/21 11:05	09/24/21 10:37	1
Americium-241	0.0230	U	0.255	0.255		0.440	pCi/g	09/02/21 11:05	09/24/21 10:37	1
Cesium-137	0.812		0.128	0.152		0.0725	pCi/g	09/02/21 11:05	09/24/21 10:37	1
Cobalt-60	-0.0300	U	0.0973	0.0973		0.115	pCi/g	09/02/21 11:05	09/24/21 10:37	1
Europium-152	0.168	U	0.136	0.137		0.320	pCi/g	09/02/21 11:05	09/24/21 10:37	1
Europium-154	0.0655	U	0.0954	0.0956		0.234	pCi/g	09/02/21 11:05	09/24/21 10:37	1
Europium-155	-0.137	U	0.169	0.169		0.592	pCi/g	09/02/21 11:05	09/24/21 10:37	1
Sodium-22	0.0394	U	0.0502	0.0503		0.0836	pCi/g	09/02/21 11:05	09/24/21 10:37	1
Zinc-65	-0.00616	U	0.145	0.145		0.441	pCi/g	09/02/21 11:05	09/24/21 10:37	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.09	U	1.17	1.18	5.00	2.03	pCi/g	09/22/21 12:05	09/30/21 17:39	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-156-082621

Lab Sample ID: 160-43230-4

Date Collected: 08/26/21 11:30

Matrix: Solid

Date Received: 08/27/21 10:15

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	92.0		40 - 110	09/22/21 12:05	09/30/21 17:39	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.40	U	1.59	1.60	5.00	3.03	pCi/g	09/12/21 17:54	10/01/21 10:41	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	85.3		30 - 110	09/12/21 17:54	10/01/21 10:41	1

Client Sample ID: FSS-156-082621

Lab Sample ID: 160-43230-4

Date Collected: 08/26/21 11:30

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 89.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	27		0.26	0.016	mg/Kg	☼	09/27/21 14:42	09/28/21 14:56	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	280		20	6.4	ug/Kg	☼	09/21/21 16:50	09/22/21 13:24	1

Client Sample ID: FSS-157-082621

Lab Sample ID: 160-43230-5

Date Collected: 08/26/21 11:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.310		0.186	0.188	3.00	0.292	pCi/g	09/20/21 16:47	10/07/21 20:36	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	83.4		40 - 110	09/20/21 16:47	10/07/21 20:36	1
Y Carrier	99.8		40 - 110	09/20/21 16:47	10/07/21 20:36	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.214	U	0.200	0.201	1.00	0.411	pCi/g	09/26/21 17:58	09/28/21 16:34	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0102	U	0.0268	0.0268	1.00	0.0784	pCi/g	09/11/21 14:30	09/22/21 22:29	1
Plutonium-239/240	0.0102	U	0.0236	0.0236	1.00	0.0504	pCi/g	09/11/21 14:30	09/22/21 22:29	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	92.2		30 - 110	09/11/21 14:30	09/22/21 22:29	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-157-082621

Lab Sample ID: 160-43230-5

Date Collected: 08/26/21 11:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Uranium-233/234	0.410		0.116	0.120	1.00	0.0515	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-235/236	0.0389	U	0.0409	0.0411	1.00	0.0501	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-238	0.413		0.115	0.120	1.00	0.0402	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	81.4		30 - 110					09/12/21 17:52	09/22/21 15:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Carbon-14	0.335	U	0.761	0.762	5.00	1.31	pCi/g	09/27/21 10:38	09/29/21 09:12	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Actinium 228	0.641		0.136	0.151		0.0742	pCi/g	09/02/21 11:05	09/24/21 11:08	1
Bismuth-212	0.405	U	0.675	0.676		1.16	pCi/g	09/02/21 11:05	09/24/21 11:08	1
Bismuth-214	0.593		0.118	0.132		0.0937	pCi/g	09/02/21 11:05	09/24/21 11:08	1
Lead-212	0.584		0.0934	0.119		0.0985	pCi/g	09/02/21 11:05	09/24/21 11:08	1
Lead-214	0.528		0.112	0.124		0.0981	pCi/g	09/02/21 11:05	09/24/21 11:08	1
Potassium-40	5.68		0.988	1.14		0.639	pCi/g	09/02/21 11:05	09/24/21 11:08	1
Radium-226	0.593		0.118	0.132	1.00	0.0937	pCi/g	09/02/21 11:05	09/24/21 11:08	1
Thorium-232	0.641		0.136	0.151		0.0742	pCi/g	09/02/21 11:05	09/24/21 11:08	1
Americium-241	0.0524	U	0.164	0.164		0.281	pCi/g	09/02/21 11:05	09/24/21 11:08	1
Cesium-137	0.249		0.0626	0.0675		0.0529	pCi/g	09/02/21 11:05	09/24/21 11:08	1
Cobalt-60	0.0116	U	0.0263	0.0264		0.0544	pCi/g	09/02/21 11:05	09/24/21 11:08	1
Europium-152	0.100	U	0.247	0.247		0.174	pCi/g	09/02/21 11:05	09/24/21 11:08	1
Europium-154	0.0330	U	0.0890	0.0891		0.128	pCi/g	09/02/21 11:05	09/24/21 11:08	1
Europium-155	-0.000913	U	0.192	0.192		0.480	pCi/g	09/02/21 11:05	09/24/21 11:08	1
Sodium-22	0.0685		0.0316	0.0323		0.0280	pCi/g	09/02/21 11:05	09/24/21 11:08	1
Zinc-65	0.0115	U	0.129	0.129		0.233	pCi/g	09/02/21 11:05	09/24/21 11:08	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.498	U	1.18	1.18	5.00	2.15	pCi/g	09/22/21 12:05	09/30/21 18:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	94.2		40 - 110					09/22/21 12:05	09/30/21 18:13	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-1.11	U	1.48	1.49	5.00	2.79	pCi/g	09/12/21 17:54	10/01/21 11:14	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-157-082621

Lab Sample ID: 160-43230-5

Date Collected: 08/26/21 11:30

Matrix: Solid

Date Received: 08/27/21 10:15

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	92.2		30 - 110	09/12/21 17:54	10/01/21 11:14	1

Client Sample ID: FSS-157-082621

Lab Sample ID: 160-43230-5

Date Collected: 08/26/21 11:30

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 89.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	14		0.24	0.015	mg/Kg	☼	09/27/21 14:42	09/28/21 14:59	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	99		21	6.9	ug/Kg	☼	09/21/21 16:50	09/22/21 13:27	1

Client Sample ID: FSS-158-082621

Lab Sample ID: 160-43230-6

Date Collected: 08/26/21 11:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.161	U	0.161	0.161	3.00	0.267	pCi/g	09/20/21 16:47	10/07/21 20:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.6		40 - 110					09/20/21 16:47	10/07/21 20:37	1
Y Carrier	101		40 - 110					09/20/21 16:47	10/07/21 20:37	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.122	U	0.211	0.211	1.00	0.411	pCi/g	09/26/21 17:58	09/28/21 16:56	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00795	U	0.0292	0.0292	1.00	0.0652	pCi/g	09/11/21 14:30	09/22/21 22:29	1
Plutonium-239/240	-0.00199	U	0.00390	0.00390	1.00	0.0385	pCi/g	09/11/21 14:30	09/22/21 22:29	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110					09/11/21 14:30	09/22/21 22:29	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.311		0.101	0.104	1.00	0.0410	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-235/236	0.0211	U	0.0292	0.0293	1.00	0.0316	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-238	0.406		0.116	0.121	1.00	0.0564	pCi/g	09/12/21 17:52	09/22/21 15:46	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-158-082621

Lab Sample ID: 160-43230-6

Date Collected: 08/26/21 11:30

Matrix: Solid

Date Received: 08/27/21 10:15

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	83.0		30 - 110	09/12/21 17:52	09/22/21 15:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.715	U	0.649	0.654	5.00	1.07	pCi/g	09/27/21 10:38	09/29/21 09:35	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.408		0.144	0.149		0.0971	pCi/g	09/02/21 11:05	09/24/21 11:09	1
Bismuth-212	-0.216	U	0.759	0.759		1.35	pCi/g	09/02/21 11:05	09/24/21 11:09	1
Bismuth-214	0.275		0.130	0.132		0.141	pCi/g	09/02/21 11:05	09/24/21 11:09	1
Lead-212	0.264		0.0774	0.0819		0.0937	pCi/g	09/02/21 11:05	09/24/21 11:09	1
Lead-214	0.360		0.117	0.123		0.124	pCi/g	09/02/21 11:05	09/24/21 11:09	1
Potassium-40	2.81		0.743	0.793		0.377	pCi/g	09/02/21 11:05	09/24/21 11:09	1
Radium-226	0.275		0.130	0.132	1.00	0.141	pCi/g	09/02/21 11:05	09/24/21 11:09	1
Thorium-232	0.408		0.144	0.149		0.0971	pCi/g	09/02/21 11:05	09/24/21 11:09	1
Americium-241	0.0422	U	0.154	0.154		0.266	pCi/g	09/02/21 11:05	09/24/21 11:09	1
Cesium-137	0.117		0.0560	0.0572		0.0535	pCi/g	09/02/21 11:05	09/24/21 11:09	1
Cobalt-60	-0.0304	U	0.0991	0.0992		0.111	pCi/g	09/02/21 11:05	09/24/21 11:09	1
Europium-152	0.0824	U	0.142	0.142		0.171	pCi/g	09/02/21 11:05	09/24/21 11:09	1
Europium-154	0.0898	U	0.0455	0.0464		0.123	pCi/g	09/02/21 11:05	09/24/21 11:09	1
Europium-155	0.0323	U	0.106	0.106		0.533	pCi/g	09/02/21 11:05	09/24/21 11:09	1
Sodium-22	0.0114	U	0.0355	0.0355		0.0677	pCi/g	09/02/21 11:05	09/24/21 11:09	1
Zinc-65	0.0500	U	0.114	0.114		0.203	pCi/g	09/02/21 11:05	09/24/21 11:09	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.21	U	1.20	1.21	5.00	2.07	pCi/g	09/22/21 12:05	09/30/21 18:46	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	97.0		40 - 110	09/22/21 12:05	09/30/21 18:46	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.17	U	1.29	1.29	5.00	2.42	pCi/g	09/12/21 17:54	10/01/21 11:48	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	101		30 - 110	09/12/21 17:54	10/01/21 11:48	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-158-082621

Lab Sample ID: 160-43230-6

Date Collected: 08/26/21 11:30

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 97.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.5		0.24	0.015	mg/Kg	☼	09/27/21 14:42	09/28/21 15:03	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	18	J	19	6.2	ug/Kg	☼	09/21/21 16:50	09/22/21 13:29	1

Client Sample ID: FSS-159-082621

Lab Sample ID: 160-43230-7

Date Collected: 08/26/21 13:15

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.130	U	0.165	0.165	3.00	0.279	pCi/g	09/20/21 16:47	10/07/21 20:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	79.2		40 - 110					09/20/21 16:47	10/07/21 20:37	1
Y Carrier	97.9		40 - 110					09/20/21 16:47	10/07/21 20:37	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.111	U	0.211	0.211	1.00	0.407	pCi/g	09/26/21 17:58	09/28/21 17:19	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0136	U	0.0219	0.0220	1.00	0.0377	pCi/g	09/11/21 14:30	09/22/21 22:29	1
Plutonium-239/240	-0.00390	U	0.00541	0.00542	1.00	0.0437	pCi/g	09/11/21 14:30	09/22/21 22:29	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	103		30 - 110					09/11/21 14:30	09/22/21 22:29	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.241		0.0909	0.0931	1.00	0.0490	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-235/236	-0.00544	U	0.00755	0.00756	1.00	0.0610	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-238	0.249		0.0924	0.0946	1.00	0.0489	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	80.3		30 - 110					09/12/21 17:52	09/22/21 15:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.938	U	0.723	0.730	5.00	1.18	pCi/g	09/27/21 10:38	09/29/21 09:57	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-159-082621

Lab Sample ID: 160-43230-7

Date Collected: 08/26/21 13:15

Matrix: Solid

Date Received: 08/27/21 10:15

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium-228	0.705		0.159	0.174		0.0786	pCi/g	09/02/21 11:05	09/24/21 10:33	1
Bismuth-212	0.311	U	0.551	0.552		0.954	pCi/g	09/02/21 11:05	09/24/21 10:33	1
Bismuth-214	0.335		0.105	0.111		0.102	pCi/g	09/02/21 11:05	09/24/21 10:33	1
Lead-212	0.406		0.0860	0.100		0.101	pCi/g	09/02/21 11:05	09/24/21 10:33	1
Lead-214	0.437		0.109	0.118		0.0936	pCi/g	09/02/21 11:05	09/24/21 10:33	1
Potassium-40	5.18		0.971	1.10		0.666	pCi/g	09/02/21 11:05	09/24/21 10:33	1
Radium-226	0.335		0.105	0.111	1.00	0.102	pCi/g	09/02/21 11:05	09/24/21 10:33	1
Thorium-232	0.705		0.159	0.174		0.0786	pCi/g	09/02/21 11:05	09/24/21 10:33	1
Americium-241	0.0470	U	0.126	0.127		0.175	pCi/g	09/02/21 11:05	09/24/21 10:33	1
Cesium-137	0.0402	U	0.0706	0.0708		0.121	pCi/g	09/02/21 11:05	09/24/21 10:33	1
Cobalt-60	0.0475		0.0289	0.0293		0.0306	pCi/g	09/02/21 11:05	09/24/21 10:33	1
Europium-152	0.0802	U	0.135	0.135		0.152	pCi/g	09/02/21 11:05	09/24/21 10:33	1
Europium-154	0.0526	U	0.0379	0.0383		0.109	pCi/g	09/02/21 11:05	09/24/21 10:33	1
Europium-155	0.0520	U	0.111	0.111		0.295	pCi/g	09/02/21 11:05	09/24/21 10:33	1
Sodium-22	0.0321		0.0222	0.0224		0.0295	pCi/g	09/02/21 11:05	09/24/21 10:33	1
Zinc-65	0.0143	U	0.136	0.136		0.245	pCi/g	09/02/21 11:05	09/24/21 10:33	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.836	U	1.53	1.53	5.00	2.79	pCi/g	09/22/21 12:05	09/30/21 19:20	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	80.0		40 - 110					09/22/21 12:05	09/30/21 19:20	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.000	U	1.41	1.41	5.00	2.53	pCi/g	09/12/21 17:54	10/01/21 12:21	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	103		30 - 110					09/12/21 17:54	10/01/21 12:21	1

Client Sample ID: FSS-159-082621

Lab Sample ID: 160-43230-7

Date Collected: 08/26/21 13:15

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 95.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	26		0.26	0.016	mg/Kg	☼	09/27/21 14:42	09/28/21 15:06	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	74		19	6.2	ug/Kg	☼	09/21/21 16:50	09/22/21 13:37	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-160-082621

Lab Sample ID: 160-43230-8

Date Collected: 08/26/21 13:15

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0830	U	0.180	0.180	3.00	0.316	pCi/g	09/21/21 13:22	10/08/21 20:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	77.1		40 - 110					09/21/21 13:22	10/08/21 20:22	1
Y Carrier	96.4		40 - 110					09/21/21 13:22	10/08/21 20:22	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.130	U	0.205	0.205	1.00	0.400	pCi/g	09/26/21 17:58	09/28/21 17:41	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0239	U	0.0221	0.0222	1.00	0.0826	pCi/g	09/11/21 14:30	09/22/21 22:29	1
Plutonium-239/240	-0.0240	U	0.0136	0.0137	1.00	0.0749	pCi/g	09/11/21 14:30	09/22/21 22:29	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	97.6		30 - 110					09/11/21 14:30	09/22/21 22:29	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.406		0.115	0.120	1.00	0.0469	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-235/236	0.0182	U	0.0293	0.0294	1.00	0.0504	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-238	0.368		0.110	0.114	1.00	0.0558	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	77.3		30 - 110					09/12/21 17:52	09/22/21 15:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.478	U	0.641	0.643	5.00	1.08	pCi/g	09/27/21 10:38	09/29/21 10:20	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.691		0.148	0.163		0.0772	pCi/g	08/31/21 16:48	09/29/21 13:22	1
Bismuth-212	0.0000000	U	0.666	0.666		1.21	pCi/g	08/31/21 16:48	09/29/21 13:22	1
	648									
Bismuth-214	0.417		0.117	0.125		0.106	pCi/g	08/31/21 16:48	09/29/21 13:22	1
Lead-212	0.517		0.0867	0.109		0.0848	pCi/g	08/31/21 16:48	09/29/21 13:22	1
Lead-214	0.391		0.109	0.116		0.104	pCi/g	08/31/21 16:48	09/29/21 13:22	1
Potassium-40	4.30		0.887	0.986		0.654	pCi/g	08/31/21 16:48	09/29/21 13:22	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-160-082621

Lab Sample ID: 160-43230-8

Date Collected: 08/26/21 13:15

Matrix: Solid

Date Received: 08/27/21 10:15

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.417		0.117	0.125	1.00	0.106	pCi/g	08/31/21 16:48	09/29/21 13:22	1
Thorium-232	0.691		0.148	0.163		0.0772	pCi/g	08/31/21 16:48	09/29/21 13:22	1
Americium-241	-0.0631	U	0.142	0.142		0.194	pCi/g	08/31/21 16:48	09/29/21 13:22	1
Cesium-137	0.413		0.0667	0.0789		0.0207	pCi/g	08/31/21 16:48	09/29/21 13:22	1
Cobalt-60	-0.0226	U	0.0612	0.0612		0.0905	pCi/g	08/31/21 16:48	09/29/21 13:22	1
Europium-152	0.0755	U	0.160	0.160		0.135	pCi/g	08/31/21 16:48	09/29/21 13:22	1
Europium-154	0.136		0.0568	0.0585		0.118	pCi/g	08/31/21 16:48	09/29/21 13:22	1
Europium-155	-0.0738	U	0.206	0.206		0.351	pCi/g	08/31/21 16:48	09/29/21 13:22	1
Sodium-22	0.0249	U	0.0324	0.0325		0.0543	pCi/g	08/31/21 16:48	09/29/21 13:22	1
Zinc-65	0.000	U	0.0137	0.0137		0.241	pCi/g	08/31/21 16:48	09/29/21 13:22	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.12	U	1.37	1.37	5.00	2.39	pCi/g	09/22/21 12:05	09/30/21 20:27	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	81.9		40 - 110					09/22/21 12:05	09/30/21 20:27	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.310	U	1.47	1.47	5.00	2.72	pCi/g	09/12/21 17:54	10/01/21 12:55	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	97.6		30 - 110					09/12/21 17:54	10/01/21 12:55	1

Client Sample ID: FSS-160-082621

Lab Sample ID: 160-43230-8

Date Collected: 08/26/21 13:15

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 89.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	19		0.26	0.016	mg/Kg	☼	09/27/21 14:42	09/28/21 15:10	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	54		20	6.5	ug/Kg	☼	09/21/21 16:50	09/22/21 13:40	1

Client Sample ID: FSS-161-082621

Lab Sample ID: 160-43230-9

Date Collected: 08/26/21 13:15

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.341	U	0.275	0.276	3.00	0.436	pCi/g	09/21/21 13:22	10/08/21 20:32	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-161-082621

Lab Sample ID: 160-43230-9

Date Collected: 08/26/21 13:15

Matrix: Solid

Date Received: 08/27/21 10:15

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	75.8		40 - 110	09/21/21 13:22	10/08/21 20:32	1
Y Carrier	95.7		40 - 110	09/21/21 13:22	10/08/21 20:32	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.160	U	0.212	0.212	1.00	0.424	pCi/g	09/26/21 17:58	09/28/21 18:04	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0262	U	0.0298	0.0298	1.00	0.0419	pCi/g	09/11/21 14:30	09/22/21 22:29	1
Plutonium-239/240	0.0131	U	0.0211	0.0211	1.00	0.0362	pCi/g	09/11/21 14:30	09/22/21 22:29	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	97.7		30 - 110	09/11/21 14:30	09/22/21 22:29	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.412		0.116	0.121	1.00	0.0551	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-235/236	0.00770	U	0.0207	0.0207	1.00	0.0497	pCi/g	09/12/21 17:52	09/22/21 15:46	1
Uranium-238	0.393		0.112	0.116	1.00	0.0398	pCi/g	09/12/21 17:52	09/22/21 15:46	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	83.3		30 - 110	09/12/21 17:52	09/22/21 15:46	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.502	U	0.705	0.707	5.00	1.20	pCi/g	09/27/21 10:38	09/29/21 10:43	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.701		0.141	0.157		0.120	pCi/g	09/02/21 11:50	09/30/21 06:38	1
Bismuth-212	0.449	U	0.803	0.804		1.38	pCi/g	09/02/21 11:50	09/30/21 06:38	1
Bismuth-214	0.695		0.138	0.155		0.108	pCi/g	09/02/21 11:50	09/30/21 06:38	1
Lead-212	0.479		0.0891	0.108		0.100	pCi/g	09/02/21 11:50	09/30/21 06:38	1
Lead-214	0.725		0.147	0.164		0.127	pCi/g	09/02/21 11:50	09/30/21 06:38	1
Potassium-40	4.98		0.939	1.06		0.643	pCi/g	09/02/21 11:50	09/30/21 06:38	1
Radium-226	0.695		0.138	0.155	1.00	0.108	pCi/g	09/02/21 11:50	09/30/21 06:38	1
Thorium-232	0.701		0.141	0.157		0.120	pCi/g	09/02/21 11:50	09/30/21 06:38	1
Americium-241	-0.0744	U	0.195	0.195		0.333	pCi/g	09/02/21 11:50	09/30/21 06:38	1
Cesium-137	0.0326	U	0.0636	0.0637		0.110	pCi/g	09/02/21 11:50	09/30/21 06:38	1
Cobalt-60	-0.0120	U	0.0879	0.0879		0.0730	pCi/g	09/02/21 11:50	09/30/21 06:38	1
Europium-152	0.111	U	0.209	0.209		0.276	pCi/g	09/02/21 11:50	09/30/21 06:38	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-161-082621

Lab Sample ID: 160-43230-9

Date Collected: 08/26/21 13:15

Matrix: Solid

Date Received: 08/27/21 10:15

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0174	U	0.0304	0.0304		0.133	pCi/g	09/02/21 11:50	09/30/21 06:38	1
Europium-155	0.0336	U	0.101	0.101		0.326	pCi/g	09/02/21 11:50	09/30/21 06:38	1
Sodium-22	-0.0143	U	0.0381	0.0381		0.0697	pCi/g	09/02/21 11:50	09/30/21 06:38	1
Zinc-65	0.000	U	0.0192	0.0192		0.184	pCi/g	09/02/21 11:50	09/30/21 06:38	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.952	U	1.20	1.21	5.00	2.10	pCi/g	09/22/21 12:05	09/30/21 21:01	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	88.7		40 - 110					09/22/21 12:05	09/30/21 21:01	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.907	U	1.36	1.36	5.00	2.52	pCi/g	09/12/21 17:54	10/01/21 13:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	97.7		30 - 110					09/12/21 17:54	10/01/21 13:28	1

Client Sample ID: FSS-161-082621

Lab Sample ID: 160-43230-9

Date Collected: 08/26/21 13:15

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 97.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	9.5		0.25	0.015	mg/Kg	☼	09/27/21 14:42	09/28/21 15:13	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	41		18	5.8	ug/Kg	☼	09/21/21 16:50	09/22/21 13:42	1

Client Sample ID: FSS-162-082621

Lab Sample ID: 160-43230-10

Date Collected: 08/26/21 13:45

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.442	U	0.290	0.292	3.00	0.447	pCi/g	09/21/21 13:22	10/08/21 20:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	77.3		40 - 110					09/21/21 13:22	10/08/21 20:33	1
Y Carrier	101		40 - 110					09/21/21 13:22	10/08/21 20:33	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-162-082621

Lab Sample ID: 160-43230-10

Date Collected: 08/26/21 13:45

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0733	U	0.216	0.216	1.00	0.412	pCi/g	09/26/21 17:58	09/28/21 18:27	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0215	U	0.0133	0.0135	1.00	0.0759	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Plutonium-239/240	-0.00431	U	0.0198	0.0198	1.00	0.0647	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.0		30 - 110					09/11/21 15:09	09/22/21 22:28	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.142		0.0721	0.0731	1.00	0.0739	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Uranium-235/236	0.000	U	0.00481	0.00481	1.00	0.0295	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Uranium-238	0.228		0.0849	0.0869	1.00	0.0526	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	81.5		30 - 110					09/12/21 17:35	09/23/21 20:09	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.454	U	0.692	0.694	5.00	1.20	pCi/g	09/27/21 10:38	09/29/21 11:05	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.190	U	0.113	0.114		0.315	pCi/g	09/02/21 11:50	09/30/21 06:40	1
Bismuth-212	0.185	U	0.478	0.478		0.854	pCi/g	09/02/21 11:50	09/30/21 06:40	1
Bismuth-214	0.262		0.101	0.105		0.0957	pCi/g	09/02/21 11:50	09/30/21 06:40	1
Lead-212	0.384		0.0838	0.0970		0.0965	pCi/g	09/02/21 11:50	09/30/21 06:40	1
Lead-214	0.389		0.0925	0.101		0.0884	pCi/g	09/02/21 11:50	09/30/21 06:40	1
Potassium-40	4.14		0.898	0.989		0.688	pCi/g	09/02/21 11:50	09/30/21 06:40	1
Radium-226	0.262		0.101	0.105	1.00	0.0957	pCi/g	09/02/21 11:50	09/30/21 06:40	1
Thorium-232	0.190	U	0.113	0.114		0.315	pCi/g	09/02/21 11:50	09/30/21 06:40	1
Americium-241	-0.0508	U	0.131	0.131		0.180	pCi/g	09/02/21 11:50	09/30/21 06:40	1
Cesium-137	0.418		0.0764	0.0875		0.0481	pCi/g	09/02/21 11:50	09/30/21 06:40	1
Cobalt-60	-0.00232	U	0.0451	0.0451		0.0316	pCi/g	09/02/21 11:50	09/30/21 06:40	1
Europium-152	0.0776	U	0.115	0.115		0.160	pCi/g	09/02/21 11:50	09/30/21 06:40	1
Europium-154	0.0285	U	0.0507	0.0508		0.108	pCi/g	09/02/21 11:50	09/30/21 06:40	1
Europium-155	0.000	U	0.0872	0.0872		0.351	pCi/g	09/02/21 11:50	09/30/21 06:40	1
Sodium-22	-0.0290	U	0.0520	0.0521		0.0908	pCi/g	09/02/21 11:50	09/30/21 06:40	1
Zinc-65	0.000	U	0.0145	0.0145		0.232	pCi/g	09/02/21 11:50	09/30/21 06:40	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-162-082621

Lab Sample ID: 160-43230-10

Date Collected: 08/26/21 13:45

Matrix: Solid

Date Received: 08/27/21 10:15

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.765	U	1.02	1.02	5.00	1.73	pCi/g	09/29/21 15:43	10/05/21 20:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	72.9		40 - 110					09/29/21 15:43	10/05/21 20:16	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.42	U	1.52	1.53	5.00	2.55	pCi/g	09/12/21 17:38	09/30/21 12:17	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	89.0		30 - 110					09/12/21 17:38	09/30/21 12:17	1

Client Sample ID: FSS-162-082621

Lab Sample ID: 160-43230-10

Date Collected: 08/26/21 13:45

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 88.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	9.5		0.25	0.015	mg/Kg	☼	09/27/21 14:42	09/28/21 15:17	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	58		21	6.9	ug/Kg	☼	09/21/21 16:50	09/22/21 13:45	1

Client Sample ID: FSS-163-082621

Lab Sample ID: 160-43230-11

Date Collected: 08/26/21 13:45

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.295	U	0.302	0.303	3.00	0.500	pCi/g	09/21/21 13:22	10/08/21 20:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	72.4		40 - 110					09/21/21 13:22	10/08/21 20:33	1
Y Carrier	94.6		40 - 110					09/21/21 13:22	10/08/21 20:33	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.135	U	0.208	0.209	1.00	0.410	pCi/g	09/26/21 17:58	09/28/21 18:50	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-163-082621

Lab Sample ID: 160-43230-11

Date Collected: 08/26/21 13:45

Matrix: Solid

Date Received: 08/27/21 10:15

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	0.0312	U	0.0405	0.0406	1.00	0.0669	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Plutonium-239/240	0.0246	U	0.0306	0.0307	1.00	0.0432	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	96.7		30 - 110					09/11/21 15:09	09/22/21 22:28	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.295		0.105	0.108	1.00	0.0807	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Uranium-235/236	0.0524	U	0.0487	0.0489	1.00	0.0534	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Uranium-238	0.288		0.0998	0.103	1.00	0.0496	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	88.8		30 - 110					09/12/21 17:35	09/23/21 20:11	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.0842	U	0.745	0.745	5.00	1.33	pCi/g	09/27/21 10:38	09/29/21 11:28	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.368		0.106	0.112		0.121	pCi/g	09/02/21 11:50	09/30/21 07:14	1
Bismuth-212	0.299	U	0.489	0.490		0.840	pCi/g	09/02/21 11:50	09/30/21 07:14	1
Bismuth-214	0.385		0.0966	0.104		0.0882	pCi/g	09/02/21 11:50	09/30/21 07:14	1
Lead-212	0.390		0.0671	0.0833		0.0667	pCi/g	09/02/21 11:50	09/30/21 07:14	1
Lead-214	0.418		0.0771	0.0880		0.0798	pCi/g	09/02/21 11:50	09/30/21 07:14	1
Potassium-40	4.06		0.759	0.861		0.501	pCi/g	09/02/21 11:50	09/30/21 07:14	1
Radium-226	0.385		0.0966	0.104	1.00	0.0882	pCi/g	09/02/21 11:50	09/30/21 07:14	1
Thorium-232	0.368		0.106	0.112		0.121	pCi/g	09/02/21 11:50	09/30/21 07:14	1
Americium-241	-0.0294	U	0.124	0.124		0.214	pCi/g	09/02/21 11:50	09/30/21 07:14	1
Cesium-137	0.223		0.0500	0.0549		0.0299	pCi/g	09/02/21 11:50	09/30/21 07:14	1
Cobalt-60	0.00108	U	0.0358	0.0358		0.0449	pCi/g	09/02/21 11:50	09/30/21 07:14	1
Europium-152	0.0272	U	0.0794	0.0794		0.107	pCi/g	09/02/21 11:50	09/30/21 07:14	1
Europium-154	0.0244	U	0.0767	0.0767		0.0881	pCi/g	09/02/21 11:50	09/30/21 07:14	1
Europium-155	-0.00425	U	0.0102	0.0102		0.406	pCi/g	09/02/21 11:50	09/30/21 07:14	1
Sodium-22	0.0376		0.0213	0.0216		0.0231	pCi/g	09/02/21 11:50	09/30/21 07:14	1
Zinc-65	0.000	U	0.0154	0.0154		0.173	pCi/g	09/02/21 11:50	09/30/21 07:14	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.822	U	0.996	1.00	5.00	1.73	pCi/g	09/29/21 15:43	10/05/21 21:22	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-163-082621

Lab Sample ID: 160-43230-11

Date Collected: 08/26/21 13:45

Matrix: Solid

Date Received: 08/27/21 10:15

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	83.0		40 - 110	09/29/21 15:43	10/05/21 21:22	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.380	U	1.32	1.32	5.00	2.43	pCi/g	09/12/21 17:38	09/30/21 13:24	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	96.7		30 - 110	09/12/21 17:38	09/30/21 13:24	1

Client Sample ID: FSS-163-082621

Lab Sample ID: 160-43230-11

Date Collected: 08/26/21 13:45

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 99.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	9.0		0.23	0.014	mg/Kg	☼	09/27/21 14:42	09/28/21 15:20	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	71		18	5.9	ug/Kg	☼	09/21/21 16:50	09/22/21 13:47	1

Client Sample ID: FSS-164-082621

Lab Sample ID: 160-43230-12

Date Collected: 08/26/21 13:45

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.609		0.312	0.316	3.00	0.457	pCi/g	09/21/21 13:22	10/08/21 20:33	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	83.3		40 - 110	09/21/21 13:22	10/08/21 20:33	1
Y Carrier	95.7		40 - 110	09/21/21 13:22	10/08/21 20:33	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.000591	U	0.219	0.219	1.00	0.401	pCi/g	09/26/21 17:58	09/28/21 19:12	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00231	U	0.0207	0.0207	1.00	0.0656	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Plutonium-239/240	0.00231	U	0.0197	0.0197	1.00	0.0571	pCi/g	09/11/21 15:09	09/22/21 22:28	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.1		30 - 110	09/11/21 15:09	09/22/21 22:28	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-164-082621

Lab Sample ID: 160-43230-12

Date Collected: 08/26/21 13:45

Matrix: Solid

Date Received: 08/27/21 10:15

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.261		0.0942	0.0966	1.00	0.0424	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Uranium-235/236	0.000	U	0.00535	0.00535	1.00	0.0327	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Uranium-238	0.291		0.100	0.103	1.00	0.0541	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	74.9		30 - 110					09/12/21 17:35	09/23/21 20:11	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	-0.0938	U	0.677	0.677	5.00	1.22	pCi/g	09/27/21 10:38	09/29/21 11:51	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.525		0.150	0.159		0.0859	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Bismuth-212	0.457	U	0.765	0.766		1.31	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Bismuth-214	0.416		0.136	0.142		0.129	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Lead-212	0.417		0.0871	0.0969		0.0978	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Lead-214	0.331		0.0974	0.103		0.100	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Potassium-40	3.80		0.812	0.894		0.333	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Radium-226	0.416		0.136	0.142	1.00	0.129	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Thorium-232	0.525		0.150	0.159		0.0859	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Americium-241	-0.0119	U	0.156	0.156		0.270	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Cesium-137	0.170		0.0453	0.0484		0.0232	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Cobalt-60	-0.0224	U	0.0872	0.0873		0.0983	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Europium-152	0.0941	U	0.0512	0.0520		0.173	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Europium-154	0.0316	U	0.0675	0.0675		0.116	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Europium-155	0.0171	U	0.0516	0.0517		0.516	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Sodium-22	0.0347		0.0240	0.0243		0.0320	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Zinc-65	0.000	U	0.0215	0.0215		0.228	pCi/g	09/02/21 11:50	09/30/21 07:15	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	1.20	U	1.16	1.16	5.00	2.02	pCi/g	09/22/21 12:05	09/30/21 21:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	105		40 - 110					09/22/21 12:05	09/30/21 21:34	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	0.796	U	1.72	1.72	5.00	3.00	pCi/g	09/12/21 17:38	09/30/21 13:57	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-164-082621

Lab Sample ID: 160-43230-12

Date Collected: 08/26/21 13:45

Matrix: Solid

Date Received: 08/27/21 10:15

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.1		30 - 110	09/12/21 17:38	09/30/21 13:57	1

Client Sample ID: FSS-164-082621

Lab Sample ID: 160-43230-12

Date Collected: 08/26/21 13:45

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 93.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	6.5		0.24	0.015	mg/Kg	☼	09/27/21 14:42	09/28/21 15:29	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	71		19	6.2	ug/Kg	☼	09/21/21 16:50	09/22/21 13:50	1

Client Sample ID: FSS-165-082621

Lab Sample ID: 160-43230-13

Date Collected: 08/26/21 14:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0295	U	0.255	0.255	3.00	0.490	pCi/g	09/21/21 13:22	10/08/21 20:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	78.5		40 - 110					09/21/21 13:22	10/08/21 20:33	1
Y Carrier	89.7		40 - 110					09/21/21 13:22	10/08/21 20:33	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.243	U	0.195	0.196	1.00	0.404	pCi/g	09/26/21 17:58	09/28/21 19:35	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0133	U	0.0254	0.0254	1.00	0.0497	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Plutonium-239/240	0.0111	U	0.0323	0.0323	1.00	0.0699	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	93.4		30 - 110					09/11/21 15:09	09/22/21 22:28	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.246		0.0922	0.0944	1.00	0.0430	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Uranium-235/236	0.00828	U	0.0223	0.0223	1.00	0.0535	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Uranium-238	0.184		0.0820	0.0834	1.00	0.0630	pCi/g	09/12/21 17:35	09/23/21 20:09	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-165-082621

Lab Sample ID: 160-43230-13

Date Collected: 08/26/21 14:30

Matrix: Solid

Date Received: 08/27/21 10:15

<u>Tracer</u>	<u>%Yield</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Uranium-232	77.2		30 - 110	09/12/21 17:35	09/23/21 20:09	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Count</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>Total</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>LOQ</u>	<u>MDC</u>	<u>Unit</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Carbon-14	0.392	U	0.829	0.831	5.00	1.43	pCi/g	09/27/21 10:38	09/29/21 12:13	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Count</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>Total</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>LOQ</u>	<u>MDC</u>	<u>Unit</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Actinium 228	0.425		0.117	0.125		0.0688	pCi/g	08/31/21 16:48	09/29/21 14:01	1
Bismuth-212	-0.186	U	0.543	0.544		0.961	pCi/g	08/31/21 16:48	09/29/21 14:01	1
Bismuth-214	0.249		0.0720	0.0763		0.0485	pCi/g	08/31/21 16:48	09/29/21 14:01	1
Lead-212	0.394		0.0670	0.0836		0.0572	pCi/g	08/31/21 16:48	09/29/21 14:01	1
Lead-214	0.340		0.0675	0.0758		0.0383	pCi/g	08/31/21 16:48	09/29/21 14:01	1
Potassium-40	3.17		0.670	0.741		0.272	pCi/g	08/31/21 16:48	09/29/21 14:01	1
Radium-226	0.249		0.0720	0.0763	1.00	0.0485	pCi/g	08/31/21 16:48	09/29/21 14:01	1
Thorium-232	0.425		0.117	0.125		0.0688	pCi/g	08/31/21 16:48	09/29/21 14:01	1
Americium-241	-0.0641	U	0.140	0.140		0.239	pCi/g	08/31/21 16:48	09/29/21 14:01	1
Cesium-137	0.129		0.0412	0.0432		0.0335	pCi/g	08/31/21 16:48	09/29/21 14:01	1
Cobalt-60	0.0168	U	0.00949	0.00963		0.0504	pCi/g	08/31/21 16:48	09/29/21 14:01	1
Europium-152	0.0601	U	0.0965	0.0967		0.143	pCi/g	08/31/21 16:48	09/29/21 14:01	1
Europium-154	0.0500	U	0.0349	0.0353		0.0911	pCi/g	08/31/21 16:48	09/29/21 14:01	1
Europium-155	-0.0150	U	0.209	0.209		0.360	pCi/g	08/31/21 16:48	09/29/21 14:01	1
Sodium-22	0.0118	U	0.0265	0.0265		0.0487	pCi/g	08/31/21 16:48	09/29/21 14:01	1
Zinc-65	0.0422	U	0.0813	0.0814		0.143	pCi/g	08/31/21 16:48	09/29/21 14:01	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Count</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>Total</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>LOQ</u>	<u>MDC</u>	<u>Unit</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Nickel-63	0.601	U	1.27	1.27	5.00	2.27	pCi/g	09/22/21 12:05	09/30/21 22:08	1

<u>Carrier</u>	<u>%Yield</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Ni	88.9		40 - 110	09/22/21 12:05	09/30/21 22:08	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Count</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>Total</u> <u>Uncert.</u> <u>(1.96σ+/-)</u>	<u>LOQ</u>	<u>MDC</u>	<u>Unit</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Plutonium-241	-0.461	U	1.32	1.32	5.00	2.43	pCi/g	09/12/21 17:38	09/30/21 14:31	1

<u>Tracer</u>	<u>%Yield</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Pu-242 (T)	93.4		30 - 110	09/12/21 17:38	09/30/21 14:31	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-165-082621

Lab Sample ID: 160-43230-13

Date Collected: 08/26/21 14:30

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 92.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	11		0.25	0.015	mg/Kg	☼	09/27/21 14:42	09/28/21 15:40	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	13	J	20	6.4	ug/Kg	☼	09/21/21 16:50	09/22/21 13:52	1

Client Sample ID: FSS-166-082621

Lab Sample ID: 160-43230-14

Date Collected: 08/26/21 14:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.104	U	0.213	0.213	3.00	0.380	pCi/g	09/21/21 13:22	10/08/21 20:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.6		40 - 110					09/21/21 13:22	10/08/21 20:33	1
Y Carrier	94.6		40 - 110					09/21/21 13:22	10/08/21 20:33	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.0206	U	0.227	0.227	1.00	0.416	pCi/g	09/26/21 17:58	09/28/21 19:57	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00755	U	0.0203	0.0203	1.00	0.0487	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Plutonium-239/240	-0.00252	U	0.00494	0.00494	1.00	0.0487	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	69.8		30 - 110					09/11/21 15:09	09/22/21 22:28	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.221		0.0952	0.0969	1.00	0.0789	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Uranium-235/236	0.00598	U	0.0249	0.0249	1.00	0.0670	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Uranium-238	0.264		0.0997	0.102	1.00	0.0537	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	72.3		30 - 110					09/12/21 17:35	09/23/21 20:11	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.196	U	0.821	0.821	5.00	1.44	pCi/g	09/27/21 10:38	09/29/21 12:36	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-166-082621

Lab Sample ID: 160-43230-14

Date Collected: 08/26/21 14:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.289		0.226	0.228		0.264	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Bismuth-212	0.768		0.336	0.345		0.283	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Bismuth-214	0.491		0.142	0.151		0.123	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Lead-212	0.420		0.0846	0.100		0.0882	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Lead-214	0.275		0.0968	0.101		0.131	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Potassium-40	3.61		0.884	0.955		0.735	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Radium-226	0.491		0.142	0.151	1.00	0.123	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Thorium-232	0.289		0.226	0.228		0.264	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Americium-241	0.0637	U	0.159	0.159		0.272	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Cesium-137	0.0309	U	0.0577	0.0578		0.0999	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Cobalt-60	-0.00143	U	0.0512	0.0512		0.0339	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Europium-152	0.0190	U	0.0141	0.0143		0.194	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Europium-154	-0.0104	U	0.0809	0.0809		0.141	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Europium-155	0.0665	U	0.131	0.131		0.377	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Sodium-22	0.0267	U	0.0213	0.0215		0.0327	pCi/g	09/02/21 11:50	09/30/21 07:15	1
Zinc-65	-0.0279	U	0.154	0.154		0.276	pCi/g	09/02/21 11:50	09/30/21 07:15	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	2.10	U	1.53	1.54	5.00	2.56	pCi/g	09/22/21 12:05	09/30/21 22:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	75.5		40 - 110					09/22/21 12:05	09/30/21 22:41	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.774	U	1.91	1.91	5.00	3.34	pCi/g	09/12/21 17:38	09/30/21 15:04	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	69.8		30 - 110					09/12/21 17:38	09/30/21 15:04	1

Client Sample ID: FSS-166-082621

Lab Sample ID: 160-43230-14

Date Collected: 08/26/21 14:30

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 96.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	8.6		0.23	0.014	mg/Kg	☼	09/27/21 14:42	09/28/21 15:43	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	28		18	5.9	ug/Kg	☼	09/21/21 16:50	09/22/21 13:55	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-167-082621

Lab Sample ID: 160-43230-15

Date Collected: 08/26/21 14:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.262	U	0.269	0.269	3.00	0.445	pCi/g	09/21/21 13:22	10/08/21 20:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.3		40 - 110					09/21/21 13:22	10/08/21 20:33	1
Y Carrier	95.3		40 - 110					09/21/21 13:22	10/08/21 20:33	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0552	U	0.219	0.219	1.00	0.413	pCi/g	09/26/21 17:58	09/28/21 20:20	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00668	U	0.0180	0.0180	1.00	0.0431	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Plutonium-239/240	0.000	U	0.00437	0.00437	1.00	0.0267	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.9		30 - 110					09/11/21 15:09	09/22/21 22:28	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.170		0.0789	0.0802	1.00	0.0598	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Uranium-235/236	0.0195	U	0.0313	0.0314	1.00	0.0539	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Uranium-238	0.167		0.0789	0.0801	1.00	0.0635	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	91.7		30 - 110					09/12/21 17:35	09/23/21 20:11	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.0763	U	0.656	0.656	5.00	1.16	pCi/g	09/27/21 10:38	09/29/21 12:58	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.226		0.148	0.150		0.159	pCi/g	09/02/21 11:50	09/30/21 07:50	1
Bismuth-212	0.000	U	0.334	0.334		0.804	pCi/g	09/02/21 11:50	09/30/21 07:50	1
Bismuth-214	0.272		0.0780	0.0827		0.0726	pCi/g	09/02/21 11:50	09/30/21 07:50	1
Lead-212	0.380		0.0643	0.0803		0.0573	pCi/g	09/02/21 11:50	09/30/21 07:50	1
Lead-214	0.330		0.0840	0.0905		0.0757	pCi/g	09/02/21 11:50	09/30/21 07:50	1
Potassium-40	2.80		0.658	0.715		0.517	pCi/g	09/02/21 11:50	09/30/21 07:50	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-167-082621

Lab Sample ID: 160-43230-15

Date Collected: 08/26/21 14:30

Matrix: Solid

Date Received: 08/27/21 10:15

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.272		0.0780	0.0827	1.00	0.0726	pCi/g	09/02/21 11:50	09/30/21 07:50	1
Thorium-232	0.226		0.148	0.150		0.159	pCi/g	09/02/21 11:50	09/30/21 07:50	1
Americium-241	0.0471	U	0.0967	0.0968		0.127	pCi/g	09/02/21 11:50	09/30/21 07:50	1
Cesium-137	-0.00184	U	0.0279	0.0279		0.0643	pCi/g	09/02/21 11:50	09/30/21 07:50	1
Cobalt-60	-0.0324	U	0.0762	0.0763		0.0835	pCi/g	09/02/21 11:50	09/30/21 07:50	1
Europium-152	0.0616	U	0.0998	0.100		0.126	pCi/g	09/02/21 11:50	09/30/21 07:50	1
Europium-154	0.113		0.0434	0.0449		0.0913	pCi/g	09/02/21 11:50	09/30/21 07:50	1
Europium-155	0.0216	U	0.0667	0.0668		0.181	pCi/g	09/02/21 11:50	09/30/21 07:50	1
Sodium-22	0.00540	U	0.0313	0.0313		0.0596	pCi/g	09/02/21 11:50	09/30/21 07:50	1
Zinc-65	0.00619	U	0.0976	0.0976		0.178	pCi/g	09/02/21 11:50	09/30/21 07:50	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.74	U	1.38	1.39	5.00	2.34	pCi/g	09/22/21 12:05	09/30/21 23:15	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Ni</i>	87.2		40 - 110					09/22/21 12:05	09/30/21 23:15	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	1.01	U	1.70	1.70	5.00	2.92	pCi/g	09/12/21 17:38	09/30/21 15:38	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	79.9		30 - 110					09/12/21 17:38	09/30/21 15:38	1

Client Sample ID: FSS-167-082621

Lab Sample ID: 160-43230-15

Date Collected: 08/26/21 14:30

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 99.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	7.9		0.27	0.016	mg/Kg	☼	09/27/21 14:42	09/28/21 15:47	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	24		18	5.9	ug/Kg	☼	09/21/21 16:50	09/22/21 13:57	1

Client Sample ID: FSS-168-082621

Lab Sample ID: 160-43230-16

Date Collected: 08/26/21 14:45

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.330	U	0.322	0.324	3.00	0.532	pCi/g	09/21/21 13:22	10/08/21 20:33	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-168-082621

Lab Sample ID: 160-43230-16

Date Collected: 08/26/21 14:45

Matrix: Solid

Date Received: 08/27/21 10:15

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	79.3		40 - 110	09/21/21 13:22	10/08/21 20:33	1
Y Carrier	93.1		40 - 110	09/21/21 13:22	10/08/21 20:33	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.132	U	0.242	0.242	1.00	0.424	pCi/g	09/26/21 17:58	09/28/21 20:43	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0117	U	0.0398	0.0398	1.00	0.0897	pCi/g	09/11/21 15:09	09/23/21 10:32	1
Plutonium-239/240	0.000	U	0.0325	0.0325	1.00	0.0898	pCi/g	09/11/21 15:09	09/23/21 10:32	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	15.0	Q	30 - 110	09/11/21 15:09	09/23/21 10:32	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.434		0.163	0.167	1.00	0.126	pCi/g	09/12/21 17:35	09/24/21 20:59	1
Uranium-235/236	0.0179	U	0.0352	0.0352	1.00	0.0538	pCi/g	09/12/21 17:35	09/24/21 20:59	1
Uranium-238	0.423		0.155	0.159	1.00	0.0909	pCi/g	09/12/21 17:35	09/24/21 20:59	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	18.8	Q	30 - 110	09/12/21 17:35	09/24/21 20:59	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.102	U	0.630	0.631	5.00	1.12	pCi/g	09/27/21 10:38	09/29/21 13:21	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.254	U	0.237	0.238		0.310	pCi/g	09/02/21 11:50	09/30/21 07:52	1
Bismuth-212	-0.0143	U	0.679	0.679		1.25	pCi/g	09/02/21 11:50	09/30/21 07:52	1
Bismuth-214	0.501		0.124	0.134		0.108	pCi/g	09/02/21 11:50	09/30/21 07:52	1
Lead-212	0.492		0.102	0.114		0.118	pCi/g	09/02/21 11:50	09/30/21 07:52	1
Lead-214	0.484		0.130	0.139		0.133	pCi/g	09/02/21 11:50	09/30/21 07:52	1
Potassium-40	6.17		1.10	1.26		0.376	pCi/g	09/02/21 11:50	09/30/21 07:52	1
Radium-226	0.501		0.124	0.134	1.00	0.108	pCi/g	09/02/21 11:50	09/30/21 07:52	1
Thorium-232	0.254	U	0.237	0.238		0.310	pCi/g	09/02/21 11:50	09/30/21 07:52	1
Americium-241	0.0630	U	0.155	0.156		0.267	pCi/g	09/02/21 11:50	09/30/21 07:52	1
Cesium-137	0.0260	U	0.0514	0.0515		0.0901	pCi/g	09/02/21 11:50	09/30/21 07:52	1
Cobalt-60	-0.0557	U	0.101	0.102		0.111	pCi/g	09/02/21 11:50	09/30/21 07:52	1
Europium-152	0.0707	U	0.214	0.214		0.210	pCi/g	09/02/21 11:50	09/30/21 07:52	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-168-082621

Lab Sample ID: 160-43230-16

Date Collected: 08/26/21 14:45

Matrix: Solid

Date Received: 08/27/21 10:15

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Europium-154	0.0687	U	0.114	0.114		0.141	pCi/g	09/02/21 11:50	09/30/21 07:52	1
Europium-155	-0.00746	U	0.0171	0.0171		0.589	pCi/g	09/02/21 11:50	09/30/21 07:52	1
Sodium-22	-0.0114	U	0.0480	0.0480		0.0901	pCi/g	09/02/21 11:50	09/30/21 07:52	1
Zinc-65	0.000	U	0.0171	0.0171		0.306	pCi/g	09/02/21 11:50	09/30/21 07:52	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.42	U	1.26	1.27	5.00	2.17	pCi/g	09/22/21 12:05	09/30/21 23:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	92.6		40 - 110					09/22/21 12:05	09/30/21 23:48	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	27.2	U	87.6	87.6	5.00	153	pCi/g	09/12/21 17:38	09/30/21 16:11	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	1.50	Q	30 - 110					09/12/21 17:38	09/30/21 16:11	1

Client Sample ID: FSS-168-082621

Lab Sample ID: 160-43230-16

Date Collected: 08/26/21 14:45

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 81.7

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	13		0.27	0.017	mg/Kg	☼	09/27/21 14:42	09/28/21 15:50	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	34		24	7.7	ug/Kg	☼	09/21/21 16:50	09/22/21 14:00	1

Client Sample ID: FSS-169-082621

Lab Sample ID: 160-43230-17

Date Collected: 08/26/21 14:45

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0875	U	0.212	0.212	3.00	0.428	pCi/g	09/21/21 13:22	10/08/21 20:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	81.8		40 - 110					09/21/21 13:22	10/08/21 20:34	1
Y Carrier	96.1		40 - 110					09/21/21 13:22	10/08/21 20:34	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-169-082621

Lab Sample ID: 160-43230-17

Date Collected: 08/26/21 14:45

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0506	U	0.225	0.225	1.00	0.430	pCi/g	09/26/21 17:58	09/28/21 21:05	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.00366	U	0.0124	0.0124	1.00	0.0280	pCi/g	09/11/21 15:09	09/23/21 10:32	1
Plutonium-239/240	0.00732	U	0.0102	0.0102	1.00	0.0110	pCi/g	09/11/21 15:09	09/23/21 10:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	47.9		30 - 110					09/11/21 15:09	09/23/21 10:32	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.212		0.125	0.126	1.00	0.145	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Uranium-235/236	-0.0228	U	0.0200	0.0201	1.00	0.130	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Uranium-238	0.259		0.122	0.124	1.00	0.0707	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	45.2		30 - 110					09/12/21 17:35	09/23/21 20:11	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-0.0983	U	0.712	0.712	5.00	1.28	pCi/g	09/28/21 09:05	09/29/21 17:53	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.335		0.131	0.135		0.172	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Bismuth-212	0.285	U	0.616	0.617		1.08	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Bismuth-214	0.320		0.0993	0.105		0.101	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Lead-212	0.364		0.0821	0.0942		0.0940	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Lead-214	0.303		0.0922	0.0972		0.0950	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Potassium-40	4.92		0.989	1.11		0.711	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Radium-226	0.320		0.0993	0.105	1.00	0.101	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Thorium-232	0.335		0.131	0.135		0.172	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Americium-241	-0.0671	U	0.168	0.168		0.288	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Cesium-137	0.204		0.0604	0.0639		0.0470	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Cobalt-60	-0.00138	U	0.0503	0.0503		0.0328	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Europium-152	0.122	U	0.0798	0.0808		0.159	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Europium-154	0.0699	U	0.116	0.116		0.120	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Europium-155	-0.0738	U	0.129	0.130		0.325	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Sodium-22	0.0430		0.0266	0.0270		0.0317	pCi/g	08/31/21 16:48	09/29/21 13:21	1
Zinc-65	0.000	U	0.0150	0.0150		0.247	pCi/g	08/31/21 16:48	09/29/21 13:21	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-169-082621

Lab Sample ID: 160-43230-17

Date Collected: 08/26/21 14:45

Matrix: Solid

Date Received: 08/27/21 10:15

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.49	U	1.32	1.33	5.00	2.29	pCi/g	09/22/21 12:05	10/01/21 00:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	91.8		40 - 110					09/22/21 12:05	10/01/21 00:22	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.101	U	2.64	2.64	5.00	4.75	pCi/g	09/12/21 17:38	09/30/21 16:45	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	47.9		30 - 110					09/12/21 17:38	09/30/21 16:45	1

Client Sample ID: FSS-169-082621

Lab Sample ID: 160-43230-17

Date Collected: 08/26/21 14:45

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 94.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.4		0.25	0.015	mg/Kg	☼	09/27/21 14:42	09/28/21 15:54	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.0	ug/Kg	☼	09/21/21 16:50	09/22/21 14:07	1

Client Sample ID: FSS-170-082621

Lab Sample ID: 160-43230-18

Date Collected: 08/26/21 14:45

Matrix: Solid

Date Received: 08/27/21 10:15

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.188	U	0.255	0.256	3.00	0.437	pCi/g	09/21/21 13:22	10/08/21 20:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	87.1		40 - 110					09/21/21 13:22	10/08/21 20:34	1
Y Carrier	87.9		40 - 110					09/21/21 13:22	10/08/21 20:34	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.126	U	0.206	0.206	1.00	0.401	pCi/g	09/26/21 17:58	09/28/21 21:28	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-170-082621

Lab Sample ID: 160-43230-18

Date Collected: 08/26/21 14:45

Matrix: Solid

Date Received: 08/27/21 10:15

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.000	U	0.00484	0.00484	1.00	0.0297	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Plutonium-239/240	0.0198	U	0.0274	0.0275	1.00	0.0297	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	69.6		30 - 110					09/11/21 15:09	09/22/21 22:28	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.192		0.0826	0.0841	1.00	0.0641	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Uranium-235/236	0.00797	U	0.0215	0.0215	1.00	0.0514	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Uranium-238	0.164		0.0751	0.0763	1.00	0.0527	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	81.2		30 - 110					09/12/21 17:35	09/23/21 20:11	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.0901	U	0.804	0.804	5.00	1.43	pCi/g	09/28/21 09:05	09/29/21 18:16	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.355		0.111	0.116		0.145	pCi/g	09/02/21 11:50	09/30/21 07:17	1
Bismuth-212	0.000	U	0.133	0.133		0.813	pCi/g	09/02/21 11:50	09/30/21 07:17	1
Bismuth-214	0.236		0.0885	0.0917		0.0908	pCi/g	09/02/21 11:50	09/30/21 07:17	1
Lead-212	0.250		0.0675	0.0745		0.0809	pCi/g	09/02/21 11:50	09/30/21 07:17	1
Lead-214	0.237		0.0824	0.0858		0.0839	pCi/g	09/02/21 11:50	09/30/21 07:17	1
Potassium-40	3.11		0.773	0.834		0.653	pCi/g	09/02/21 11:50	09/30/21 07:17	1
Radium-226	0.236		0.0885	0.0917	1.00	0.0908	pCi/g	09/02/21 11:50	09/30/21 07:17	1
Thorium-232	0.355		0.111	0.116		0.145	pCi/g	09/02/21 11:50	09/30/21 07:17	1
Americium-241	0.0210	U	0.107	0.107		0.150	pCi/g	09/02/21 11:50	09/30/21 07:17	1
Cesium-137	0.0197	U	0.0382	0.0383		0.0670	pCi/g	09/02/21 11:50	09/30/21 07:17	1
Cobalt-60	0.0548		0.0305	0.0310		0.0300	pCi/g	09/02/21 11:50	09/30/21 07:17	1
Europium-152	-0.0115	U	0.0229	0.0229		0.151	pCi/g	09/02/21 11:50	09/30/21 07:17	1
Europium-154	0.130		0.0557	0.0573		0.106	pCi/g	09/02/21 11:50	09/30/21 07:17	1
Europium-155	0.00438	U	0.0574	0.0574		0.229	pCi/g	09/02/21 11:50	09/30/21 07:17	1
Sodium-22	-0.0236	U	0.0487	0.0488		0.0862	pCi/g	09/02/21 11:50	09/30/21 07:17	1
Zinc-65	0.000	U	0.0388	0.0388		0.231	pCi/g	09/02/21 11:50	09/30/21 07:17	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.70	U	1.29	1.30	5.00	2.21	pCi/g	09/22/21 12:05	10/01/21 00:55	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
 Project/Site: BNL Decommissioning Project

Job ID: 160-43230-1

Client Sample ID: FSS-170-082621

Lab Sample ID: 160-43230-18

Date Collected: 08/26/21 14:45

Matrix: Solid

Date Received: 08/27/21 10:15

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	94.1		40 - 110	09/22/21 12:05	10/01/21 00:55	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.0648	U	1.85	1.85	5.00	3.31	pCi/g	09/12/21 17:38	09/30/21 17:18	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	69.6		30 - 110	09/12/21 17:38	09/30/21 17:18	1

Client Sample ID: FSS-170-082621

Lab Sample ID: 160-43230-18

Date Collected: 08/26/21 14:45

Matrix: Solid

Date Received: 08/27/21 10:15

Percent Solids: 93.3

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	9.4		0.25	0.015	mg/Kg	☼	09/27/21 14:42	09/28/21 15:57	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	31		19	6.0	ug/Kg	☼	09/21/21 16:50	09/22/21 14:10	1

Laboratory Report

Eurofins TestAmerica, St. Louis
 13715 Rider Trail North
 Earth City, MO 63045
 United States
 Attention: Ivan H Vania
 Telephone: 314-298-8566

Report Date 10/12/2021
 Sample Receipt Date 08/30/2021
 RJ Lee Group Job No. AOH1063332-0
 Authorization/P.O. No.
 Client Job No./Name 160-43230-1

Analysis: Asbestos in Bulk Samples by Point Count

Method: NYELAP Method 198.1

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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546986.HPL	FSS-153-082621 (160-43230-1)	Yes	1	ND		100.00	Q, CA, OP, MI, M	EAF-10/11/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546987.HPL	FSS-154-082621 (160-43230-2)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/11/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546988.HPL	FSS-155-082621 (160-43230-3)	Yes	1	ND		100.00	Q, CA, AM, F, OP, M	EAF-10/11/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43230-1

RJ Lee Group Job No: AOH1063332-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546989.HPL	FSS-156-082621 (160-43230-4)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/11/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546990.HPL	FSS-157-082621 (160-43230-5)	Yes	1	ND		100.00	Q, CL, F, OR, OP, MI, M	AC-10/11/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss:		0.0%						
10546991.HPL	FSS-158-082621 (160-43230-6)	Yes	1	ND		100.00	Q, CL, F, OP, MI, M	AC-10/11/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss:		0.0%						
10546992.HPL	FSS-159-082621 (160-43230-7)	Yes	1	ND		100.00	Q, CA, CL, AM, F, OP, MI, M	AC-10/11/2021
Description:		Pale Brown Sediment Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss:		0.0%						

Client Job No./Name: 160-43230-1

RJ Lee Group Job No: AOH1063332-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546993.HPL	FSS-160-082621 (160-43230-8)	Yes	1	ND		100.00	Q, CA, CL, F, OR, OP, MI, M	AC-10/11/2021
Description:	Brown Sediment							
	Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss:	0.0%							
10546994.HPL	FSS-161-082621 (160-43230-9)	Yes	1	ND		100.00	Q, CA, CL, F, OR, OP, MI, M	AC-10/11/2021
Description:	Brown Sediment							
	Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss:	0.0%							
10546995.HPL	FSS-162-082621 (160-43230-10)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-10/11/2021
Description:	Brown Sediment							
	Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss:	0.0%							
10546996.HPL	FSS-163-082621 (160-43230-11)	Yes	1	ND		100.00	Q, CA, CL, F, OR, OP, MI, M	AC-10/11/2021
Description:	Brown Sediment							
	Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss:	0.0%							

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Client Job No./Name: 160-43230-1

RJ Lee Group Job No: AOH1063332-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10546997.HPL	FSS-164-082621 (160-43230-12)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-10/11/2021
Description:		Brown Sediment						
		Four slides scanned. No asbestos detected. NY ELAP Method 198.1						
Weight Loss:		0.0%						
10546998.HPL	FSS-165-082621 (160-43230-13)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/11/2021
Description:		Beige Sediment						
		4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10546999.HPL	FSS-166-082621 (160-43230-14)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/11/2021
Description:		Beige Sediment						
		4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10547000.HPL	FSS-167-082621 (160-43230-15)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/11/2021
Description:		Beige Sediment						
		4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10547001.HPL	FSS-168-082621 (160-43230-16)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/11/2021
Description:		Beige Sediment						
		4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43230-1

RJ Lee Group Job No: AOH1063332-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10547002.HPL	FSS-169-082621 (160-43230-17)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-10/11/2021
Description:	Brown Sediment							
	Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss:	0.0%							
10547003.HPL	FSS-170-082621 (160-43230-18)	Yes	1	ND		100.00	Q, CA, CL, F, OP, MI, M	AC-10/11/2021
Description:	Brown Sediment							
	Four slides scanned. No asbestos detected. NY ELAP Method 198.1							
Weight Loss:	0.0%							

Client Job No./Name: 160-43230-1

RJ Lee Group Job No: AOH1063332-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
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Authorized Signature: _____

Alexandra Cheek, Microscopist

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ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- AM = Amphibole
- B = Binder
- CA = Carbonates
- CL = Clay
- F = Feldspar
- G = Gypsum
- HY = Hydromagnesite
- M = Miscellaneous
- MI = Mica
- OP = Opaque
- OR = Organic
- P = Perlite
- Q = Quartz
- T = Tar
- V = Vermiculite

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43306-1	FSS-171-082821	Solid	08/28/21 09:00	09/03/21 09:00
160-43306-2	FSS-172-082821	Solid	08/28/21 10:00	09/03/21 09:00
160-43306-3	FSS-173-082821	Solid	08/28/21 11:00	09/03/21 09:00
160-43306-4	FSS-174-082821	Solid	08/28/21 12:00	09/03/21 09:00
160-43306-5	FSS-175-082821	Solid	08/28/21 13:00	09/03/21 09:00
160-43306-6	FSS-176-082821	Solid	08/28/21 13:30	09/03/21 09:00
160-43306-7	FSS-177-082821	Solid	08/28/21 14:00	09/03/21 09:00
160-43306-8	FSS-178-090221	Solid	09/02/21 11:00	09/03/21 09:00
160-43306-9	FSS-179-090221	Solid	09/02/21 11:00	09/03/21 09:00
160-43306-10	FSS-180-090221	Solid	09/02/21 11:00	09/03/21 09:00

Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Client Contact
FPM
Address: 181 Kenwood Avenue
Oneida, NY 13421
Phone: (315) 336-7721 ext. 218
FAX: (315) 336-7722
Project Name: BNL 705 Stack Demo
Site: BNL
P O # 1085-20-01-01

Project Manager: Dan Ours
Email: d.ours@fpm-remediations.com
Tel/Fax: (315) 336-7721 ext. 218

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below: 30 Days
 2 weeks
 1 week
 2 days
 1 day

Site Contact: Doug Beard
Lab Contact: Ivan Vania

Site Contact: Doug Beard
Lab Contact: Ivan Vania

Carrier: Fed Ex
Date: 09-02-21

COC No.: 1 of 1 **COCs**

TALS Project #: W. Fillingame

For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (C-Comp, G-Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Gamma Spec: Ra-226+detcts	Strontium-90 (GFC)	Asbestos - EPA600 R-93	Lead (ICP/MS) - 6020B	Mercury - EPA 7470A	NI-63	Tridium	C-14	Alpha Spec Pu 238,239,240	Alpha Spec U 234,235,238	Pu 241 by LSC	Sample Specific Notes:
FSS-171-082821	28-Aug	9:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SUTA - Bias 1
FSS-172-082821	28-Aug	10:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SUTA - Bias 2
FSS-173-082821	28-Aug	11:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SUTA - 05
FSS-174-082821	28-Aug	12:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SUTA - 04
FSS-175-082821	28-Aug	13:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SUTA - 03
FSS-176-082821	28-Aug	13:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SUTA - 02
FSS-177-082821	28-Aug	14:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SUTA - 01
FSS-178-090221	2-Sep	11:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SUTD-Bias 2 0-6"
FSS-179-090221	2-Sep	11:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SUTD-Bias 2 6"-12"
FSS-180-090221	2-Sep	11:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	SUTD-Bias 2 18"-24"



Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu164, Eu155

Return to Client Disposal by Lab Archive for Months

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Custody Seal No.: Company: Cabrera Services, Inc.
Relinquished by: Douglas Beard
Relinquished by: *[Signature]*
Relinquished by: **FED EX**

Received by: Company: *[Signature]*
Received in Laboratory by: Company: CIA SIV

Date/Time: 21/17:00
Date/Time: 9/2/21
Date/Time: 0900

Therm ID No.: Cooler Temp. (°C): Obs'd: Corrd: Company: Date/Time:

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler: Vania, Ivan H		Carrier Tracking No(s): 160-218878-1						
Client Contact: Ivan Vania		Phone: Ivan.Vania@Eurofins.com		State of Origin: New York						
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD A2LA, DoD ANAB; NELAP New York		Job #: 160-43306-1						
Address: 4955 Yarrow Street		Due Date Requested: 10/3/2021		Preservation Codes:						
City: Arvada		TAT Requested (days):		A HCL B NaOH C Zn Acetate D Nitric Acid E NaHSO4 F MeOH G Amchlor H Ascorbic Acid I Ice J DI Water K EDTA L EDA Other						
State: CO, 80002		PO #:		M Hexane N None O AsNaO2 P Na2O4S Q Na2SO3 R Na2S2O3 S H2SO4 T TSP Dodecahydrate U Acetone V MCAA W pH 4-5 Z other (specify)						
Phone: 303-736-0100(Tel) 303-431-7171(Fax)		WO #:								
Email:		Project #:								
Project Name: BNL Decommissioning Project		16009147								
Site:		SSOW#:								
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=organic, A=air)	Field Filled Sample (Yes or No)	Form MS/MSD (Yes or No)	7418_DDS/7418 Prep Mercury	60208_DDS/3050B (MOD) ICMS Metals Pb Only	Total Number of Containers	Special Instructions/Note:
FSS-171-082821 (160-43306-1)	8/28/21	09:00 Eastern	Solid	Solid	X	X	X	X	1	
FSS-172-082821 (160-43306-2)	8/28/21	10:00 Eastern	Solid	Solid	X	X	X	X	1	
FSS-173-082821 (160-43306-3)	8/28/21	11:00 Eastern	Solid	Solid	X	X	X	X	1	
FSS-174-082821 (160-43306-4)	8/28/21	12:00 Eastern	Solid	Solid	X	X	X	X	1	
FSS-175-082821 (160-43306-5)	8/28/21	13:00 Eastern	Solid	Solid	X	X	X	X	1	
FSS-176-082821 (160-43306-6)	8/28/21	13:30 Eastern	Solid	Solid	X	X	X	X	1	
FSS-177-082821 (160-43306-7)	8/28/21	14:00 Eastern	Solid	Solid	X	X	X	X	1	
FSS-178-090221 (160-43306-8)	9/2/21	11:00 Eastern	Solid	Solid	X	X	X	X	1	
FSS-179-090221 (160-43306-9)	9/2/21	11:00 Eastern	Solid	Solid	X	X	X	X	1	
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>										
<p>Possible Hazard Identification Level 1 radioactive <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For <input type="checkbox"/> Months Deliverable Requested: I, II, III, IV Other (specify) _____ Empty Kit Relinquished by _____ Date: _____ Method of Shipment: _____ Primary Deliverable Rank: 2</p>										
<p>Relinquished by: MICHA KERVINKING Date: 9/19/21 17:00 Company: ETASL Relinquished by: _____ Date: _____ Company: _____ Relinquished by: _____ Date: _____ Company: _____</p>										
<p>Custody Seals Intact: NA Cooler Temperature(s) °C and Other Remarks: 0.2 1.11 47.1.0</p>										



Chain of Custody Record

ADK10634790

Client Information (Sub Contract Lab)		Company: RJ Lee Group, Inc		COC No: 160-218879-1	
Client Contact: 350 Hochberg Rd, Monroeville, PA, 15146		Shipping/Receiving: 16009147		Page: Page 1 of 2	
Address: 350 Hochberg Rd, Monroeville, PA, 15146		Project Name: BNL Decommissioning Project		Job #: 160-43308-1	
City: Monroeville		Site: SSOWH		Preservation Codes:	
State, Zip: PA, 15146		Due Date Requested: 10/4/2021		A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - Nitric Acid F - MeOH G - Ammonia H - Acetic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Phone: PA, 15146		TAT Requested (days):		M - Hexane N - None O - Acetic Acid P - Na2O2 Q - Na2SO4 R - Na2S2O8 S - H2SO4 T - TSP Dinitrohydrazine U - Acetone V - MCAA W - pH 4-6 Z - other (specify)	
Email:		RO #:		Special Instructions/Notes:	
Project #:		WO #:		Total Number of Containers:	
Site:		Project #:		Sub (Asbestos - PLM-EPA800-R-53/LAP-080.03) SIB (Asbestos - PLM-EPA800-R-53/LAP-080.03)	
Sample Identification - Client ID (Lab ID)		Sample Date		Field Filtered Sample (Yes or No)	
FSS-171-082821 (160-43308-1)		8/28/21		X	
FSS-172-082821 (160-43308-2)		8/28/21		X	
FSS-173-082821 (160-43308-3)		8/28/21		X	
FSS-174-082821 (160-43308-4)		8/28/21		X	
FSS-175-082821 (160-43308-5)		8/28/21		X	
FSS-176-082821 (160-43308-6)		8/28/21		X	
FSS-177-082821 (160-43308-7)		8/28/21		X	
FSS-178-082821 (160-43308-8)		9/2/21		X	
FSS-179-082821 (160-43308-9)		9/2/21		X	
Note: Since laboratory accreditation is subject to change, Eurofins TestAmerica places the ownership of method, analysis & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of origin listed above for analytes/methods being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For <input type="checkbox"/> Months	
Possible Hazard Identification		Level 1 radioactive		Special Instructions/QC Requirements:	
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2		Method of Shipment:	
Empty Kit Returned by:		Date:		Date/Time:	
Returned by: Michelle Kehnberg		Date/Time: 9/19/2021 19:00		Date/Time: 9-20-2021 9:30 AM	
Returned by:		Date/Time:		Date/Time:	
Returned by:		Date/Time:		Date/Time:	
Custody Seals Intact:		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	
Δ Yes Δ No		Δ Yes Δ No		Cooler Temperature(s) °C and Other Remarks:	

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43306-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 9/3/2021 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 4 coolers at receipt time were 1.2° C, 2.1° C, 5.1° C and 22.6° C.

ASBESTOS

An aliquot of the samples was forwarded to RJ LEE for asbestos analysis. Refer to the subcontract section of the report for details of this analysis.

METALS (ICP/MS)

Samples FSS-171-082821 (160-43306-1), FSS-172-082821 (160-43306-2), FSS-173-082821 (160-43306-3), FSS-174-082821 (160-43306-4), FSS-175-082821 (160-43306-5), FSS-176-082821 (160-43306-6), FSS-177-082821 (160-43306-7), FSS-178-090221 (160-43306-8), FSS-179-090221 (160-43306-9) and FSS-180-090221 (160-43306-10) were analyzed for Metals (ICP/MS) in accordance with EPA SW-846 Method 6020 DoD5. The samples were prepared on 09/21/2021 and analyzed on 09/22/2021.

Preparation Batch 280-549628:

The samples were made up of broken up rocks and may not be completely homogenized.: FSS-171-082821 (160-43306-1), FSS-172-082821 (160-43306-2), FSS-173-082821 (160-43306-3), FSS-174-082821 (160-43306-4), FSS-175-082821 (160-43306-5),

FSS-176-082821 (160-43306-6), FSS-177-082821 (160-43306-7), (160-43306-D-1 MS), and (160-43306-D-1 MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples FSS-171-082821 (160-43306-1), FSS-172-082821 (160-43306-2), FSS-173-082821 (160-43306-3), FSS-174-082821 (160-43306-4), FSS-175-082821 (160-43306-5), FSS-176-082821 (160-43306-6), FSS-177-082821 (160-43306-7), FSS-178-090221 (160-43306-8), FSS-179-090221 (160-43306-9) and FSS-180-090221 (160-43306-10) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7471B_ DoD5. The samples were prepared on 09/23/2021 and analyzed on 09/24/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PARTICLE SIZE REDUCTION PREPARATION

Samples FSS-171-082821 (160-43306-1), FSS-172-082821 (160-43306-2), FSS-173-082821 (160-43306-3), FSS-174-082821 (160-43306-4), FSS-175-082821 (160-43306-5), FSS-176-082821 (160-43306-6) and FSS-177-082821 (160-43306-7) were analyzed for Particle Size Reduction Preparation in accordance with NONE. The samples were analyzed on 09/07/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-178-090221 (160-43306-8), FSS-179-090221 (160-43306-9) and FSS-180-090221 (160-43306-10) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905. The samples were leached on 09/07/2021, prepared on 09/21/2021 and analyzed on 10/11/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples FSS-171-082821 (160-43306-1), FSS-172-082821 (160-43306-2), FSS-173-082821 (160-43306-3), FSS-174-082821 (160-43306-4), FSS-175-082821 (160-43306-5), FSS-176-082821 (160-43306-6) and FSS-177-082821 (160-43306-7) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905.0. The samples were leached on 09/07/2021, prepared on 09/21/2021 and analyzed on 10/11/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-178-090221 (160-43306-8), FSS-179-090221 (160-43306-9) and FSS-180-090221 (160-43306-10) were analyzed for Tritium in accordance with EPA Method 906.0. The samples were prepared on 09/29/2021 and analyzed on 10/02/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-178-090221 (160-43306-8), FSS-179-090221 (160-43306-9) and FSS-180-090221 (160-43306-10) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were leached on 09/07/2021, prepared on 09/11/2021 and analyzed on 09/22/2021.

Plutonium-238 and Plutonium-239/240 exceeded the RPD limit for the duplicate of sample 160-43230-10. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples FSS-171-082821 (160-43306-1), FSS-172-082821 (160-43306-2), FSS-173-082821 (160-43306-3), FSS-174-082821 (160-43306-4), FSS-175-082821 (160-43306-5), FSS-176-082821 (160-43306-6) and FSS-177-082821 (160-43306-7) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A01-R_Pu. The samples were leached on 09/07/2021, prepared on 09/11/2021 and analyzed on 09/22/2021 and 09/23/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-178-090221 (160-43306-8), FSS-179-090221 (160-43306-9) and FSS-180-090221 (160-43306-10) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were leached on 09/07/2021, prepared on 09/12/2021 and analyzed on 09/23/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples FSS-171-082821 (160-43306-1), FSS-172-082821 (160-43306-2), FSS-173-082821 (160-43306-3), FSS-174-082821 (160-43306-4), FSS-175-082821 (160-43306-5), FSS-176-082821 (160-43306-6) and FSS-177-082821 (160-43306-7) were analyzed for

Isotopic Uranium (Alpha Spectrometry) in accordance with A-01-R U. The samples were leached on 09/07/2021, prepared on 09/12/2021 and analyzed on 09/23/2021 and 09/24/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples FSS-171-082821 (160-43306-1), FSS-172-082821 (160-43306-2), FSS-173-082821 (160-43306-3), FSS-174-082821 (160-43306-4), FSS-175-082821 (160-43306-5), FSS-176-082821 (160-43306-6), FSS-177-082821 (160-43306-7), FSS-178-090221 (160-43306-8), FSS-179-090221 (160-43306-9) and FSS-180-090221 (160-43306-10) were analyzed for Carbon-14 by LSC in accordance with EERF C-01. The samples were prepared on 10/05/2021 and analyzed on 10/07/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM

Samples FSS-171-082821 (160-43306-1), FSS-172-082821 (160-43306-2), FSS-173-082821 (160-43306-3), FSS-174-082821 (160-43306-4), FSS-175-082821 (160-43306-5), FSS-176-082821 (160-43306-6) and FSS-177-082821 (160-43306-7) were analyzed for Tritium in accordance with DOE. The samples were prepared on 09/29/2021 and analyzed on 10/02/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples FSS-178-090221 (160-43306-8), FSS-179-090221 (160-43306-9) and FSS-180-090221 (160-43306-10) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA_01_R. The samples were leached on 09/07/2021, prepared on 09/09/2021 and analyzed on 10/03/2021.

Preparation Batch 160-526074:

For samples FSS-178-090221 (160-43306-8), FSS-179-090221 (160-43306-9), FSS-180-090221 (160-43306-10), (LCS 160-526074/2-A), (MB 160-526074/1-A), (410-53441-A-14-B), and (410-53441-A-14-C DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred	Reported
From	to
Nuclide	Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

Preparation Batch 160-525951:

The detection goal of 0.2 pCi/g was not met for Ra-226 for the samples. An elevated MDC can occur when higher background counts are applied to a peak ROI. This is due to the relatively small size of the peak or subsequent "force-fit" of the non-existent peak which resulted in higher than normal background counts due to statistical fluctuations in the Compton background. The laboratory does not believe this adversely affects the data: FSS-172-082821 (160-43306-2), FSS-177-082821 (160-43306-7), and (160-43306-A-7-D DU).

For samples FSS-171-082821 (160-43306-1), FSS-172-082821 (160-43306-2), FSS-173-082821 (160-43306-3), FSS-174-082821 (160-43306-4), FSS-175-082821 (160-43306-5), FSS-176-082821 (160-43306-6), FSS-177-082821 (160-43306-7), and (160-43306-A-7-D DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have

are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM 226 (21 DAY INGROWTH)

Samples FSS-171-082821 (160-43306-1), FSS-172-082821 (160-43306-2), FSS-173-082821 (160-43306-3), FSS-174-082821 (160-43306-4), FSS-175-082821 (160-43306-5), FSS-176-082821 (160-43306-6) and FSS-177-082821 (160-43306-7) were analyzed for Radium 226 (21 day Ingrowth) in accordance with GA-01-R. The samples were leached on 09/07/2021, prepared on 09/08/2021 and analyzed on 10/01/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples FSS-178-090221 (160-43306-8), FSS-179-090221 (160-43306-9) and FSS-180-090221 (160-43306-10) were analyzed for Nickel 59/63 in accordance with STL-RC-0055. The samples were leached on 09/07/2021, prepared on 09/24/2021 and analyzed on 10/06/2021.

Preparation Batch 160-529541:

The method blank (MB) z-score was outside limits. The associated samples were non-detect for Ni-63, therefore, re-analysis was not required: FSS-171-082821 (160-43306-1), FSS-172-082821 (160-43306-2), FSS-173-082821 (160-43306-3), FSS-174-082821 (160-43306-4), FSS-175-082821 (160-43306-5), FSS-176-082821 (160-43306-6), FSS-177-082821 (160-43306-7), FSS-178-090221 (160-43306-8), FSS-179-090221 (160-43306-9), FSS-180-090221 (160-43306-10), and (160-43306-A-7-K DU).

Nickel-63 was detected in method blank MB 160-529541/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63 (LSC)

Samples FSS-171-082821 (160-43306-1), FSS-172-082821 (160-43306-2), FSS-173-082821 (160-43306-3), FSS-174-082821 (160-43306-4), FSS-175-082821 (160-43306-5), FSS-176-082821 (160-43306-6) and FSS-177-082821 (160-43306-7) were analyzed for Nickel 59/63 (LSC) in accordance with LSC-Nickel. The samples were leached on 09/07/2021, prepared on 09/24/2021 and analyzed on 10/06/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples FSS-171-082821 (160-43306-1), FSS-172-082821 (160-43306-2), FSS-173-082821 (160-43306-3), FSS-174-082821 (160-43306-4), FSS-175-082821 (160-43306-5), FSS-176-082821 (160-43306-6), FSS-177-082821 (160-43306-7), FSS-178-090221

(160-43306-8), FSS-179-090221 (160-43306-9) and FSS-180-090221 (160-43306-10) were analyzed for Plutonium 241 in accordance with TAL-STL-RC-0245. The samples were prepared on 09/12/2021 and analyzed on 09/30/2021.

Preparation Batch 160-526531:

The samples did not meet the requested limit (RL) due to a low carrier recovery, which can be attributed to the presence of matrix interferences noted during the initial sample preparation: FSS-171-082821 (160-43306-1) and FSS-172-082821 (160-43306-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-171-082821

Lab Sample ID: 160-43306-1

Date Collected: 08/28/21 09:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	4.4		0.28	0.017	mg/Kg		09/21/21 14:59	09/22/21 09:43	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	20	6.4	ug/Kg		09/23/21 18:50	09/24/21 16:05	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	7.52		0.554	0.819	3.00	0.342	pCi/g	09/21/21 15:03	10/11/21 17:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	84.1		40 - 110					09/21/21 15:03	10/11/21 17:17	1
Y Carrier	86.0		40 - 110					09/21/21 15:03	10/11/21 17:17	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0647	U	0.0328	0.0332	1.00	0.0907	pCi/g	09/11/21 15:09	09/23/21 10:32	1
Plutonium-239/240	-0.0691	U	0.0379	0.0383	1.00	0.0983	pCi/g	09/11/21 15:09	09/23/21 10:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	42.4		30 - 110					09/11/21 15:09	09/23/21 10:32	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0175	U	0.0343	0.0343	1.00	0.0525	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Uranium-238	0.309		0.129	0.132	1.00	0.0421	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	49.3		30 - 110					09/12/21 17:35	09/23/21 20:11	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	1.16	U	0.956	0.964	5.00	1.57	pCi/g	10/05/21 14:19	10/07/21 12:12	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	-0.111	U	0.246	0.246		0.418	pCi/g	09/08/21 13:08	10/01/21 07:27	1
Cesium-137	4.05		0.232	0.474		0.0256	pCi/g	09/08/21 13:08	10/01/21 07:27	1
Cobalt-60	0.0118	U	0.0206	0.0206		0.0937	pCi/g	09/08/21 13:08	10/01/21 07:27	1
Europium-152	0.0140	U	0.0239	0.0240		0.250	pCi/g	09/08/21 13:08	10/01/21 07:27	1
Europium-154	0.0801	U	0.122	0.122		0.155	pCi/g	09/08/21 13:08	10/01/21 07:27	1
Europium-155	-0.117	U	0.249	0.250		0.425	pCi/g	09/08/21 13:08	10/01/21 07:27	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-171-082821

Lab Sample ID: 160-43306-1

Date Collected: 08/28/21 09:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.532		0.163	0.171	0.200	0.156	pCi/g	09/08/21 13:08	10/01/21 07:27	1
Other Detected										
Radionuclides	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Ac-228	0.492		0.181	0.187		0.190	pCi/g	09/08/21 13:08	10/01/21 07:27	1
Bi-214	0.532		0.163	0.171		0.156	pCi/g	09/08/21 13:08	10/01/21 07:27	1
K-40	12.0		1.59	2.00		0.785	pCi/g	09/08/21 13:08	10/01/21 07:27	1
Pb-212	0.512		0.111	0.129		0.137	pCi/g	09/08/21 13:08	10/01/21 07:27	1
Pb-214	0.563		0.139	0.151		0.174	pCi/g	09/08/21 13:08	10/01/21 07:27	1
Tl-208	0.179		0.0764	0.0786		0.0716	pCi/g	09/08/21 13:08	10/01/21 07:27	1

Method: H3-04-RC - Tritium (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	41.2		1.37	3.81	1.00	0.359	pCi/g	09/29/21 16:36	10/02/21 02:18	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.01	U	0.947	0.953	5.00	1.62	pCi/g	09/24/21 15:55	10/06/21 12:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	88.7		40 - 110					09/24/21 15:55	10/06/21 12:43	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.384	U	3.17	3.17	5.00	5.70	pCi/g	09/12/21 17:38	09/30/21 17:52	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	42.4		30 - 110					09/12/21 17:38	09/30/21 17:52	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			09/07/21 15:01	1

Client Sample ID: FSS-172-082821

Lab Sample ID: 160-43306-2

Date Collected: 08/28/21 10:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	4.1		0.27	0.016	mg/Kg		09/21/21 14:59	09/22/21 10:00	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-172-082821

Lab Sample ID: 160-43306-2

Date Collected: 08/28/21 10:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.0	ug/Kg		09/23/21 18:50	09/24/21 16:08	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.527		0.253	0.257	3.00	0.380	pCi/g	09/21/21 15:03	10/11/21 17:18	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Sr Carrier</i>	71.0		40 - 110					09/21/21 15:03	10/11/21 17:18	1
<i>Y Carrier</i>	94.6		40 - 110					09/21/21 15:03	10/11/21 17:18	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00953	U	0.0132	0.0132	1.00	0.0456	pCi/g	09/11/21 15:09	09/23/21 10:32	1
Plutonium-239/240	-0.00954	U	0.0132	0.0132	1.00	0.0457	pCi/g	09/11/21 15:09	09/23/21 10:32	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Pu-242 (T)</i>	37.1		30 - 110					09/11/21 15:09	09/23/21 10:32	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0166	U	0.0325	0.0325	1.00	0.0498	pCi/g	09/12/21 17:35	09/23/21 20:11	1
Uranium-238	0.333		0.130	0.133	1.00	0.0399	pCi/g	09/12/21 17:35	09/23/21 20:11	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Uranium-232</i>	52.4		30 - 110					09/12/21 17:35	09/23/21 20:11	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.818	U	0.913	0.917	5.00	1.53	pCi/g	10/05/21 14:19	10/07/21 13:19	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	0.0450	U	0.188	0.188		0.326	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Cesium-137	0.0250	U	0.0581	0.0581		0.104	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Cobalt-60	0.0344	U	0.0301	0.0303		0.0506	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Europium-152	0.117	U	0.231	0.231		0.213	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Europium-154	0.0533	U	0.0885	0.0887		0.158	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Europium-155	-0.137	U	0.477	0.477		0.814	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Radium-226	0.212	U	0.107	0.109	0.200	0.385	pCi/g	09/08/21 13:08	10/01/21 07:29	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-172-082821

Lab Sample ID: 160-43306-2

Date Collected: 08/28/21 10:00

Matrix: Solid

Date Received: 09/03/21 09:00

<i>Other Detected</i>			Count	Total						
<i>Radionuclides</i>			Uncert.	Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	(1.96σ+/-)	(1.96σ+/-)						
K-40	8.10		2.02	2.17		1.56	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Pb-212	0.623		0.130	0.145		0.144	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Pb-214	0.446		0.124	0.131		0.171	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Tl-208	0.236		0.0697	0.0735		0.0468	pCi/g	09/08/21 13:08	10/01/21 07:29	1

Method: H3-04-RC - Tritium (LSC)

Analyte	Result	Qualifier	Count Uncert.	Total Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
Tritium	37.6		1.30	3.49	1.00	0.355	pCi/g	09/29/21 16:36	10/02/21 02:40	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert.	Total Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.667	U	0.909	0.912	5.00	1.58	pCi/g	09/24/21 15:55	10/06/21 13:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	91.6		40 - 110					09/24/21 15:55	10/06/21 13:52	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert.	Total Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-241	-0.813	U	3.38	3.38	5.00	6.19	pCi/g	09/12/21 17:38	09/30/21 18:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	37.1		30 - 110					09/12/21 17:38	09/30/21 18:25	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			09/07/21 15:01	1

Client Sample ID: FSS-173-082821

Lab Sample ID: 160-43306-3

Date Collected: 08/28/21 11:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.2		0.27	0.016	mg/Kg		09/21/21 14:59	09/22/21 10:11	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg		09/23/21 18:50	09/24/21 16:15	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert.	Total Uncert.	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			(1.96σ+/-)	(1.96σ+/-)						
Strontium-90	2.91		0.372	0.439	3.00	0.327	pCi/g	09/21/21 15:03	10/11/21 17:18	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-173-082821

Lab Sample ID: 160-43306-3

Date Collected: 08/28/21 11:00

Matrix: Solid

Date Received: 09/03/21 09:00

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	83.1		40 - 110	09/21/21 15:03	10/11/21 17:18	1
Y Carrier	86.4		40 - 110	09/21/21 15:03	10/11/21 17:18	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-238	0.0178	U	0.0412	0.0413	1.00	0.0880	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Plutonium-239/240	0.00712	U	0.0296	0.0296	1.00	0.0798	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	50.9		30 - 110					09/11/21 15:09	09/22/21 22:28	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-235	0.0326	U	0.0452	0.0453	1.00	0.0730	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Uranium-238	0.220		0.0994	0.101	1.00	0.0858	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	66.3		30 - 110					09/12/21 17:35	09/23/21 20:09	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	1.19	U	0.918	0.927	5.00	1.50	pCi/g	10/05/21 14:19	10/07/21 13:42	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Americium-241	-0.0877	U	0.221	0.221		0.378	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Cesium-137	0.697		0.108	0.129		0.0447	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Cobalt-60	0.0150	U	0.0391	0.0392		0.0811	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Europium-152	0.0722	U	0.0963	0.0966		0.219	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Europium-154	0.0251	U	0.129	0.130		0.151	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Europium-155	-0.000671	U	0.166	0.166		0.465	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Radium-226	0.277		0.135	0.138	0.200	0.154	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Other Detected Radionuclides	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
K-40	6.14		1.41	1.54		1.17	pCi/g	09/08/21 13:08	10/01/21 07:29	1
Pb-212	0.308		0.130	0.135		0.150	pCi/g	09/08/21 13:08	10/01/21 07:29	1

Method: H3-04-RC - Tritium (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Tritium	38.1		1.34	3.55	1.00	0.372	pCi/g	09/29/21 16:36	10/02/21 03:03	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-173-082821

Lab Sample ID: 160-43306-3

Date Collected: 08/28/21 11:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.485	U	0.859	0.861	5.00	1.50	pCi/g	09/24/21 15:55	10/06/21 14:59	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	91.7		40 - 110					09/24/21 15:55	10/06/21 14:59	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	0.273	U	2.55	2.55	5.00	4.54	pCi/g	09/12/21 17:38	09/30/21 18:59	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	50.9		30 - 110					09/12/21 17:38	09/30/21 18:59	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			09/07/21 15:01	1

Client Sample ID: FSS-174-082821

Lab Sample ID: 160-43306-4

Date Collected: 08/28/21 12:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.7		0.27	0.016	mg/Kg		09/21/21 14:59	09/22/21 10:14	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	17	5.6	ug/Kg		09/23/21 18:50	09/24/21 16:18	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.372	U	0.285	0.286	3.00	0.461	pCi/g	09/21/21 15:03	10/11/21 17:18	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	64.5		40 - 110					09/21/21 15:03	10/11/21 17:18	1
Y Carrier	92.0		40 - 110					09/21/21 15:03	10/11/21 17:18	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0229	U	0.0344	0.0344	1.00	0.101	pCi/g	09/11/21 15:09	09/23/21 20:05	1
Plutonium-239/240	0.0104	U	0.0266	0.0267	1.00	0.0583	pCi/g	09/11/21 15:09	09/23/21 20:05	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	48.1		30 - 110					09/11/21 15:09	09/23/21 20:05	1

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Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-174-082821

Lab Sample ID: 160-43306-4

Date Collected: 08/28/21 12:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.00935	U	0.0252	0.0252	1.00	0.0603	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Uranium-238	0.222		0.0944	0.0961	1.00	0.0618	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	68.2		30 - 110					09/12/21 17:35	09/23/21 20:09	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.626	U	0.724	0.727	5.00	1.22	pCi/g	10/05/21 14:19	10/07/21 14:05	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	0.0195	U	0.181	0.181		0.313	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Cesium-137	0.00207	U	0.0604	0.0604		0.110	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Cobalt-60	0.00701	U	0.0414	0.0414		0.0900	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Europium-152	0.133	U	0.270	0.271		0.369	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Europium-154	0.0289	U	0.0582	0.0583		0.111	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Europium-155	-0.00229	U	0.00543	0.00544		0.521	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Radium-226	0.410		0.117	0.124	0.200	0.120	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Ac-228	0.507		0.154	0.162		0.171	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Bi-214	0.410		0.117	0.124		0.120	pCi/g	09/08/21 13:08	10/01/21 08:01	1
K-40	11.1		1.50	1.87		0.754	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Pb-212	0.409		0.0865	0.101		0.0916	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Pb-214	0.691		0.137	0.154		0.125	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Tl-208	0.172		0.0532	0.0560		0.0451	pCi/g	09/08/21 13:08	10/01/21 08:01	1

Method: H3-04-RC - Tritium (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.513		0.248	0.252	1.00	0.365	pCi/g	09/29/21 16:36	10/02/21 03:25	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	1.12	U	1.07	1.08	5.00	1.85	pCi/g	09/24/21 15:55	10/06/21 16:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	81.9		40 - 110					09/24/21 15:55	10/06/21 16:06	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-174-082821

Lab Sample ID: 160-43306-4

Date Collected: 08/28/21 12:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.911	U	2.57	2.57	5.00	4.70	pCi/g	09/12/21 17:38	09/30/21 19:33	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	48.1		30 - 110					09/12/21 17:38	09/30/21 19:33	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			09/07/21 15:01	1

Client Sample ID: FSS-175-082821

Lab Sample ID: 160-43306-5

Date Collected: 08/28/21 13:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	2.9		0.27	0.016	mg/Kg		09/21/21 14:59	09/22/21 10:18	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.9	ug/Kg		09/23/21 18:50	09/24/21 16:20	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0513	U	0.193	0.193	3.00	0.347	pCi/g	09/21/21 15:03	10/11/21 17:18	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	80.7		40 - 110					09/21/21 15:03	10/11/21 17:18	1
Y Carrier	82.6		40 - 110					09/21/21 15:03	10/11/21 17:18	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.0134	U	0.0463	0.0463	1.00	0.114	pCi/g	09/11/21 15:09	09/23/21 20:05	1
Plutonium-239/240	-0.0118	U	0.0134	0.0134	1.00	0.0697	pCi/g	09/11/21 15:09	09/23/21 20:05	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	47.0		30 - 110					09/11/21 15:09	09/23/21 20:05	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	-0.00381	U	0.00746	0.00746	1.00	0.0737	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Uranium-238	0.180		0.0929	0.0940	1.00	0.0591	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	54.6		30 - 110					09/12/21 17:35	09/23/21 20:09	1

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Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-175-082821

Lab Sample ID: 160-43306-5

Date Collected: 08/28/21 13:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.753	U	0.796	0.800	5.00	1.33	pCi/g	10/05/21 14:19	10/07/21 14:27	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	0.0454	U	0.193	0.193		0.335	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Cesium-137	-0.00328	U	0.0829	0.0829		0.152	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Cobalt-60	0.0238	U	0.0731	0.0731		0.0967	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Europium-152	0.0565	U	0.0849	0.0851		0.222	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Europium-154	0.0477	U	0.111	0.112		0.192	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Europium-155	0.0845	U	0.208	0.208		0.772	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Radium-226	0.562		0.175	0.184	0.200	0.171	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Bi-214	0.562		0.175	0.184		0.171	pCi/g	09/08/21 13:08	10/01/21 08:01	1
K-40	14.3		1.97	2.42		0.520	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Pb-212	0.540		0.119	0.132		0.127	pCi/g	09/08/21 13:08	10/01/21 08:01	1
Pb-214	0.592		0.149	0.160		0.171	pCi/g	09/08/21 13:08	10/01/21 08:01	1

Method: H3-04-RC - Tritium (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	0.870		0.272	0.282	1.00	0.349	pCi/g	09/29/21 16:36	10/02/21 03:48	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.510	U	0.919	0.921	5.00	1.62	pCi/g	09/24/21 15:55	10/06/21 17:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	93.3		40 - 110					09/24/21 15:55	10/06/21 17:13	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-2.65	U	2.47	2.48	5.00	4.82	pCi/g	09/12/21 17:38	09/30/21 20:06	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	47.0		30 - 110					09/12/21 17:38	09/30/21 20:06	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			09/07/21 15:01	1

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Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-176-082821

Lab Sample ID: 160-43306-6

Date Collected: 08/28/21 13:30

Matrix: Solid

Date Received: 09/03/21 09:00

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	4.8		0.28	0.017	mg/Kg		09/21/21 14:59	09/22/21 10:21	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	15	U	19	6.3	ug/Kg		09/23/21 18:50	09/24/21 16:23	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.147	U	0.273	0.273	3.00	0.475	pCi/g	09/21/21 15:03	10/11/21 17:18	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	69.0		40 - 110					09/21/21 15:03	10/11/21 17:18	1
Y Carrier	69.5		40 - 110					09/21/21 15:03	10/11/21 17:18	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0211	U	0.0401	0.0402	1.00	0.0786	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Plutonium-239/240	-0.0176	U	0.0154	0.0155	1.00	0.100	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	45.8		30 - 110					09/11/21 15:09	09/22/21 22:28	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0132	U	0.0204	0.0204	1.00	0.0364	pCi/g	09/12/21 17:35	09/24/21 20:56	1
Uranium-238	0.232		0.0490	0.0526	1.00	0.0202	pCi/g	09/12/21 17:35	09/24/21 20:56	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	61.2		30 - 110					09/12/21 17:35	09/24/21 20:56	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.870	U	0.919	0.924	5.00	1.54	pCi/g	10/05/21 14:19	10/07/21 14:50	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	0.0102	U	0.166	0.166		0.289	pCi/g	09/08/21 13:08	10/01/21 08:02	1
Cesium-137	-0.0529	U	0.0797	0.0799		0.136	pCi/g	09/08/21 13:08	10/01/21 08:02	1
Cobalt-60	0.0569		0.0322	0.0327		0.0350	pCi/g	09/08/21 13:08	10/01/21 08:02	1
Europium-152	0.0924	U	0.125	0.125		0.196	pCi/g	09/08/21 13:08	10/01/21 08:02	1
Europium-154	0.0928	U	0.146	0.147		0.120	pCi/g	09/08/21 13:08	10/01/21 08:02	1
Europium-155	0.000	U	0.0618	0.0618		0.334	pCi/g	09/08/21 13:08	10/01/21 08:02	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-176-082821

Lab Sample ID: 160-43306-6

Date Collected: 08/28/21 13:30

Matrix: Solid

Date Received: 09/03/21 09:00

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.443		0.126	0.134	0.200	0.0892	pCi/g	09/08/21 13:08	10/01/21 08:02	1

Other Detected			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radionuclides	Result	Qualifier								
Ac-228	0.448		0.145	0.151		0.0893	pCi/g	09/08/21 13:08	10/01/21 08:02	1
Bi-214	0.443		0.126	0.134		0.0892	pCi/g	09/08/21 13:08	10/01/21 08:02	1
K-40	10.8		1.41	1.78		0.353	pCi/g	09/08/21 13:08	10/01/21 08:02	1
Pb-212	0.483		0.0857	0.105		0.0769	pCi/g	09/08/21 13:08	10/01/21 08:02	1
Pb-214	0.555		0.119	0.132		0.0721	pCi/g	09/08/21 13:08	10/01/21 08:02	1

Method: H3-04-RC - Tritium (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	3.92		0.463	0.573	1.00	0.362	pCi/g	09/29/21 16:36	10/02/21 04:11	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.540	U	0.826	0.828	5.00	1.42	pCi/g	09/24/21 15:55	10/06/21 18:20	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	97.8		40 - 110					09/24/21 15:55	10/06/21 18:20	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.751	U	2.62	2.62	5.00	4.82	pCi/g	09/12/21 17:38	09/30/21 20:40	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	45.8		30 - 110					09/12/21 17:38	09/30/21 20:40	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			09/07/21 15:01	1

Client Sample ID: FSS-177-082821

Lab Sample ID: 160-43306-7

Date Collected: 08/28/21 14:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.4		0.29	0.018	mg/Kg		09/21/21 14:59	09/22/21 10:25	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	14	U	18	5.8	ug/Kg		09/23/21 18:50	09/24/21 16:25	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-177-082821

Lab Sample ID: 160-43306-7

Date Collected: 08/28/21 14:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	-0.0317	U	0.231	0.231	3.00	0.424	pCi/g	09/21/21 15:03	10/11/21 17:18	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	70.9		40 - 110					09/21/21 15:03	10/11/21 17:18	1
Y Carrier	91.2		40 - 110					09/21/21 15:03	10/11/21 17:18	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00305	U	0.0376	0.0376	1.00	0.0929	pCi/g	09/11/21 15:09	09/23/21 20:05	1
Plutonium-239/240	0.0145	U	0.0265	0.0265	1.00	0.0506	pCi/g	09/11/21 15:09	09/23/21 20:05	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	50.5		30 - 110					09/11/21 15:09	09/23/21 20:05	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235	0.0523		0.0592	0.0594	1.00	0.0523	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Uranium-238	0.234		0.113	0.115	1.00	0.0677	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	45.5		30 - 110					09/12/21 17:35	09/23/21 20:09	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.711	U	0.861	0.864	5.00	1.45	pCi/g	10/05/21 14:19	10/07/21 15:13	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	0.0685	U	0.156	0.156		0.269	pCi/g	09/08/21 13:08	10/01/21 08:02	1
Cesium-137	-0.0490	U	0.0814	0.0816		0.140	pCi/g	09/08/21 13:08	10/01/21 08:02	1
Cobalt-60	0.0141	U	0.0143	0.0144		0.0481	pCi/g	09/08/21 13:08	10/01/21 08:02	1
Europium-152	0.141	U	0.193	0.194		0.201	pCi/g	09/08/21 13:08	10/01/21 08:02	1
Europium-154	0.0593	U	0.104	0.104		0.145	pCi/g	09/08/21 13:08	10/01/21 08:02	1
Europium-155	0.0397	U	0.108	0.109		0.387	pCi/g	09/08/21 13:08	10/01/21 08:02	1
Radium-226	0.102	U	0.0899	0.0905	0.200	0.380	pCi/g	09/08/21 13:08	10/01/21 08:02	1
Other Detected Radionuclides			Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
K-40	2.76		0.988	1.03		1.04	pCi/g	09/08/21 13:08	10/01/21 08:02	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-177-082821

Lab Sample ID: 160-43306-7

Date Collected: 08/28/21 14:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: H3-04-RC - Tritium (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	149		2.64	13.1	1.00	0.372	pCi/g	09/29/21 16:36	10/02/21 04:33	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.387	U	0.904	0.905	5.00	1.61	pCi/g	09/24/21 15:55	10/06/21 19:27	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Ni	94.0		40 - 110					09/24/21 15:55	10/06/21 19:27	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.151	U	2.40	2.40	5.00	4.34	pCi/g	09/12/21 17:38	09/30/21 21:13	1
<i>Tracer</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Pu-242 (T)	50.5		30 - 110					09/12/21 17:38	09/30/21 21:13	1

Method: Part Size Red - Particle Size Reduction Preparation

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PSR sample generated	1.0				NONE			09/07/21 15:01	1

Client Sample ID: FSS-178-090221

Lab Sample ID: 160-43306-8

Date Collected: 09/02/21 11:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	18		0.26	0.016	mg/Kg		09/21/21 14:59	09/22/21 10:28	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	51		18	5.9	ug/Kg		09/23/21 18:50	09/24/21 16:28	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.283	U	0.253	0.254	3.00	0.416	pCi/g	09/21/21 15:03	10/11/21 17:20	1
<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>					<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
Sr Carrier	77.9		40 - 110					09/21/21 15:03	10/11/21 17:20	1
Y Carrier	86.7		40 - 110					09/21/21 15:03	10/11/21 17:20	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-178-090221

Lab Sample ID: 160-43306-8

Date Collected: 09/02/21 11:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.00590	U	0.236	0.236	1.00	0.435	pCi/g	09/29/21 18:38	10/02/21 14:28	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0136	U	0.0394	0.0394	1.00	0.0853	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Plutonium-239/240	-0.00271	U	0.00532	0.00532	1.00	0.0525	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	60.0		30 - 110					09/11/21 15:09	09/22/21 22:28	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.370		0.128	0.132	1.00	0.103	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Uranium-235	0.0286	U	0.0445	0.0445	1.00	0.0786	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Uranium-238	0.548		0.147	0.154	1.00	0.0493	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	63.3		30 - 110					09/12/21 17:35	09/23/21 20:09	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.686	U	0.822	0.826	5.00	1.38	pCi/g	10/05/21 14:19	10/07/21 15:35	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.698		0.223	0.234		0.161	pCi/g	09/09/21 10:24	10/03/21 13:50	1
Bismuth-212	-0.312	U	0.920	0.920		1.62	pCi/g	09/09/21 10:24	10/03/21 13:50	1
Bismuth-214	0.590		0.168	0.178		0.164	pCi/g	09/09/21 10:24	10/03/21 13:50	1
Lead-212	0.681		0.118	0.137		0.128	pCi/g	09/09/21 10:24	10/03/21 13:50	1
Lead-214	0.640		0.163	0.175		0.157	pCi/g	09/09/21 10:24	10/03/21 13:50	1
Potassium-40	5.93		1.10	1.24		0.390	pCi/g	09/09/21 10:24	10/03/21 13:50	1
Radium-226	0.590		0.168	0.178	1.00	0.164	pCi/g	09/09/21 10:24	10/03/21 13:50	1
Thorium-232	0.698		0.223	0.234		0.161	pCi/g	09/09/21 10:24	10/03/21 13:50	1
Americium-241	-0.0941	U	0.223	0.223		0.380	pCi/g	09/09/21 10:24	10/03/21 13:50	1
Cesium-137	0.291		0.0819	0.0869		0.0615	pCi/g	09/09/21 10:24	10/03/21 13:50	1
Cobalt-60	0.0123	U	0.0596	0.0596		0.0725	pCi/g	09/09/21 10:24	10/03/21 13:50	1
Europium-152	0.0858	U	0.159	0.160		0.226	pCi/g	09/09/21 10:24	10/03/21 13:50	1
Europium-154	0.108	U	0.137	0.137		0.155	pCi/g	09/09/21 10:24	10/03/21 13:50	1
Europium-155	-0.124	U	0.411	0.411		0.699	pCi/g	09/09/21 10:24	10/03/21 13:50	1
Sodium-22	0.0271	U	0.0406	0.0407		0.0701	pCi/g	09/09/21 10:24	10/03/21 13:50	1
Zinc-65	-0.0440	U	0.184	0.184		0.326	pCi/g	09/09/21 10:24	10/03/21 13:50	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-178-090221

Lab Sample ID: 160-43306-8

Date Collected: 09/02/21 11:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.762	U	0.944	0.947	5.00	1.63	pCi/g	09/24/21 15:55	10/06/21 21:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	85.0		40 - 110					09/24/21 15:55	10/06/21 21:41	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.01	U	1.92	1.92	5.00	3.57	pCi/g	09/12/21 17:38	09/30/21 21:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	60.0		30 - 110					09/12/21 17:38	09/30/21 21:47	1

Client Sample ID: FSS-179-090221

Lab Sample ID: 160-43306-9

Date Collected: 09/02/21 11:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	12		0.25	0.015	mg/Kg		09/21/21 14:59	09/22/21 10:32	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	53		18	5.7	ug/Kg		09/23/21 18:50	09/24/21 16:31	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.305		0.188	0.190	3.00	0.294	pCi/g	09/21/21 15:03	10/11/21 17:20	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	87.7		40 - 110					09/21/21 15:03	10/11/21 17:20	1
Y Carrier	91.6		40 - 110					09/21/21 15:03	10/11/21 17:20	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.195	U	0.212	0.212	1.00	0.420	pCi/g	09/29/21 18:38	10/02/21 14:51	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.000	U	0.0227	0.0227	1.00	0.0692	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Plutonium-239/240	0.0389	U	0.0410	0.0411	1.00	0.0502	pCi/g	09/11/21 15:09	09/22/21 22:28	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-179-090221

Lab Sample ID: 160-43306-9

Date Collected: 09/02/21 11:00

Matrix: Solid

Date Received: 09/03/21 09:00

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.4		30 - 110	09/11/21 15:09	09/22/21 22:28	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.474		0.135	0.141	1.00	0.0608	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Uranium-235	0.0336	U	0.0419	0.0420	1.00	0.0592	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Uranium-238	0.485		0.136	0.142	1.00	0.0549	pCi/g	09/12/21 17:35	09/23/21 20:09	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	68.6		30 - 110	09/12/21 17:35	09/23/21 20:09	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	0.896	U	0.941	0.946	5.00	1.57	pCi/g	10/05/21 14:19	10/07/21 15:58	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium 228	0.950		0.158	0.184		0.0707	pCi/g	09/09/21 10:24	10/03/21 13:51	1
Bismuth-212	0.391	U	0.696	0.697		1.20	pCi/g	09/09/21 10:24	10/03/21 13:51	1
Bismuth-214	0.582		0.122	0.136		0.0974	pCi/g	09/09/21 10:24	10/03/21 13:51	1
Lead-212	0.723		0.0932	0.131		0.0811	pCi/g	09/09/21 10:24	10/03/21 13:51	1
Lead-214	0.562		0.108	0.122		0.0821	pCi/g	09/09/21 10:24	10/03/21 13:51	1
Potassium-40	7.34		1.03	1.27		0.279	pCi/g	09/09/21 10:24	10/03/21 13:51	1
Radium-226	0.582		0.122	0.136	1.00	0.0974	pCi/g	09/09/21 10:24	10/03/21 13:51	1
Thorium-232	0.950		0.158	0.184		0.0707	pCi/g	09/09/21 10:24	10/03/21 13:51	1
Americium-241	-0.0252	U	0.155	0.155		0.204	pCi/g	09/09/21 10:24	10/03/21 13:51	1
Cesium-137	0.141		0.0530	0.0549		0.0440	pCi/g	09/09/21 10:24	10/03/21 13:51	1
Cobalt-60	0.00684	U	0.0297	0.0297		0.0518	pCi/g	09/09/21 10:24	10/03/21 13:51	1
Europium-152	0.151	U	0.164	0.164		0.161	pCi/g	09/09/21 10:24	10/03/21 13:51	1
Europium-154	0.0536	U	0.130	0.130		0.105	pCi/g	09/09/21 10:24	10/03/21 13:51	1
Europium-155	-0.0966	U	0.407	0.407		0.691	pCi/g	09/09/21 10:24	10/03/21 13:51	1
Sodium-22	0.0290		0.0201	0.0203		0.0267	pCi/g	09/09/21 10:24	10/03/21 13:51	1
Zinc-65	0.000	U	0.0309	0.0309		0.229	pCi/g	09/09/21 10:24	10/03/21 13:51	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.170	U	0.859	0.859	5.00	1.53	pCi/g	09/24/21 15:55	10/06/21 22:47	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	93.6		40 - 110	09/24/21 15:55	10/06/21 22:47	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-179-090221

Lab Sample ID: 160-43306-9

Date Collected: 09/02/21 11:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-1.06	U	1.79	1.80	5.00	3.37	pCi/g	09/12/21 17:38	09/30/21 22:20	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	67.4		30 - 110					09/12/21 17:38	09/30/21 22:20	1

Client Sample ID: FSS-180-090221

Lab Sample ID: 160-43306-10

Date Collected: 09/02/21 11:00

Matrix: Solid

Date Received: 09/03/21 09:00

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	5.5		0.28	0.017	mg/Kg		09/21/21 14:59	09/22/21 10:35	1

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	11	J	19	6.3	ug/Kg		09/23/21 18:50	09/24/21 16:33	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.429		0.224	0.226	3.00	0.340	pCi/g	09/21/21 15:03	10/11/21 17:20	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	83.4		40 - 110					09/21/21 15:03	10/11/21 17:20	1
Y Carrier	87.5		40 - 110					09/21/21 15:03	10/11/21 17:20	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-0.0694	U	0.234	0.234	1.00	0.444	pCi/g	09/29/21 18:38	10/02/21 15:14	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00759	U	0.0238	0.0238	1.00	0.0796	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Plutonium-239/240	0.00760	U	0.0205	0.0205	1.00	0.0490	pCi/g	09/11/21 15:09	09/22/21 22:28	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	68.3		30 - 110					09/11/21 15:09	09/22/21 22:28	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium-233/234	0.252		0.100	0.102	1.00	0.0874	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Uranium-235	0.0254	U	0.0395	0.0396	1.00	0.0699	pCi/g	09/12/21 17:35	09/23/21 20:09	1
Uranium-238	0.211		0.0896	0.0912	1.00	0.0713	pCi/g	09/12/21 17:35	09/23/21 20:09	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43306-1

Client Sample ID: FSS-180-090221

Lab Sample ID: 160-43306-10

Date Collected: 09/02/21 11:00

Matrix: Solid

Date Received: 09/03/21 09:00

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	71.4		30 - 110	09/12/21 17:35	09/23/21 20:09	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	0.382	U	0.668	0.669	5.00	1.14	pCi/g	10/05/21 14:19	10/07/21 16:20	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Actinium 228	0.349		0.135	0.140		0.276	pCi/g	09/09/21 10:24	10/03/21 13:52	1
Bismuth-212	0.238	U	0.460	0.461		0.806	pCi/g	09/09/21 10:24	10/03/21 13:52	1
Bismuth-214	0.293		0.0923	0.0970		0.0928	pCi/g	09/09/21 10:24	10/03/21 13:52	1
Lead-212	0.333		0.0754	0.0864		0.0879	pCi/g	09/09/21 10:24	10/03/21 13:52	1
Lead-214	0.305		0.0884	0.0937		0.109	pCi/g	09/09/21 10:24	10/03/21 13:52	1
Potassium-40	3.61		0.813	0.890		0.637	pCi/g	09/09/21 10:24	10/03/21 13:52	1
Radium-226	0.293		0.0923	0.0970	1.00	0.0928	pCi/g	09/09/21 10:24	10/03/21 13:52	1
Thorium-232	0.349		0.135	0.140		0.276	pCi/g	09/09/21 10:24	10/03/21 13:52	1
Americium-241	-0.0195	U	0.137	0.137		0.238	pCi/g	09/09/21 10:24	10/03/21 13:52	1
Cesium-137	-0.0354	U	0.0573	0.0574		0.0982	pCi/g	09/09/21 10:24	10/03/21 13:52	1
Cobalt-60	-0.00655	U	0.0458	0.0458		0.0549	pCi/g	09/09/21 10:24	10/03/21 13:52	1
Europium-152	0.0554	U	0.147	0.147		0.154	pCi/g	09/09/21 10:24	10/03/21 13:52	1
Europium-154	0.0727	U	0.0773	0.0777		0.100	pCi/g	09/09/21 10:24	10/03/21 13:52	1
Europium-155	0.00744	U	0.0827	0.0827		0.276	pCi/g	09/09/21 10:24	10/03/21 13:52	1
Sodium-22	0.0103	U	0.0276	0.0276		0.0519	pCi/g	09/09/21 10:24	10/03/21 13:52	1
Zinc-65	-0.0370	U	0.137	0.137		0.243	pCi/g	09/09/21 10:24	10/03/21 13:52	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Nickel-63	0.853	U	0.945	0.949	5.00	1.66	pCi/g	09/24/21 15:55	10/06/21 23:54	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ni	90.4		40 - 110	09/24/21 15:55	10/06/21 23:54	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-241	-0.716	U	1.78	1.78	5.00	3.28	pCi/g	09/12/21 17:38	09/30/21 22:54	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	68.3		30 - 110	09/12/21 17:38	09/30/21 22:54	1

Laboratory Report

Eurofins TestAmerica, St. Louis
13715 Rider Trail North
Earth City, MO 63045
United States
Attention: Ivan H Vania
Telephone: 314-298-8566

Report Date 10/12/2021
Sample Receipt Date 09/15/2021
RJ Lee Group Job No. AOH1063479-0
Authorization/P.O. No.
Client Job No./Name 160-43306-1

Analysis: Asbestos in Bulk Samples by Point Count

Method: NYELAP Method 198.1

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RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10547936.HPL	FSS-171-082821 (16043306-1)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/11/2021
Description:		Grey Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10547937.HPL	FSS-172-082821 (16043306-2)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/11/2021
Description:		Grey Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10547938.HPL	FSS-173-082821 (16043306-3)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/12/2021
Description:		Grey Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

Client Job No./Name: 160-43306-1

RJ Lee Group Job No: AOH1063479-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10547939.HPL	FSS-174-082821 (16043306-4)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/11/2021
Description:		Grey Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10547940.HPL	FSS-175-082821 (16043306-5)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/11/2021
Description:		Grey Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10547941.HPL	FSS-176-082821 (16043306-6)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/11/2021
Description:		Grey Powder 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10547942.HPL	FSS-177-082821 (16043306-7)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/12/2021
Description:		Grey Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						
10547943.HPL	FSS-178-090221 (16043306-8)	Yes	1	ND		100.00	Q, CA, AM, F, OR, OP, MI, M	EAF-10/11/2021
Description:		Brown Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss:		0.0%						

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Client Job No./Name: 160-43306-1

RJ Lee Group Job No: AOH1063479-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
10547944.HPL	FSS-179-090221 (16043306-9)	Yes	1	ND		100.00	Q, CA, AM, F, OR, OP, MI, M	EAF-10/11/2021
Description:		Brown Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss: 0.0%								
10547945.HPL	FSS-180-090221 (16043306-10)	Yes	1	ND		100.00	Q, CA, AM, F, OP, MI, M	EAF-10/11/2021
Description:		Beige Sediment 4 Slides Scanned. No Asbestos Detected. NY ELAP Method 198.1.						
Weight Loss: 0.0%								

Client Job No./Name: 160-43306-1

RJ Lee Group Job No: AOH1063479-0

RJLG Sample Number	Client Sample Number	Homogeneous	# of Layers	Asbestos Detected(%)	Non-Asbestos Fibers(%)	Non-Fibrous Materials(%)	Matrix Material	Analyst - Analysis Date
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Authorized Signature: _____

Elizabeth Fischer, Microscopist

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ASBESTOS

- AM = Amosite
- AC = Actinolite
- AN = Anthophyllite
- CH = Chrysotile
- CR = Crocidolite
- TR = Tremolite

NON-ASBESTOS

- CE = Cellulose
- MW = Mineral Wool
- FG = Fibrous Glass
- SF = Synthetic Fibers
- H = Hair
- W = Wollastonite
- OF = Other Fibers

NON-FIBROUS MATERIALS

- | | | |
|-----------------|---------------------|-----------------|
| AM = Amphibole | HY = Hydromagnesite | Q = Quartz |
| B = Binder | M = Miscellaneous | T = Tar |
| CA = Carbonates | MI = Mica | V = Vermiculite |
| CL = Clay | OP = Opaque | |
| F = Feldspar | OR = Organic | |
| G = Gypsum | P = Perlite | |

DISCLAIMER NOTES

- "ND" indicates no asbestos was detected; the method detection limit is 0.25%.
- "Trace" or "<" indicates asbestos was identified in the sample, but the concentration is less than the method quantitation limit. PLM coefficients of variance range from approximately 1.8 at the quantitation limit of 0.25% to 0.32 at high fiber concentrations.
- Samples are archived for three months following analysis and are then properly discarded.
- These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which these results are used or interpreted.
- This test report relates to the items tested.
- This report is not valid unless it bears the name of a NVLAP Lab Code 101208-0 approved signatory.
- Any reproduction of this document must be in full in order for the report to be valid.
- This report may not be used to claim product endorsement by NVLAP Lab Code 101208-0, any agency of the U.S. Government or any other laboratory accrediting agency.
- Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar nonfriable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as "non-asbestos-containing."
- Sample(s) for this project were analyzed at our: Monroeville, PA (AIHA LAP, LLC. #100364, NY ELAP #10884) facility.
- If RJ Lee Group, Inc. did not collect the samples analyzed, the verifiability of the laboratorys results are limited to the reported values.

Sample Summary

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43375-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-43375-1	Rinseate - 082821	Water	08/28/21 17:30	09/03/21 09:00
160-43375-2	Rinseate - 090221	Water	09/02/21 17:00	09/03/21 09:00

Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: DW NPDES RCRA Other:

Client Contact
FPM
Address: 181 Kenwood Avenue
Oneida, NY 13421
Phone: (315) 336-7721 ext. 218
Fax: (315) 336-7722
Project Name: BNL 705 Stack Demo
Site: BNL
P O # 1085-20-01-01

Project Manager: Dan Ours
Email: d.ours@fpm-remediations.com
Tel/Fax: (315) 336-7721 ext. 218

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below: 30 Days
 2 weeks
 1 week
 2 days
 1 day

Site Contact: Doug Beard
Lab Contact: Ivan Vania

Site: 1 of 1 COCs
TALS Project #: _____
Sampler: _____
For Lab Use Only: _____
Walk-in Client: _____
Lab Sampling: _____
Job / SDG No.: _____

Sample Identification	Sample Date	Sample Time	Sample Type (C-Comp, G-Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Gamma Spec: Ra-226+delects	Strontium-90 (G/PC)	Asbestos - EPA600 R-93	Lead (ICP/MS) - 6020B	Mercury - EPA 7470A	NI-63	Tridium	C-14	Alpha Spec Pu 238,239,240	Alpha Spec U 234,235,238	Pu 241 by LSC	Carrier: Fed Ex	Date: 09-02-21	COC No:
FSS-171-082821	28-Aug	9:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	1	SUTA - Bias 1
FSS-172-082821	28-Aug	10:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	1	SUTA - Bias 2
FSS-173-082821	28-Aug	11:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	1	SUTA - 05
FSS-174-082821	28-Aug	12:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	1	SUTA - 04
FSS-175-082821	28-Aug	13:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	1	SUTA - 03
FSS-176-082821	28-Aug	13:30	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	1	SUTA - 02
FSS-177-082821	28-Aug	14:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	1	SUTA - 01
FSS-178-090221	2-Sep	11:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	1	SUTD-Bias 2 0-6"
FSS-179-090221	2-Sep	11:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	1	SUTD-Bias 2 6"-12"
FSS-180-090221	2-Sep	11:00	C	S	3	N	N	1	1	1	1	1	1	1	1	1	1	1	1	1	SUTD-Bias 2 18"-24"



160-43306 Chain of Custody

Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other _____

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments: Gamma Spec results must include Cs-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am241, Co60, Na22, Zn65, Th 232, Eu152, Eu164, Eu155

Return to Client Disposal by Lab Archive for _____ Months

Custody Seal No.: _____
Company: Cabrera Services, Inc.

Relinquished by: Douglas Beard
Date/Time: 21/17:00

Relinquished by: *[Signature]*
Date/Time: 9/2/21 0900
Company: CIA SIV

Relinquished by: _____
Date/Time: _____
Company: _____

Cooler Temp. (°C): Obs'd: _____
Received by: Fed Ex
Date/Time: _____
Company: _____

Therm ID No.: _____
Date/Time: _____
Company: _____

Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: DW HVES RCRA Other:

Client Contact Email: clours@pmc-medications.com Tel/Fax: (315) 336-7721 ext. 218 Address 181 Karwood Avenue Oneida, NY 13421 Phone (315) 336-7721 ext. 218 Fax (315) 336-7722 Project Name: BNL 705 Stack Demo Site: BNL P O # 1085-20-01-01		Project Manager: Dan Ours Site Contact: Doug Beard Lab Contact: Ivan Vanla		Date: 09-02-21 Carrier: Fed Ex		COC No: 1 of 1 COCs TALS Project #:			
<input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below <u>30</u> Days <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Filtered Sample (Y/N) Perform MS/MSD (Y/N) Gamma Spec: Ra-226+detec Strontium-90 (GFP) Asbestos - EPA 843 Lead (CFMS) - 6020B Mercury - EPA 7470A Ni-63 Ttium C-14 Alpha Spec Pu 238,239,240 Alpha Spec U 234,235,238 Pu 241 by LSC		W. Fillingame For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:		Sample Specific Notes: SU7A - Bias 1 SU7A - Bias 2 SU7A - 05 SU7A - 04 SU7A - 03 SU7A - 02 SU7A - 01 SU7D-Bias 2 0-5" SU7D-Bias 2 6"-12" SU7D-Bias 2 18"-24" Rinseate Rinseate		Preservation Used: 1= Ice, 2= HCI, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.	
Sample Date	Sample Time	Sample Type (C=Cont, G=Gas)	Matrix	# of Cont.	Sample Date	Sample Time	Sample Type (C=Cont, G=Gas)	Matrix	# of Cont.
25-Aug	8:00	C	S	3	25-Aug	8:00	C	S	3
26-Aug	10:00	C	S	3	26-Aug	10:00	C	S	3
26-Aug	11:00	C	S	3	26-Aug	11:00	C	S	3
26-Aug	12:00	C	S	3	26-Aug	12:00	C	S	3
26-Aug	13:00	C	S	3	26-Aug	13:00	C	S	3
26-Aug	14:00	C	S	3	26-Aug	14:00	C	S	3
2-Sep	11:00	C	S	3	2-Sep	11:00	C	S	3
2-Sep	11:00	C	S	3	2-Sep	11:00	C	S	3
2-Sep	11:00	C	S	3	2-Sep	11:00	C	S	3
26-Aug	17:30	C	W	10	26-Aug	17:30	C	W	10
2-Sep	17:00	C	W	10	2-Sep	17:00	C	W	10
Special Instructions/QC Requirements & Comments: Gamma Spec results must include Ca-137, Ra-226, Bi-214, Pb-214, Ac-228, Bi-212, Pb-212, and K-40, Am-241, Co-60, Na-22, Zn-65, Th-232, Eu-152, Eu-164, Eu-166									
Relinquished by: Fed Ex		Relinquished by: Douglas Beard		Relinquished by: Services, Inc.		Relinquished by: Company:		Relinquished by: Company:	
Date/Time: 9-02-21/17:00		Date/Time: 21/17:00		Date/Time: 9-02-21/17:00		Date/Time: 21/17:00		Date/Time: 9-02-21/17:00	
Received in Laboratory by: REVIS COC		Received in Laboratory by: REVIS COC		Received in Laboratory by: REVIS COC		Received in Laboratory by: REVIS COC		Received in Laboratory by: REVIS COC	
Date/Time: 9/21/13:50		Date/Time: 9/21/13:50		Date/Time: 9/21/13:50		Date/Time: 9/21/13:50		Date/Time: 9/21/13:50	



Chain of Custody Record

Client Information (Sub Contract Lab) Client Contact: Vania, Ivan H Shipping/Receiving: Ivan.Vania@Eurofins.com Company: TestAmerica Laboratories, Inc. Address: 4955 Yarrow Street, Anvada, CO, 80002 Phone: 303-736-0100(Tel) 303-431-7171(Fax) Email: [Redacted] Project Name: BNL Decommissioning Project Site: [Redacted]		Lab PM: Vania, Ivan H E-Mail: Ivan.Vania@Eurofins.com Accreditations Required (See note): DoD - A2LA, DoD ANAB; NELAP New York		Camer Tracking No(s): 160-218994.1 State of Origin: New York Job #: 160-43375-1	
Due Date Requested: 10/7/2021 TAT Requested (days): [Redacted]	PO #: [Redacted] WO #: [Redacted]	Project #: 16009147 SOW#: [Redacted]	Analysis Requested Field Filtered Sample (Yes or No) [X] 7470A, DODS/7470A, Prep Mercury Perform MS/MSD (Yes or No) [X] 902A, DODS/302A Metals (CP/MS) Pb Only Total Number of Containers: 1		
Sample Date: 8/28/21 Sample Time: 17:30 Eastern Sample Date: 9/2/21 Sample Time: 17:00 Eastern	Sample Type (C=Comp, G=grab) [Redacted] Matrix (Water, Solid, Overstabil, Other) [Redacted]	Preservation Code: [Redacted]	Special Instructions/Note: [Redacted]		
Sample Identification - Client ID (Lab ID) Rinseate 082821 (160-43375-1) Rinseate 090221 (160-43375-2)	Matrix: Water Water	Preservation Code: [Redacted]	Special Instructions/Note: [Redacted]		

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV Other (specify) [Redacted] Primary Deliverable Rank: 2
 Empty Kit Relinquished by: [Redacted] Date: [Redacted]
 Relinquished by: **Michael Kenning** Date: **SEP 13 2021 17:00** Company: **Eurofins**
 Relinquished by: [Redacted] Date: [Redacted] Company: [Redacted]
 Relinquished by: [Redacted] Date: [Redacted] Company: [Redacted]
 Custody Seals Intact: **NA** Cooler Temperature(s) °C and Other Remarks: **31 RLI CF+10**

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements: [Redacted] Method of Shipment: [Redacted]

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/method, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

CASE NARRATIVE

Client: FPM Remediations Inc

Project: BNL Decommissioning Project

Report Number: 160-43375-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 9/3/2021 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.2° C, 2.1° C and 5.1° C.

Receipt Exceptions

The samples in this job were submitted with those in job 160-43306-1, but were not listed on that COC. The client sent a revised COC that included the samples for both jobs.

TOTAL METALS (ICP/MS)

Samples Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2) were analyzed for total metals (ICP/MS) in accordance with 6020A. The samples were prepared and analyzed on 09/16/2021.

For ICPMS Metals, a 2X dilution was performed. This is a standard dilution that is performed by TestAmerica St. Louis on all samples analyzed by method SW-846 6020A. The dilution is performed in order to have the matrix of the samples (i.e. the concentration of acids) match the matrix of the standards used for calibration and instrument quality control purposes. The MDL studies analyzed by this method undergo the same 2X dilution, and all detection limits are based on this. As such, MDL's and RL's are not affected by the dilution.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

MERCURY (CVAA)

Samples Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2) were analyzed for Mercury (CVAA) in accordance with EPA SW-846 Method 7470A. The samples were prepared and analyzed on 09/24/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 (GFPC)

Samples Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2) were analyzed for Radium-226 (GFPC) in accordance with EPA Method 903.0. The samples were prepared on 09/14/2021 and analyzed on 10/15/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2) were analyzed for Strontium-90 (GFPC) in accordance with EPA 905.0. The samples were prepared on 09/23/2021 and analyzed on 10/07/2021.

Preparation Batch 160-528678:

Insufficient sample volume was available to prepare a sample duplicate. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared to demonstrate batch precision: Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM, TOTAL (LSC)

Samples Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2) were analyzed for Tritium, Total (LSC) in accordance with USEPA 906.0. The samples were prepared on 09/28/2021 and analyzed on 10/01/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

AMERICIUM 241 (ALPHA SPECTROMETRY)

Samples Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2) were analyzed for Americium 241 (Alpha Spectrometry) in accordance with A_01R. The samples were prepared on 09/13/2021 and analyzed on 09/24/2021.

Preparation Batch 160-526831

Insufficient sample volume was available to prepare a sample duplicate: A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared to demonstrate batch precision: Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2).

The following samples exhibited a negative result greater in magnitude than the 3 sigma TPU. This occurrence was evaluated and determined to be random in nature. Sporadic occurrences such as this are statistically expected: Rinseate - 090221 (160-43375-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with USDOE. The samples were prepared on 09/13/2021 and analyzed on 09/24/2021.

Preparation Batch 160-526833:

Insufficient sample volume was available to prepare a sample duplicate. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared to demonstrate batch precision: Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2).

The method blank had less than 400 tracer counts. However, the FWHM keV was <100, the Peak Diff keV was <50, the method blank met the detection goal, the z-score was <3, and the tracer recovery was within QC limits. This demonstrates method performance and supports confidence in the results: (MB 160-526833/1-A).

Preparation Batch 160-526836:

Insufficient sample volume was available to prepare a sample duplicate. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared to demonstrate batch precision: Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were prepared on 09/13/2021 and analyzed on 09/24/2021.

Preparation Batch 160-526835:

Insufficient sample volume was available to prepare a sample duplicate. A laboratory control sample/ laboratory control sample duplicate

(LCS/LCSD) were prepared to demonstrate batch precision: Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CARBON-14 BY LSC

Samples Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2) were analyzed for Carbon-14 by LSC in accordance with EERF. The samples were prepared on 09/28/2021 and analyzed on 09/29/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226 & OTHER GAMMA EMITTERS (GS)-21 DAY INGROWTH

Samples Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2) were analyzed for Radium-226 & other gamma emitters (GS)-21 day ingrowth in accordance with GA-01-R. The samples were prepared on 09/13/2021 and analyzed on 10/04/2021 and 10/11/2021.

Preparation Batch 160-526684:

The Ra-228 MDC (66.7 pCi/L) for the method blank (MB) is above the requested limit of 50 pCi/L. Ra-228 activity was not observed in the method blank above the MDC or RL. The MDC for the samples was not less than the requested limit. The data was reported with the MDC's achieved: (MB 160-526684/1-A).

The MB z-score for Pb-214 does not meet QC criteria. This appears to be random in nature, and limited deviations such as this are statistically expected when larger analyte lists are reported. Such excursions are often caused by fluctuations in Compton background, force-fitting of peaks that are not found by the software peak-search algorithm, and inclusion of inferior peak results by the software in weighted averages. The laboratory SOP allows for such statistical exceedances: (MB 160-526684/1-A).

The detection goal of 50.0 pCi/L was not met for Ra-226/Ra-228 for the following sample. An elevated MDC can occur when higher background counts are applied to a peak ROI. This is due to the relatively small size of the peak or subsequent "force-fit" of the non-existent peak which resulted in higher than normal background counts due to statistical fluctuations in the Compton background. The laboratory does not believe this adversely affects the data, as the Ra-226/Ra-228 result is below the RL and MDC: Rinseate - 090221 (160-43375-2) and (160-43375-C-2-B DU).

For samples Rinseate - 082821 (160-43375-1), Rinseate - 090221 (160-43375-2), (LCS 160-526684/2-A), (MB 160-526684/1-A), and (160-43375-C-2-B DU) many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred From Nuclide	Reported to Nuclide
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Po-216	Pb-212
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-214
Th-227	Pb-211
Bi-214	Ra-226

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

NICKEL 59/63

Samples Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2) were analyzed for Nickel 59/63 in accordance with

LSC-Nickel. The samples were prepared on 10/07/2021 and analyzed on 10/10/2021.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PLUTONIUM 241

Samples Rinseate - 082821 (160-43375-1) and Rinseate - 090221 (160-43375-2) were analyzed for Plutonium 241 in accordance with LSC-Pu241. The samples were prepared on 09/13/2021 and analyzed on 09/30/2021.

Preparation Batch 160-526836:

While the method blank ((MB 160-526836/1-A)) did not meet the requested limit (RL), the associated sample was non-detect for Plutonium-241. In addition, the tracer recovery was low but within acceptance criteria, which elevated the MDC. The laboratory does not believe this excursion to have any adverse impact on the data and the results were reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43375-1

Client Sample ID: Rinseate - 082821

Lab Sample ID: 160-43375-1

Date Collected: 08/28/21 17:30

Matrix: Water

Date Received: 09/03/21 09:00

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.70	U	3.0	0.18	ug/L		09/16/21 07:48	09/16/21 19:40	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.027	ug/L		09/24/21 14:40	09/24/21 20:21	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.266	U	0.209	0.210	1.00	0.322	pCi/L	09/14/21 09:45	10/15/21 09:41	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba	95.7		40 - 110					09/14/21 09:45	10/15/21 09:41	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0508	U	0.159	0.159	3.00	0.280	pCi/L	09/23/21 15:41	10/07/21 21:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	87.7		40 - 110					09/23/21 15:41	10/07/21 21:14	1
Y Carrier	101		40 - 110					09/23/21 15:41	10/07/21 21:14	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	38.3	U	158	158	500	286	pCi/L	09/28/21 11:14	10/01/21 19:57	1

Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	0.0158	U	0.0905	0.0905	1.00	0.190	pCi/L	09/13/21 17:32	09/24/21 12:09	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Americium-243	88.1		30 - 110					09/13/21 17:32	09/24/21 12:09	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	-0.00393	U	0.0353	0.0353	1.00	0.112	pCi/L	09/13/21 17:32	09/24/21 11:17	1
Plutonium-239/240	0.00393	U	0.0336	0.0336	1.00	0.0973	pCi/L	09/13/21 17:32	09/24/21 11:17	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	93.6		30 - 110					09/13/21 17:32	09/24/21 11:17	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43375-1

Client Sample ID: Rinseate - 082821

Lab Sample ID: 160-43375-1

Date Collected: 08/28/21 17:30

Matrix: Water

Date Received: 09/03/21 09:00

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Uranium-233/234	0.0764	U	0.0977	0.0979	1.00	0.164	pCi/L	09/13/21 17:32	09/24/21 11:53	1
Uranium-235	-0.00559	U	0.0110	0.0110	1.00	0.108	pCi/L	09/13/21 17:32	09/24/21 11:53	1
Uranium-238	-0.00897	U	0.0124	0.0125	1.00	0.100	pCi/L	09/13/21 17:32	09/24/21 11:53	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	87.0		30 - 110					09/13/21 17:32	09/24/21 11:53	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Carbon-14	0.839	U	7.36	7.36	20.0	12.7	pCi/L	09/28/21 09:03	09/29/21 17:59	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Actinium-228	16.5	U	29.2	29.2		50.0	pCi/L	09/13/21 12:23	10/04/21 21:52	1
Americium-241	-5.98	U	23.8	23.8		40.8	pCi/L	09/13/21 12:23	10/04/21 21:52	1
Bismuth-212	64.9	U	119	119		206	pCi/L	09/13/21 12:23	10/04/21 21:52	1
Bismuth-214	45.9		25.6	26.1		39.4	pCi/L	09/13/21 12:23	10/04/21 21:52	1
Cesium-137	5.64	U	9.66	9.69	20.0	16.7	pCi/L	09/13/21 12:23	10/04/21 21:52	1
Cobalt-60	5.18	U	6.63	6.66		11.4	pCi/L	09/13/21 12:23	10/04/21 21:52	1
Europium-152	-4.68	U	8.29	8.31		45.0	pCi/L	09/13/21 12:23	10/04/21 21:52	1
Europium-154	27.8	U	13.8	14.2		28.1	pCi/L	09/13/21 12:23	10/04/21 21:52	1
Europium-155	5.49	U	18.2	18.2		88.5	pCi/L	09/13/21 12:23	10/04/21 21:52	1
Lead-212	-13.0	U	13.6	13.7		42.3	pCi/L	09/13/21 12:23	10/04/21 21:52	1
Lead-214	23.0	U	14.7	15.0		24.6	pCi/L	09/13/21 12:23	10/04/21 21:52	1
Potassium-40	59.2	U	146	146		162	pCi/L	09/13/21 12:23	10/04/21 21:52	1
Radium-226	45.9		25.6	26.1	50.0	39.4	pCi/L	09/13/21 12:23	10/04/21 21:52	1
Radium-228	16.5	U	29.2	29.2	50.0	50.0	pCi/L	09/13/21 12:23	10/04/21 21:52	1
Sodium-22	7.53	U	10.3	10.3		17.4	pCi/L	09/13/21 12:23	10/04/21 21:52	1
Zinc-65	-0.158	U	26.8	26.8		48.6	pCi/L	09/13/21 12:23	10/04/21 21:52	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Nickel-63	0.774	U	1.41	1.41	5.00	2.46	pCi/L	10/07/21 12:39	10/10/21 17:49	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ni	103		40 - 110					10/07/21 12:39	10/10/21 17:49	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (1.96σ+/-)	Uncert. (1.96σ+/-)						
Plutonium-241	-2.14	U	2.55	2.56	5.00	4.80	pCi/L	09/13/21 17:32	09/30/21 16:13	1

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43375-1

Client Sample ID: Rinseate - 082821

Lab Sample ID: 160-43375-1

Date Collected: 08/28/21 17:30

Matrix: Water

Date Received: 09/03/21 09:00

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	93.6		30 - 110	09/13/21 17:32	09/30/21 16:13	1

Client Sample ID: Rinseate - 090221

Lab Sample ID: 160-43375-2

Date Collected: 09/02/21 17:00

Matrix: Water

Date Received: 09/03/21 09:00

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.70	U	3.0	0.18	ug/L		09/16/21 07:48	09/16/21 19:58	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.080	U	0.20	0.027	ug/L		09/24/21 14:40	09/24/21 20:24	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.217	U	0.224	0.225	1.00	0.369	pCi/L	09/14/21 09:45	10/15/21 09:41	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba	89.8		40 - 110	09/14/21 09:45	10/15/21 09:41	1

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.0422	U	0.159	0.159	3.00	0.282	pCi/L	09/23/21 15:41	10/07/21 21:14	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	88.7		40 - 110	09/23/21 15:41	10/07/21 21:14	1
Y Carrier	103		40 - 110	09/23/21 15:41	10/07/21 21:14	1

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	66.7	U	160	160	500	282	pCi/L	09/28/21 11:14	10/01/21 20:20	1

Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	-0.0595	U	0.0323	0.0330	1.00	0.176	pCi/L	09/13/21 17:32	09/24/21 12:09	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Americium-243	81.0		30 - 110	09/13/21 17:32	09/24/21 12:09	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (1.96σ+/-)	Total Uncert. (1.96σ+/-)	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-238	0.0540	U	0.0614	0.0616	1.00	0.0865	pCi/L	09/13/21 17:32	09/24/21 11:17	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
Project/Site: BNL Decommissioning Project

Job ID: 160-43375-1

Client Sample ID: Rinseate - 090221

Lab Sample ID: 160-43375-2

Date Collected: 09/02/21 17:00

Matrix: Water

Date Received: 09/03/21 09:00

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry) (Continued)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Plutonium-239/240	0.00386	U	0.0473	0.0473	1.00	0.122	pCi/L	09/13/21 17:32	09/24/21 11:17	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Pu-242 (T)</i>	109		30 - 110					09/13/21 17:32	09/24/21 11:17	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Uranium-233/234	0.0472	U	0.0588	0.0590	1.00	0.0830	pCi/L	09/13/21 17:32	09/24/21 11:53	1
Uranium-235	0.000	U	0.0105	0.0105	1.00	0.0640	pCi/L	09/13/21 17:32	09/24/21 11:53	1
Uranium-238	0.00428	U	0.0366	0.0366	1.00	0.106	pCi/L	09/13/21 17:32	09/24/21 11:53	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
<i>Uranium-232</i>	77.1		30 - 110					09/13/21 17:32	09/24/21 11:53	1

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Carbon-14	2.10	U	7.47	7.47	20.0	12.8	pCi/L	09/28/21 09:03	09/29/21 19:05	1

Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Actinium-228	0.000	U	18.4	18.4		57.5	pCi/L	09/13/21 12:23	10/11/21 16:16	1
Americium-241	7.68	U	20.7	20.7		35.4	pCi/L	09/13/21 12:23	10/11/21 16:16	1
Bismuth-212	-2.39	U	125	125		229	pCi/L	09/13/21 12:23	10/11/21 16:16	1
Bismuth-214	18.0	U	8.81	9.05		60.4	pCi/L	09/13/21 12:23	10/11/21 16:16	1
Cesium-137	-3.91	U	9.33	9.34	20.0	16.4	pCi/L	09/13/21 12:23	10/11/21 16:16	1
Cobalt-60	5.44	U	9.37	9.39		10.7	pCi/L	09/13/21 12:23	10/11/21 16:16	1
Europium-152	1.08	U	1.60	1.60		38.2	pCi/L	09/13/21 12:23	10/11/21 16:16	1
Europium-154	9.50	U	19.7	19.7		22.9	pCi/L	09/13/21 12:23	10/11/21 16:16	1
Europium-155	0.000	U	15.4	15.4		68.2	pCi/L	09/13/21 12:23	10/11/21 16:16	1
Lead-212	6.55	U	11.1	11.1		16.2	pCi/L	09/13/21 12:23	10/11/21 16:16	1
Lead-214	-5.98	U	18.3	18.3		32.6	pCi/L	09/13/21 12:23	10/11/21 16:16	1
Potassium-40	0.000	U	64.1	64.1		157	pCi/L	09/13/21 12:23	10/11/21 16:16	1
Radium-226	18.0	U	8.81	9.05	50.0	60.4	pCi/L	09/13/21 12:23	10/11/21 16:16	1
Radium-228	0.000	U	18.4	18.4	50.0	57.5	pCi/L	09/13/21 12:23	10/11/21 16:16	1
Sodium-22	5.44	U	7.08	7.11		11.9	pCi/L	09/13/21 12:23	10/11/21 16:16	1
Zinc-65	0.000	U	3.38	3.38		30.6	pCi/L	09/13/21 12:23	10/11/21 16:16	1

Method: ST-RC-0055 - Nickel-59/Nickel-63 (LSC)

Analyte	Result	Qualifier	Count	Total	LOQ	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(1.96σ+/-)	(1.96σ+/-)						
Nickel-63	0.826	U	1.39	1.39	5.00	2.43	pCi/L	10/07/21 12:39	10/10/21 18:56	1

Eurofins TestAmerica, St. Louis

Client Sample Results

Client: FPM Remediations Inc
 Project/Site: BNL Decommissioning Project

Job ID: 160-43375-1

Client Sample ID: Rinseate - 090221

Lab Sample ID: 160-43375-2

Date Collected: 09/02/21 17:00

Matrix: Water

Date Received: 09/03/21 09:00

<u>Carrier</u>	<u>%Yield</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Ni	104		40 - 110	10/07/21 12:39	10/10/21 18:56	1

Method: ST-RC-0245 - Plutonium-241 (LSC)

<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Count Uncert. (1.96σ+/-)</u>	<u>Total Uncert. (1.96σ+/-)</u>	<u>LOQ</u>	<u>MDC</u>	<u>Unit</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Plutonium-241	-0.660	U	2.27	2.27	5.00	4.12	pCi/L	09/13/21 17:32	09/30/21 17:03	1

<u>Tracer</u>	<u>%Yield</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Pu-242 (T)	109		30 - 110	09/13/21 17:32	09/30/21 17:03	1

Data Validation Report
High Flux Beam Reactor Stack Demolition and Decommissioning
Brookhaven National Laboratory

Introduction

Data validation of analytical laboratory results was performed using the requirements listed in the UFP-QAPP (OFJV 2020b) and the Consolidate Quality Systema Manual Version 5.1.1 (QSM, DoD/DOE 2018). The laboratory provided Stage 4 data reports for review.

Radionuclides that were not detected were qualified with a “U” flag by the analytical laboratory. All results assigned a “U” flag by the laboratory were maintained during data validation. No additional “U” flags were assigned during data validation to identify radionuclides that were not detected. Analytical data assigned a “U” flag represent a normal usable result.

A “Q” flag was assigned during data validation to analytical results where the combined standard uncertainty exceeded the FSS project objectives. The most common cause for assignment of a “Q” flag was an instrument background or source check outside control limits either before or after a measurement was performed. A “Q” flag was also assigned to a batch of results if the laboratory control sample (LCS) recovery was outside acceptable limits. Analytical data assigned a “Q” flag represent a usable result.

A “J” flag was assigned during data validation to analytical results that are unusually uncertain or estimated. The most common cause for assignment of a “J” flag was a carrier or tracer recovery outside acceptable limits. Analytical data assigned a “J” flag represent a usable result.

A “B” flag was assigned during data validation to analytical results associated with a blank result outside acceptable limits. The most common cause for assignment of a “B” flag was a method blank (MB) greater than three times the reported total uncertainty. Analytical data assigned a “B” flag represent a usable result.

A “R” flag assigned during data validation indicates quantitative or qualitative problems so severe the data are rejected and cannot be used for their intended purpose. No laboratory analytical data were assigned an “R” flag.

Laboratory Data Packages

The laboratory provided Stage 4 data reports for review. The following information was provided to assist in the validation of analytical results.

Alpha Spectrometry

The initial calibration and calibration verification was provided for each detector used.

Monthly background subtraction data were provided, no control or tolerance information was provided so these data were not evaluated.

Daily checks for continuing calibration verification were provided with control and tolerance limits for evaluation.

Daily instrument contamination checks were provided with control limits for evaluation.

Gamma Spectroscopy

The initial calibration and calibration verification provided for each detector used.

Monthly background subtraction data were provided with control and tolerance limits for evaluation.

Daily checks for continuing calibration verification were provided with control and tolerance limits for evaluation.

Daily instrument contamination checks were provided with control limits for evaluation.

Gas Flow Proportional Counting

The initial calibration included self-absorption curves and cross-talk factors and were acceptable. Voltage plateau information was not provided and was not evaluated.

Monthly background subtraction data were provided, no control or tolerance information was provided so these data were not evaluated.

Daily checks for continuing calibration verification were provided with control and tolerance limits for evaluation.

Daily instrument contamination checks were provided with control limits for evaluation.

Liquid Scintillation Counting

Instrument calibration with nuclide-specific quench curves were provided for each detector used. Nuclide-specific calibration verification information was provided for each instrument used.

Daily continuing calibration verification information was provided, no control or tolerance information was provided so these data were not evaluated.

Method Blanks

Method blanks were associated with specific sample batches. Method blanks were evaluated to determine if the reported result was less than three times the total uncertainty ($Z_{\text{Blank}} < 3$).

Laboratory Control Samples

Laboratory control samples were associated with specific sample batches. Laboratory control sample results were reviewed to determine the analyte recovery was within 25% of the expected value (75% to 125% recovery).

Laboratory Duplicates

Laboratory duplicates were associated with specific sample batches. Laboratory duplicate results were evaluated using a duplicate error ratio reported by the laboratory to determine if the value was less than 3.

Carrier and Tracer Recovery

Individual sample analyses using a carrier or tracer were evaluated to determine if the sample recovery was between 30% and 110%.

Re-Use Soils

Laboratory Reports Reviewed:

J41698-1, J41798-1, J42005-2, J42457-1

Analyses Reviewed:

Gamma spectroscopy for Ra-226 and Cs-137

Gas flow proportional counting for Sr-90.

No issues were identified during validation of the data.

All results are usable for their intended purpose.

All U flags assigned by the laboratory were retained.

No additional data qualifiers were assigned.

Reference Area Samples

Laboratory Reports reviewed:

J41496-1 (soil), J41700-1 (concrete)

Analyses Reviewed:

Alpha spectrometry for isotopic uranium and isotopic plutonium

Gamma spectroscopy for multiple radionuclides of concern

Gas flow proportional counting for Sr-90

Liquid scintillation counting for H-3 and Ni-63 (soil only)

Method blank 160-502826/1-A detected Eu-152 and Eu-154 with $Z_{\text{Blank}} < 3$

B flag assigned to Eu-152 and Eu-154 results for RA-001-031721, RA-002-031721, RA-003-031721, RA-004-031721, RA-005-031721, RA-006-031721, RA-007-031721, RA-008-031721, RA-009-031721, RA-010-031721, RA-011-031721, RA-012-031721, RA-013-031721, RA-014-031721, RA-015-031721, RA-016-031721

Detector failed the background check after a sample was counted

B flag assigned to Sr-90 results for RA-008-031721 and RA-017 041321

Carrier recovery less than 30%

J flag assigned to Ni-63 result for RA-001-031721

Final Status Survey Samples

Laboratory Reports reviewed:

J43079-1, J43084-1, J43113-1, J43124-1, J43154-1, J43154-2, J43157-1 Rev 1,
J43195-1, J43220-1, J43230-1, J43306-1

Analyses Reviewed:

Alpha spectrometry for isotopic uranium and isotopic plutonium

Gamma spectroscopy for multiple radionuclides of concern

Gas flow proportional counting for Sr-90

Liquid scintillation counting for H-3, C-14, Ni-63, and Pu-241

Alpha Spectrometry

Monthly background subtract data not provided

B flag assigned to U-234, U-235, and U-238 for FSS-011-081121, FSS-012-081121

Method Blank 160-526536 detected U-238 with $Z_{\text{Blank}} < 3$

B flag assigned to U-238 for FSS-136-082521, FSS-137-082521, FSS-138-082521,
FSS-145-082521, FSS-146-082521, FSS-147-082521

Tracer recovery <30% for uranium and plutonium

J flag assigned to U-234, U-235, U-238, Pu-238, Pu-239/240 for FSS-168-082621

Gamma Spectroscopy

Method blank 160-523157 detected Eu-152 with $Z_{\text{Blank}} < 3$

B flag assigned to Eu-152 for FSS-002-081121, FSS-003-081121, FSS-004-081121,
FSS-006-081121, FSS-007-081121, FSS-008-081121, FSS-010-081121, FSS-011-
081121, FSS-012-081121, FSS-014-081121, FSS-015-081121, FSS-016-081121

Method blank 160-523357 detected Eu-154 with $Z_{\text{Blank}} < 3$

B flag assigned to Eu-154 for FSS-001-081121, FSS-005-081121, FSS-009-081121,
FSS-013-081121

Method blanks 160-523276 and 160-523294 detected Eu-152 with $Z_{\text{Blank}} < 3$

B flag assigned to Eu-152 for FSS-017-081221, FSS-018-081221, FSS-019-081221, FSS-
020-081221, FSS-021-081221, FSS-022-081221, FSS-023-081221, FSS-024-081221,
FSS-025-081221, FSS-026-081221, FSS-027-081221, FSS-028-081221, FSS-029-
081221, FSS-030-081221, FSS-031-081221, FSS-032-081221, FSS-033-081221, FSS-
034-081221, FSS-035-081221, FSS-036-081221, FSS-037-081221, FSS-038-081221,
FSS-039-081221, FSS-040-081221, FSS-041-081221, FSS-042-081221, FSS-043-
081221

Method blank 160-523941 detected Eu-154 with $Z_{\text{Blank}} < 3$

B flag assigned to Eu-154 for FSS-044-081721, FSS-045-081721, FSS-046-081721, FSS-047-081721, FSS-048-081721, FSS-049-081721, FSS-050-081721, FSS-051-081721, FSS-052-081721, FSS-053-081721, FSS-054-081721, FSS-055-081721, FSS-056-081721, FSS-057-081721, FSS-058-081721

Method blank 160-524257 detected Eu-152 with $Z_{\text{Blank}} < 3$

B flag assigned to Eu-152 for FSS-082-081921, FSS-083-081921, FSS-084-081921, FSS-085-081921, FSS-086-081921, FSS-087-081921, FSS-091-081921, FSS-092-081921, FSS-093-081921,

Method blank 160-524257 detected Eu-152 with $Z_{\text{Blank}} < 3$

B flag assigned to Eu-152 for FSS-103-082021, FSS-104-082021, FSS-105-082021, FSS-106-082021, FSS-107-082021, FSS-108-082021, FSS-109-082021, FSS-110-082021, FSS-111-082021, FSS-112-082021, FSS-113-082021, FSS-114-082021

Method blank 160-525011 detected Eu-152 with $Z_{\text{Blank}} < 3$

B flag assigned to Eu-152 for FSS-136-082521, FSS-137-082521, FSS-138-082521, FSS-145-082521, FSS-146-082521, FSS-147-082521, FSS-148-082521, FSS-149-082521, FSS-150-082521, FSS-151-082521, FSS-152-082521, FSS-088-082521, FSS-089-082521, FSS-090-082521

Method blank 160-525011 detected Eu-152 with $Z_{\text{Blank}} < 3$

B flag assigned to Eu-152 for FSS-160-082621, FSS-165-082621, FSS-169-082621

Laboratory duplicate Eu-152 duplicate error ratio >3

J flag assigned to Eu-152 for FSS-161-082621, FSS-162-082621, FSS-163-082621, FSS-164-082621, FSS-166-082621, FSS-167-082621, FSS-168-082621, FSS-170-082621

Gas Flow Proportional Counting

Detector failed the background check after a sample was counted

B flag assigned to Sr-90 for FSS-010-081121, FSS-054-081721

Laboratory control sample recovery less than 75%

Q flag assigned to Sr-90 for FSS-059-081821, FSS-060-081821, FSS-061-081821, FSS-062-081821, FSS-063-081821, FSS-064-081821, FSS-065-081821, FSS-066-081821, FSS-181-081821, FSS-067-081821, FSS-068-081821, FSS-069-081821, FSS-070-081821, FSS-071-081821, FSS-072-081821, FSS-073-081821

Liquid Scintillation Counting

Method blank 160-524989 detected H-3 with $Z_{\text{Blank}} < 3$

B flag assigned to H-3 for FSS-032-081321, FSS-033-081321, FSS-034-081321, FSS-035-081321, FSS-036-081321, FSS-037-081321, FSS-038-081321, FSS-039-081321, FSS-040-081321, FSS-041-081321, FSS-042-081321, FSS-043-081321

Sample recovery greater than 110%

J flag Ni-63 for FSS-044-081721, FSS-060-081821, FSS-070-081821

Method blank 160-526201 detected Ni-63 with $Z_{\text{Blank}} < 3$

B flag assigned to Ni-63 for FSS-059-081821, FSS-060-081821, FSS-061-081821, FSS-062-081821, FSS-063-081821, FSS-064-081821, FSS-065-081821, FSS-066-081821, FSS-067-081821, FSS-068-081821, FSS-069-081821, FSS-070-081821, FSS-071-081821, FSS-072-081821, FSS-073-081821, FSS-074-081821, FSS-075-081821, FSS-076-081821, FSS-077-081821, FSS-078-081821, FSS-079-081821, FSS-080-081821, FSS-081-081821, FSS-181-081821

Laboratory control sample 160-525621 recovery greater than 125%

Q flag assigned to Pu-241 for FSS-080-081821, FSS-081-081821, FSS-094-081921, FSS-095-081921, FSS-096-081921

Sample recovery less than 30%

J flag assigned to Pu-241 for FSS-168-082621