DATE: August 31, 2016

SUBJECT: Radiochemical data validation for National Air and Radiation Environmental Laboratory (NAREL), data packages 1600015, 1600016, and 1600017 in regards to Canadian Radium Site, Mount Kisco, West Chester County, New York.

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DCN: RST3-03-F-0013

Associated TDD: TO-0006-0053

1. Overview

This report addresses the above referenced data packages that were analyzed by NAREL at their Montgomery, AL facility. The analytes (isotopes) that were reported and methods are provided in the following table.

Table of Isotopes and Analytical Methods.

Method	Description	Isotopes
NAREL ACT-02F-TH	Alpha Spectroscopy (Isotopic Thorium)	Th227, Th228, Th230, Th232
NAREL ACT-02F-U	Alpha Spectroscopy (Isotopic Uranium)	U234, U235, U238
NAREL GAM-01-RA	Gamma Spectroscopy	Bi207, Bi212, Bi214, Cs137, Eu155, K40, Pb210, Pb212, Pb214, Ra226, Ra228, Th234, Tl208, U235

2. INTRODUCTION

Fifty-one (51) soil samples were collected during the time period April 5, 2016 and April 6, 2016. The following table provides a list of these field samples. The samples were submitted under one nine page long Chain of Custody form (No. 2-041816-105138-0008). The sample condition upon receipt is

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documented by notations made on the chain of custody form. The samples on the chain of custody were subdivided into three "sample data groups," 1600015, 1600016, and 1600017. Three reports were issued for each sample data group, one for isotopic thorium by alpha spectroscopy, one for isotopic uranium by alpha spectroscopy, and one for gamma spectroscopy results. The lab reports package included a summary report, results, chain of custody, case narrative and some quality-related data. Nine electronic data deliverables (EDD) were provided, which contained much, but not all, of the quality data and results in a readily accessible format.

The lab reports plus EDD were missing several items that would normally be provided in a CLP level 4 data package. It is notable that no information was provided on:

- NIST traceability of standards,
- Instrument calibrations,
- Concentrations in method blanks in units (pCi/g),
- Dilution factors,
- The tracers or carriers used for alpha spectroscopy,
- Actual spectral data (counts per channel) in tabular or graphic form.

The radio-analytical data were validated to Multi-Agency Radiological Laboratory Analytical Protocols Manual (MARLAP) *Chapter 8 - Radiochemical Data Verification and Validation*[1]and the requirements of the quality assurance project plan (QAPP) to the degree feasible.[2] Since the data package is not a Level 4 CLP-equivalent style document, it cannot be validated to those standards. In validating a level 4 equivalent package a reviewer expects to find abundant objective evidence supporting a conclusion that an analysis is acceptable and may qualify results if such evidence is not provided. In validating this package the reviewer didn't have that option. By and large qualifiers were assigned optimistically based on what information was provided.

DATA VALIDATION PRECAUTIONS AND LIMITATIONS

It should be noted that this technical report describes method validation and is not intended to provide guidance for validation of overall program/project objectives and requirements. Project validation is generally performed by project management personnel and involves a comprehensive review of all aspects (and objectives) of a sampling and analysis project.

[1] Multi-Agency Radiological Laboratory Analytical Protocols Manual, Volume I, NUREG-1576, EPA 402-B-04-001A, NTIS PB2004-105421, July 2004.

[2] SITE-SPECIFIC UFP QUALITY ASSURANCE PROJECT PLAN CANADIAN RADIUM AND URANIUM CORPORATION SITE, MOUNT KISCO, WESTCHESTER COUNTY, NEW YORK, DC No.: RST3-02-D-0010, TDD No.: TO-0006-0053. July 2015.

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Table of Sample IDs and Analytical Methods.

Client ID	NAREL ID	QC type	Method
C2-SB1-0012-01	B6.04104Y		NAREL ACT-02F-TH
C2-SB1-0012-01	B6.04104Y	DUP	NAREL ACT-02F-TH
C2-SB1-0012-01	B6.04104Y		NAREL ACT-02F-U
C2-SB1-0012-01	B6.04104Y	DUP	NAREL ACT-02F-U
C2-SB1-0012-01	B6.04104Y		NAREL GAM-01-RA
C2-SB1-4860-01	B6.04105Z		NAREL ACT-02F-TH
C2-SB1-4860-01	B6.04105Z		NAREL ACT-02F-U
C2-SB1-4860-01	B6.04105Z		NAREL GAM-01-RA
C2-SB1-6072-01	B6.04106A		NAREL ACT-02F-TH
C2-SB1-6072-01	B6.04106A		NAREL ACT-02F-U
C2-SB1-6072-01	B6.04106A		NAREL GAM-01-RA
C2-SB1-6072-01	B6.04106A	DUP	NAREL GAM-01-RA
C2-SB1-7284-01	B6.04107B		NAREL ACT-02F-TH
C2-SB1-7284-01	B6.04107B		NAREL ACT-02F-U
C2-SB1-7284-01	B6.04107B		NAREL GAM-01-RA
C2-SB1-8496-01	B6.04108C		NAREL ACT-02F-TH
C2-SB1-8496-01	B6.04108C		NAREL ACT-02F-U
C2-SB1-8496-01	B6.04108C		NAREL GAM-01-RA
C2-SB2-0012-01	B6.04109D		NAREL ACT-02F-TH
C2-SB2-0012-01	B6.04109D		NAREL ACT-02F-U
C2-SB2-0012-01	B6.04109D		NAREL GAM-01-RA
C2-SB2-1224-01	B6.04110W		NAREL ACT-02F-TH
C2-SB2-1224-01	B6.04110W		NAREL ACT-02F-U

Client ID	NAREL ID	QC type	Method
C2-SB2-1224-01	B6.04110W		NAREL GAM-01-RA
C2-SB2-2436-01	B6.04111X		NAREL ACT-02F-TH
C2-SB2-2436-01	B6.04111X		NAREL ACT-02F-U
C2-SB2-2436-01	B6.04111X		NAREL GAM-01-RA
C2-SB2-3648-01	B6.04112Y		NAREL ACT-02F-TH
C2-SB2-3648-01	B6.04112Y		NAREL ACT-02F-U
C2-SB2-3648-01	B6.04112Y		NAREL GAM-01-RA
C2-SB2-7284-01	B6.04113Z		NAREL ACT-02F-TH
C2-SB2-7284-01	B6.04113Z	DUP	NAREL ACT-02F-TH
C2-SB2-7284-01	B6.04113Z		NAREL ACT-02F-U
C2-SB2-7284-01	B6.04113Z	DUP	NAREL ACT-02F-U
C2-SB2-7284-01	B6.04113Z		NAREL GAM-01-RA
C2-SB2-7284-02	B6.04114A		NAREL ACT-02F-TH
C2-SB2-7284-02	B6.04114A		NAREL ACT-02F-U
C2-SB2-7284-02	B6.04114A		NAREL GAM-01-RA
C2-SB2-8496-01	B6.04115B		NAREL ACT-02F-TH
C2-SB2-8496-01	B6.04115B		NAREL ACT-02F-U
C2-SB2-8496-01	B6.04115B		NAREL GAM-01-RA
C2-SB3-0012-01	B6.04116C		NAREL ACT-02F-TH
C2-SB3-0012-01	B6.04116C		NAREL ACT-02F-U
C2-SB3-0012-01	B6.04116C		NAREL GAM-01-RA
C2-SB3-1224-01	B6.04117D		NAREL ACT-02F-TH
C2-SB3-1224-01	B6.04117D		NAREL ACT-02F-U
C2-SB3-1224-01	B6.04117D		NAREL GAM-01-RA

Client ID	NAREL ID	QC type	Method
C2-SB3-4860-01	B6.04118E		NAREL ACT-02F-TH
C2-SB3-4860-01	B6.04118E		NAREL ACT-02F-U
C2-SB3-4860-01	B6.04118E		NAREL GAM-01-RA
C2-SB3-6072-01	B6.04119F		NAREL ACT-02F-TH
C2-SB3-6072-01	B6.04119F		NAREL ACT-02F-U
C2-SB3-6072-01	B6.04119F		NAREL GAM-01-RA
C2-SB3-7284-01	B6.04120Y		NAREL ACT-02F-TH
C2-SB3-7284-01	B6.04120Y		NAREL ACT-02F-U
C2-SB3-7284-01	B6.04120Y		NAREL GAM-01-RA
C2-SB3-8496-01	B6.04121Z		NAREL ACT-02F-TH
C2-SB3-8496-01	B6.04121Z	DUP	NAREL ACT-02F-TH
C2-SB3-8496-01	B6.04121Z		NAREL ACT-02F-U
C2-SB3-8496-01	B6.04121Z	DUP	NAREL ACT-02F-U
C2-SB3-8496-01	B6.04121Z		NAREL GAM-01-RA
C3-SB10-0012-01	B6.04140C		NAREL ACT-02F-TH
C3-SB10-0012-01	B6.04140C		NAREL ACT-02F-U
C3-SB10-0012-01	B6.04140C		NAREL GAM-01-RA
C3-SB1-0012-01	B6.04122A		NAREL ACT-02F-TH
C3-SB1-0012-01	B6.04122A		NAREL ACT-02F-U
C3-SB1-0012-01	B6.04122A		NAREL GAM-01-RA
C3-SB10-1224-01	B6.04141D		NAREL ACT-02F-TH
C3-SB10-1224-01	B6.04141D		NAREL ACT-02F-U
C3-SB10-1224-01	B6.04141D		NAREL GAM-01-RA
C3-SB10-6072-01	B6.04142E		NAREL ACT-02F-TH
C3-SB10-6072-01	B6.04142E	DUP	NAREL ACT-02F-TH
C3-SB10-6072-01	B6.04142E		NAREL ACT-02F-U
C3-SB10-6072-01	B6.04142E	DUP	NAREL ACT-02F-U

Client ID	NAREL ID	QC type	Method
C3-SB10-6072-01	B6.04142E		NAREL GAM-01-RA
C3-SB10-7284-01	B6.04143F		NAREL ACT-02F-TH
C3-SB10-7284-01	B6.04143F		NAREL ACT-02F-U
C3-SB10-7284-01	B6.04143F		NAREL GAM-01-RA
C3-SB10-8496-01	B6.04144G		NAREL ACT-02F-TH
C3-SB10-8496-01	B6.04144G		NAREL ACT-02F-U
C3-SB10-8496-01	B6.04144G		NAREL GAM-01-RA
C3-SB11-0012-01	B6.04145H		NAREL ACT-02F-TH
C3-SB11-0012-01	B6.04145H		NAREL ACT-02F-U
C3-SB11-0012-01	B6.04145H		NAREL GAM-01-RA
C3-SB11-3648-01	B6.04146J		NAREL ACT-02F-TH
C3-SB11-3648-01	B6.04146J		NAREL ACT-02F-U
C3-SB11-3648-01	B6.04146J		NAREL GAM-01-RA
C3-SB11-3648-01	B6.04146J	DUP	NAREL GAM-01-RA
C3-SB12-0012-01	B6.04147K		NAREL ACT-02F-TH
C3-SB12-0012-01	B6.04147K		NAREL ACT-02F-U
C3-SB12-0012-01	B6.04147K		NAREL GAM-01-RA
C3-SB13-0012-01	B6.04148L		NAREL ACT-02F-TH
C3-SB13-0012-01	B6.04148L		NAREL ACT-02F-U
C3-SB13-0012-01	B6.04148L		NAREL GAM-01-RA
C3-SB13-1224-01	B6.04149M		NAREL ACT-02F-TH
C3-SB13-1224-01	B6.04149M		NAREL ACT-02F-U
C3-SB13-1224-01	B6.04149M		NAREL GAM-01-RA
C3-SB1-3648-01	B6.04123B		NAREL ACT-02F-TH
C3-SB1-3648-01	B6.04123B		NAREL ACT-02F-U
C3-SB1-3648-01	B6.04123B		NAREL GAM-01-RA
C3-SB1-3648-02	B6.04124C		NAREL ACT-02F-TH

Client ID	NAREL ID	QC type	Method
C3-SB1-3648-02	B6.04124C		NAREL ACT-02F-U
C3-SB1-3648-02	B6.04124C		NAREL GAM-01-RA
C3-SB1-3648-02	B6.04124C	DUP	NAREL GAM-01-RA
C3-SB14-0012-01	B6.04150E		NAREL ACT-02F-TH
C3-SB14-0012-01	B6.04150E		NAREL ACT-02F-U
C3-SB14-0012-01	B6.04150E		NAREL GAM-01-RA
C3-SB15-0012-01	B6.04151F		NAREL ACT-02F-TH
C3-SB15-0012-01	B6.04151F		NAREL ACT-02F-U
C3-SB15-0012-01	B6.04151F		NAREL GAM-01-RA
C3-SB15-2436-01	B6.04152G		NAREL ACT-02F-TH
C3-SB15-2436-01	B6.04152G		NAREL ACT-02F-U
C3-SB15-2436-01	B6.04152G		NAREL GAM-01-RA
C3-SB16-0012-01	B6.04153H		NAREL ACT-02F-TH
C3-SB16-0012-01	B6.04153H		NAREL ACT-02F-U
C3-SB16-0012-01	B6.04153H		NAREL GAM-01-RA
C3-SB16-3648-01	B6.04154J		NAREL ACT-02F-TH
C3-SB16-3648-01	B6.04154J		NAREL ACT-02F-U
C3-SB16-3648-01	B6.04154J		NAREL GAM-01-RA
C3-SB2-0012-01	B6.04125D		NAREL ACT-02F-TH
C3-SB2-0012-01	B6.04125D		NAREL ACT-02F-U
C3-SB2-0012-01	B6.04125D		NAREL GAM-01-RA
C3-SB2-1224-01	B6.04126E		NAREL ACT-02F-TH
C3-SB2-1224-01	B6.04126E		NAREL ACT-02F-U
C3-SB2-1224-01	B6.04126E		NAREL GAM-01-RA
C3-SB3-0012-01	B6.04127F		NAREL ACT-02F-TH
C3-SB3-0012-01	B6.04127F		NAREL ACT-02F-U
C3-SB3-0012-01	B6.04127F		NAREL GAM-01-RA

Client ID	NAREL ID	QC type	Method
C3-SB3-1224-01	B6.04128G		NAREL ACT-02F-TH
C3-SB3-1224-01	B6.04128G		NAREL ACT-02F-U
C3-SB3-1224-01	B6.04128G		NAREL GAM-01-RA
C3-SB4-0012-01	B6.04129H		NAREL ACT-02F-TH
C3-SB4-0012-01	B6.04129H		NAREL ACT-02F-U
C3-SB4-0012-01	B6.04129H		NAREL GAM-01-RA
C3-SB4-1224-01	B6.04130A		NAREL ACT-02F-TH
C3-SB4-1224-01	B6.04130A		NAREL ACT-02F-U
C3-SB4-1224-01	B6.04130A		NAREL GAM-01-RA
C3-SB5-0012-01	B6.04131B		NAREL ACT-02F-TH
C3-SB5-0012-01	B6.04131B		NAREL ACT-02F-U
C3-SB5-0012-01	B6.04131B		NAREL GAM-01-RA
C3-SB6-0012-01	B6.04132C		NAREL ACT-02F-TH
C3-SB6-0012-01	B6.04132C	DUP	NAREL ACT-02F-TH
C3-SB6-0012-01	B6.04132C		NAREL ACT-02F-U
C3-SB6-0012-01	B6.04132C		NAREL GAM-01-RA
C3-SB6-3648-01	B6.04133D		NAREL ACT-02F-TH
C3-SB6-3648-01	B6.04133D		NAREL ACT-02F-U
C3-SB6-3648-01	B6.04133D		NAREL GAM-01-RA
C3-SB7-0012-01	B6.04134E		NAREL ACT-02F-TH
C3-SB7-0012-01	B6.04134E		NAREL ACT-02F-U
C3-SB7-0012-01	B6.04134E		NAREL GAM-01-RA
C3-SB7-3648-01	B6.04135F		NAREL ACT-02F-TH
C3-SB7-3648-01	B6.04135F		NAREL ACT-02F-U
C3-SB7-3648-01	B6.04135F		NAREL GAM-01-RA
C3-SB8-0012-01	B6.04136G		NAREL ACT-02F-TH
C3-SB8-0012-01	B6.04136G		NAREL ACT-02F-U

Client ID	NAREL ID	QC type	Method
C3-SB8-0012-01	B6.04136G		NAREL GAM-01-RA
C3-SB8-1224-01	B6.04137H		NAREL ACT-02F-TH
C3-SB8-1224-01	B6.04137H		NAREL ACT-02F-U
C3-SB8-1224-01	B6.04137H		NAREL GAM-01-RA
C3-SB9-0012-01	B6.04138J		NAREL ACT-02F-TH

Client ID	NAREL ID	QC type	Method
C3-SB9-0012-01	B6.04138J		NAREL ACT-02F-U
C3-SB9-0012-01	B6.04138J		NAREL GAM-01-RA
C3-SB9-1224-01	B6.04139K		NAREL ACT-02F-TH
C3-SB9-1224-01	B6.04139K		NAREL ACT-02F-U
C3-SB9-1224-01	B6.04139K		NAREL GAM-01-RA

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3. DATA QUALIFIERS

Final Data qualifiers are codes placed on an analytical result that alerts data users to the validator's concern about the result. These qualifiers may be summarized as U, J, R, or Q in the final validation report.

None the analysis was performed and radioactivity was detected. The result is statistically positive at the 95% confidence level, above the critical level and above the MDC. The radionuclide is considered to be present in the sample.

U A normal, not detected (< critical value) result.

UJ The analyte was not detected, but the required MDA was not attained. A number of specific problems also resulted in assignment of a J qualifier where results were more uncertain than usual.

Q A reported combined standard uncertainty, which exceeds the project's required method uncertainty. (In this report Q was only used as an intermediate or preliminary qualifier.)

J An unusually uncertain or estimated result.

R A rejected result: the problems (quantitative or qualitative) are so severe that the data cannot be used.

The data validator should be aware that a data qualifier or a set of qualifiers does not apply to all similar data. The data validator should incorporate the project MQOs into the testing and qualifying decision-making process.

During the data validation process the data validator may use additional qualifiers based on QC sample results and acceptance criteria. The final validation reports should also include a summary of QC sample performance for use by the data assessor. Intermediate or preliminary qualifiers, such as 'S', 'B' or 'P' are assigned on the basis of QC sample performance and these are taken into consideration in assignment of a final qualifier to an analytical result.

J1+ A result for a sample whose associated blank contained detected activity above the critical level and the result for the sample was less than 5 times the result for the blank.

S A result with a related spike result (laboratory control sample [LCS], matrix spike [MS] or matrix spike duplicate [MSD]) that is outside the control limit for recovery (%R); S+ or S- used to indicate high or low recovery.

P A result with an associated a pair of poorly performing laboratory replicates (DER > 1.96).

PP A result with an associated a pair of very poorly performing laboratory replicates (DER > 2.58). No samples were rejected for having a PP intermediate qualifier.

P1 A result for a particular analyte and sample that has associated with it a poorly performing pair of field replicates (DER > 1.96).

P**P1** A result for a particular analyte and sample that has associated with it a very poorly performing pair of field replicates (DER > 2.58). No samples were rejected for having a 'PP1' intermediate qualifier.

B A result with associated blank result, which is outside the control limit, B+ or B-.used to indicate high or low results.

The logic for mapping preliminary data qualifiers to final data qualifiers is provided in the following

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table (next page). Each sample result has only one final data qualifier, but may have several preliminary or intermediate data qualifiers.

4. Equations

The following equations are frequently used to compare the performance of pairs of aliquots that were drawn from the same sample.

A. Duplicate error ratio

The duplicate error ratio is the relative error in a pair of measurements and takes into account the measurement results, Ma and Mb, as well as the standard errors associated with the measurements, 2Sa and 2Sb.

By convention, laboratories report analytical errors as 2 times the standard deviation, 2 Sa and 2 Sb. If Ma and Mb are results from duplicate aliquots that were taken from a homogeneous sample, then ninety-five percent of the time the DER is expected to be less than 1.96. Ninety-nine percent of the time it is expected to be less than 2.58.

$$DER = 2 \times \frac{Abs(Ma - Mb)}{\sqrt{(2\,Sa)^2 + (2\,Sb)^2}}$$

B. Relative Percent Difference

The relative percent difference (RPctD) is a measure of consistency of measured concentration between two aliquots of a sample.

$$RPctD = 200\% \times \frac{Abs(Ma - Mb)}{Ma + Mb}$$

C. Matrix Spike Percent Difference

$$MSPctD = 100\% \times \frac{Spike\ Result - Unspiked\ Result}{Spike}$$

D. Matrix Spike Normalized Difference

$$MSND = 2 \times \frac{Spike\ Result - Unspiked\ Result - Spike}{((2\,S_{Spike\ Result})^2 + (2\,S_{UnSpike\ Result})^2 + (2\,S_{Spike\ Result})^2)^{0.5}}$$

Ninety-five percent of the time the absolute value of the matrix spike normalized difference is expected to be less than 1.96, and ninety-nine percent of the time it should be less than 2.58.

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Table of preliminary and final data qualifiers for this dataset.

Interim Qualifiers	Final Qualifier
B+,	J
B+, S+,	J
J,	J
J, P, B+,	J
J, R	R
J, S+,	J
P, B+,	J
P1,	J
PP,	J
PP, B+,	J
PP1,	J
PP1, S+,	J
R	R
S+,	J
U,	U
U, B+,	UJ
U, P1,	UJ
U, PP1,	UJ
U, PP1, S+,	UJ
U, S+,	UJ

5. SAMPLE HANDLING AND ANALYSIS EVALUATION

This section contains the technical review comments describing the findings and observations for each of the main verification and validation parameters described in MARLAP Chapter 8 - Radiochemical Data Verification and Validation.

A. Sample Descriptors (MARLAP 8.5.1.1)

Each sample should have a unique identification code that can be cross-referenced to a unique laboratory identification number.

Discussion

Each field sample has laboratory different identification numbers (NAREL ID) for each of the three analytical methods employed. Laboratory duplicate sample pairs share the same NAREL ID and CLIENT ID, however one member of each duplicate pair has the QC TYPE designation of "DUP."

B. Aliquot Size (MARLAP 8.5.1.2)

The aliquot or sample size used for analysis should be documented so that it can be checked when reviewing calculations, examining dilution factors or analyzing any data that requires aliquant as an

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input. It is also imperative that the appropriate unit (liter, kilogram, etc.) is assigned to the aliquant.

Discussion

Each sample in the data package had an aliquot size associated with each result. However no information was provided on the dilution factors that were employed in the alpha spectroscopy methods (NAREL ACT-02F-TH and NAREL ACT-02F-U). This information would ordinarily be provided in a CLP Level 4 equivalent data package.

No qualifiers were assigned on this basis.

C. Dates of Sample Collection, Preparation, and Analysis (MARLAP 8.5.1.3)

The analytical data package should report date of sampling, preparation, and analysis. These data are used to calculate radiological holding times, some of which may be specified in the Field Sampling Plan.

Discussion

Data were provided and the holding times ranged from 49 to 92 days. All holding times were well below the 6 month limit. No qualifiers were assigned on that basis.

D. Preservation (MARLAP 8.5.1.4)

Appropriate preservation is dependent upon analyte and matrix and should be defined in sampling and analysis documentation.

Discussion

Soil samples for these analytes do not require any special preservation. The hand written notations on the Chain of Custody Record document the condition of the samples upon arrival at the laboratory. There are notations on the Chain of Custody Record that six of the glass sample containers were cracked or broken upon receipt. There is no indication on the Chain of Custody Record that these samples should be considered spoiled.

No data qualifiers were assigned on this basis.

E. Tracking (MARLAP 8.5.1.5)

Each analytical result should be linked to the instrument or detector on which it was counted.

Discussion

Each analytical result in the data package was linked to a specific detector. Thus no issues of this type were recognized and no qualifiers were assigned on this basis.

F. Traceability (MARLAP 8.5.1.6)

The traceability of standards and reference materials to be used during the analysis should be specified in the Field Sampling Plan.

Discussion

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The Field Sampling Plan did not provide specific requirements for traceability. CLP level 4 equivalent packages typically provide information on the standards so that their traceability to NIST is established. These data packages did not provide this type of traceability information.

No qualifiers were assigned on this basis because it is not a stated requirement of the QAPP.

G. QC Types and Linkages (MARLAP 8.5.1.7)

The type and quantity of QC samples should be identified and listed in the SOW and the results provided by the laboratory in a summary report. Replicates and matrix spike results should be linked to the original sample results.

The information obtained from the analysis of laboratory-generated duplicates is useful to evaluate analytical variability and laboratory precision. Results from the analysis of laboratory-generated duplicate samples can also reflect the homogeneity or inhomogeneity of individual samples or groups of samples of the same matrices.

Discussion

The QAPP requires matrix spike (MS) and matrix spike duplicates (MSD) for soil samples, but it is ambiguous about the number of MS and MSD that are required per QA batch. Typically, analytical laboratories do not provide MS or MSD for gamma spectroscopy analyses. In these NAREL data packages there were apparently no MS or MSD samples in connection with any of the analytical methods.

For most types of radiochemical analyses, analytical laboratories typically report the results of method blanks in units of pCi/g in their Level 4 CLP equivalent packages. Instead, NAREL took backgrounds and reported the results units of pCi, which are less useful for comparative purposes. The QAPP does not specify the reporting units for method blanks or background samples.

The QAPP required laboratory control standards (LCS), but not laboratory control standard duplicates (LCSD). Each of the data packages provide results for LCS as required by the QAPP.

The lack of method blanks *per se*, MS and MSD in a Level 4 CLP equivalent data package would normally result in qualifying the associated samples as "more uncertain than usual." However the NAREL data packages are not typical Level 4 packages, thus no qualifiers were assigned based on QC types and linkages.

H. Chemical Separation (Yield) (MARLAP 8.5.1.8)

Yield assesses the effects of the sample matrix and the chemical separation steps on the analytical result and estimates the analyte loss throughout the total analytical process.

The evaluation of an analytical yield serves to evaluate the efficiency of radiochemical separations utilized when preparing samples for measurement or analysis. The use of a tracer is conducted when a known amount of a chemical tracer is added to unknown samples; during analysis, a yield or recovery of the tracer material is used to determine the efficiency of the entire analytical process. The tracer that is chosen is used because it mimics the properties of one or more target radionuclides. A tracer refers to a radioactive isotope, while a carrier is a non-radioactive substance.

Discussion

The analyses that employed a tracer or carrier include:

- Isotopic thorium by alpha spectroscopy (NAREL ACT-02F-TH)

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- Isotopic uranium by alpha spectroscopy (NAREL ACT-02F-U).

The tracers or carriers employed are not stated in the reports, although the chemical yields are provided. No results exhibited high or low tracer recovery, thus no samples were qualified on this basis.

I. Self-Absorption (MARLAP 8.5.1.9)

For some radiochemical analytical methods, the SOW may specify the generation of a self-absorption curve, which correlates mass of sample deposited in a known geometry to detector efficiency.

Discussion

No information was provided in the data packages to judge the sufficiency of self-absorption correction curves or whether such corrections were applied.

No qualifiers were assigned on this basis.

J. Efficiency, Calibration Curves, and Instrument Background (MARLAP 8.5.1.10)

The determination of detector efficiency is a detailed process that is best checked during an audit of the laboratory's capabilities and is usually not part of the verification and validation process.

Discussion

Instrument backgrounds in units of pCi were provided but data on instrument efficiency and calibration curves were not. Usually level 4 CLP equivalent packages provide information on instrument backgrounds and also the results of a method blank in units of pCi/g.

No qualifiers were assigned on this basis.

K. Spectrometry Resolution (MARLAP 8.5.1.11)

The measured resolution of alpha and gamma spectrometers, and spectral information should be provided in the data package to evaluate if proper peak identification and separation was made.

Discussion

Spectra were not provided in tabular or graphic form. In addition, the spectral resolution and peak width data were not provided.

It is notable that both uranium-235 and radium-226 have gamma emissions at 186 KeV and the gamma spectrometer resolution of modern equipment is insufficient to avoid problems. The result was a substantial positive bias in the reported concentrations of uranium-235 by method NAREL GAM-01-RA compared to uranium-235 results by NAREL ACT-02F-U. All uranium-235 results reported by gamma spectroscopy were rejected (i.e. assigned a data qualifier of 'R'). This is a common difficulty with using gamma spectroscopy to estimate environmental uranium-235 concentrations in samples that contain radium-226.

L. Dilution and Correction Factors (MARLAP 8.5.1.12)

Samples for radiochemistry are usually not diluted. If required, dilution and correction factors (i.e., dry weight correction, ashed weight correction) should be provided in the data package so that the final

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calculations of all data affected by dilution factors can be recalculated and confirmed.

Discussion

Dilutions of the standard solutions are not addressed in the data packages. Aliquot sizes, wet weights and dry weights are provided in the data package for each sample and method of analysis. No qualifiers were assigned on this basis.

M. Counts and Count Time (Duration) (MARLAP 8.5.1.13)

The count time for each sample, QC analysis, and instrument background should be recorded in the data package. The ability to detect radionuclides is directly related to the count time.

Discussion

Count times, QC analyses, and backgrounds are documented in the data package. Count times were nearly always sufficient for results to have the required MDC. No issues with missing data of these types were recognized.

N. Result of Measurement, Uncertainty, Minimum Detectable Concentration, and Units (MARLAP 8.5.1.14)

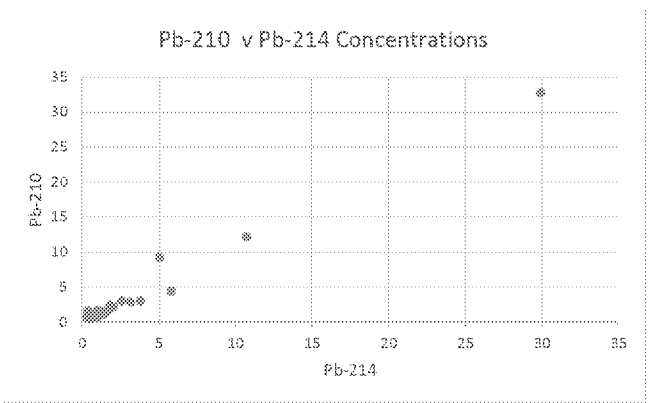
The result of each measurement, its expanded measurement uncertainty, and the estimated sample- or analyte-specific MDC should be reported for each sample in the appropriate units.

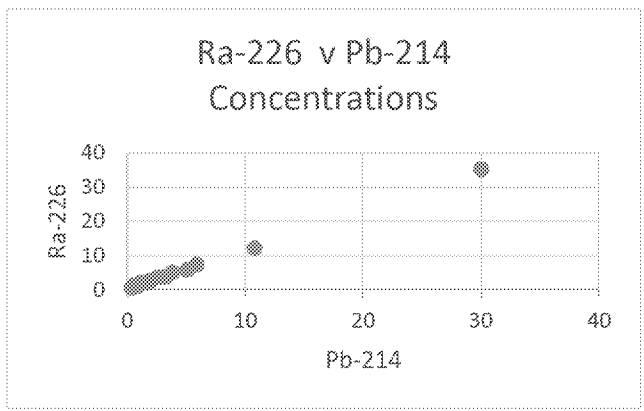
Discussion

No issues with these factors were recognized and no qualifiers were assigned on this basis.

Three isotopes that were requested by gamma spectroscopy require discussion: bismuth-210, lead-210 and uranium-235. Bismuth-210 is a pure beta emitter, so it cannot be determined by gamma spectroscopy.

Lead-210 emits a low-energy 46 KeVgamma ray with a low (4%) abundance. It can be detected by gamma spectroscopy at relatively low levels provided that the sample geometry is optimized for low energy gamma emitters and there are not elevated concentrations of other gamma emitting isotopes in the sample. The sample geometry and detector used by NAREL appeared to give good performance as evidenced by the plots of lead-210 versus lead-214 and radium-226 versus lead-214.





The reported ratio of radium-226 to its lead-214 daughter is also consistent.

One is left with the impression that the radium-226 and lead-210 results are reasonably reliable.

Frequently this is not the case in gamma spectroscopy results where the detector and sample geometry have not been optimized for low energy gamma emitters. NAREL's recommendation that radium-226 concentrations should be estimated from lead-214 or bismuth-214 daughters is a good one, particularly if a project schedule permits a 21 day ingrowth time between sample preparation and gamma counting.

As stated in section 5K, method NAREL GAM-01-RA is not suitable for quantitating uranium-235 concentrations and those results should not be used. Those results are rejected because no sound decision can be based on them.

6. QUALITY CONTROL SAMPLES TECHNICAL REVIEW

A. Method Blanks (MARLAP 8.5.2.1)

Method blank results are usually provided in level 4 CLP equivalent data packages. The requirement for a method blank is usually established in the SOW and appropriate plan documents. Check to see if a method blank was analyzed and no detected concentration/activity found in the results.

Discussion

Method blank results were not provided in the data package. The following background results were elevated. Those that exceeded the critical level were flagged with a 'J' while those that exceeded the minimum detectable activity were not specifically flagged in the table below.

NAREL ID	Prep batch	Analyte	Background Qualifier
RBK-00735409G	0013448P	Pb210	J
RBK-00735457Q	0013451J	Th228	
RBK-00735460K	0013452K	U234	J
RBK-00735460K	0013452K	U238	
RBK-00735845Z	0013471N	Th227	
RBK-00736017Y	0013480P	Th227	
RBK-00736017Y	0013480P	Th230	J
RBK-00736020T	0013481Q	U234	J
RBK-00736020T	0013481Q	U238	J
RBK-00734849Z	0013404B	Bi214	J
RBK-00734849Z	0013404B	K40	J
RBK-00734849Z	0013404B	Pb214	J
RBK-00734849Z	0013404B	Tl208	J
RBK-00735179M	0013431E	U238	J
RBK-00735294P	0013438M	Th228	J

The results for field samples that were associated with these background results were assigned an intermediate qualifier of 'B+,' as summarized below.

Method	Analyte	Number Assigned a 'B+'
NAREL ACT-02F-TH	Th227	13
NAREL ACT-02F-TH	Th228	17
NAREL ACT-02F-TH	Th230	8

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NAREL ACT-02F-U	U234	16
NAREL ACT-02F-U	U238	26
NAREL GAM-01-RA	Bi214	18
NAREL GAM-01-RA	K40	18
NAREL GAM-01-RA	Pb210	18
NAREL GAM-01-RA	Pb214	18
NAREL GAM-01-RA	Tl208	18

B. Laboratory Control Samples (MARLAP 8.5.2.2)

Laboratory control sample duplicates (LCSD) were not run. Laboratory control samples (LCS) were run for each batch and analysis type, and all spike and recovery results for LCS samples were acceptable, based on QAPP requirements, except for those isotopic thorium results in preparation batch # 0013451J. The thorium-230 spike for that preparation batch exhibited a 122% recovery. An intermediate qualifier of 'S+' was assigned to the 56 isotopic thorium field sample results in this batch.

Table showing spike-qualified samples.

Client ID	NAREL ID	Method	QC type	SDG	Spike Qualifier
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-TH		1600016	S+
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-TH	DUP	1600016	S+
C3-SB1-0012-01	B6.04122A	NAREL ACT-02F-TH		1600016	S+
C3-SB1-3648-01	B6.04123B	NAREL ACT-02F-TH		1600016	S+
C3-SB1-3648-02	B6.04124C	NAREL ACT-02F-TH		1600016	S+
C3-SB2-0012-01	B6.04125D	NAREL ACT-02F-TH		1600016	S+
C3-SB2-1224-01	B6.04126E	NAREL ACT-02F-TH		1600016	S+
C3-SB3-0012-01	B6.04127F	NAREL ACT-02F-TH		1600016	S+
C3-SB3-1224-01	B6.04128G	NAREL ACT-02F-TH		1600016	S+
C3-SB4-0012-01	B6.04129H	NAREL ACT-02F-TH		1600016	S+
C3-SB4-1224-01	B6.04130A	NAREL ACT-02F-TH		1600016	S+
C3-SB6-3648-01	B6.04133D	NAREL ACT-02F-TH		1600016	S+
C3-SB7-3648-01	B6.04135F	NAREL ACT-02F-TH		1600016	S+
C3-SB8-1224-01	B6.04137H	NAREL ACT-02F-TH		1600016	S+

C. Laboratory Replicates (MARLAP 8.5.2.3)

The objective of replicate analyses is to measure laboratory precision based on each sample matrix. Check to see if laboratory replicate was analyzed and within control limits.

Discussion

One laboratory replicate sample for uranium-238 exhibited a duplicate error ratio (DER) greater than 2.58. The uranium-238 analyses of all associated samples in its prep batch were assigned an intermediate qualifier of 'PP', and those uranium-238 results were rejected. One thorium-227 and one uranium-238 laboratory replicate each had DERs between 1.96 and 2.58. Associated samples were assigned intermediate lab qualifers of 'P' and those results are considered more uncertain than usual.

Method	Prep Batch	Matrix	Client ID	NAREL ID	Analyte	Rel Diff (%)	Dup Error Ratio
NAREL ACT-02F-TH	0013447N	SOIL	C2-SB1-0012-01	B6.04104Y	Th227	24.9	0.53
NAREL ACT-02F-TH	0013447N	SOIL	C2-SB1-0012-01	B6.04104Y	Th228	24.2	1.45
NAREL ACT-02F-TH	0013447N	SOIL	C2-SB1-0012-01	B6.04104Y	Th230	5.6	0.32
NAREL ACT-02F-TH	0013447N	SOIL	C2-SB1-0012-01	B6.04104Y	Th232	12.9	0.78
NAREL ACT-02F-TH	0013438 M	SOIL	C2-SB2-7284-01	B6.04113Z	Th227	25.7	0.68
NAREL ACT-02F-TH	0013438 M	SOIL	C2-SB2-7284-01	B6.04113Z	Th228	15	1.4
NAREL ACT-02F-TH	0013438 M	SOIL	C2-SB2-7284-01	B6.04113Z	Th230	8.2	0.66
NAREL ACT-02F-TH	0013438 M	SOIL	C2-SB2-7284-01	B6.04113Z	Th232	14.7	1.34
NAREL ACT-02F-TH	0013451J	SOIL	C2-SB3-8496-01	B6.04121Z	Th227	13.8	0.3
NAREL ACT-02F-TH	0013451J	SOIL	C2-SB3-8496-01	B6.04121Z	Th228	4.7	0.46
NAREL ACT-02F-TH	0013451J	SOIL	C2-SB3-8496-01	B6.04121Z	Th230	20.5	1.84
NAREL ACT-02F-TH	0013451J	SOIL	C2-SB3-8496-01	B6.04121Z	Th232	12.7	1.22
NAREL ACT-02F-TH	0013480P	SOIL	C3-SB10-6072-01	B6.04142E	Th227	10.7	0.5
NAREL ACT-02F-TH	0013480P	SOIL	C3-SB10-6072-01	B6.04142E	Th228	6.9	0.8
NAREL ACT-02F-TH	0013480P	SOIL	C3-SB10-6072-01	B6.04142E	Th230	5.1	0.67
NAREL ACT-02F-TH	0013480P	SOIL	C3-SB10-6072-01	B6.04142E	Th232	6.8	0.78
NAREL ACT-02F-TH	0013471N	SOIL	C3-SB6-0012-01	B6.04132C	Th227	115.5	2.22
NAREL ACT-02F-TH	0013471N	SOIL	C3-SB6-0012-01	B6.04132C	Th228	15.3	0.96
NAREL ACT-02F-TH	0013471N	SOIL	C3-SB6-0012-01	B6.04132C	Th230	1.9	0.13
NAREL ACT-02F-TH	0013471N	SOIL	C3-SB6-0012-01	B6.04132C	Th232	11.6	0.7
NAREL ACT-02F-U	0013431E	SOIL	C2-SB1-0012-01	B6.04104Y	U234	15.5	1.15
NAREL ACT-02F-U	0013431E	SOIL	C2-SB1-0012-01	B6.04104Y	U235	76.2	1.44
NAREL ACT-02F-U	0013431E	SOIL	C2-SB1-0012-01	B6.04104Y	U238	28.5	2.09
NAREL ACT-02F-U	0013439N	SOIL	C2-SB2-7284-01	B6.04113Z	U234	29.2	1.93
NAREL ACT-02F-U	0013439N	SOIL	C2-SB2-7284-01	B6.04113Z	U235	17.6	0.29
NAREL ACT-02F-U	0013439N	SOIL	C2-SB2-7284-01	B6.04113Z	U238	0.5	0.03
NAREL ACT-02F-U	0013488Y	SOIL	C2-SB3-8496-01	B6.04121Z	U234	0.7	0.05
NAREL ACT-02F-U	0013488Y	SOIL	C2-SB3-8496-01	B6.04121Z	U234	9.4	0.73
NAREL ACT-02F-U	0013452K	SOIL	C2-SB3-8496-01	B6.04121Z	U235	27.3	0.53
NAREL ACT-02F-U	0013452K	SOIL	C2-SB3-8496-01	B6.04121Z	U235	117.2	1.91
NAREL ACT-02F-U	0013452K	SOIL	C2-SB3-8496-01	B6.04121Z	U238	13.6	1.15
NAREL ACT-02F-U	0013452K	SOIL	C2-SB3-8496-01	B6.04121Z	U238	39.3	3.25
NAREL ACT-02F-U	0013481Q	SOIL	C3-SB10-6072-01	B6.04142E	U234	2.9	0.33
NAREL ACT-02F-U	0013481Q	SOIL	C3-SB10-6072-01	B6.04142E	U235	25.2	0.74
NAREL ACT-02F-U	0013481Q	SOIL	C3-SB10-6072-01	B6.04142E	U238	1.5	0.17
NAREL GAM-01-RA	0013404B	SOIL	C2-SB1-6072-01	B6.04106A	Bi212	10.6	0.81

Method	Prep Batch	Matrix	Client ID	NAREL ID	Analyte	Rel Diff (%)	Dup Error Ratio
NAREL GAM-01-RA	0013404B	SOIL	C2-SB1-6072-01	B6.04106A	Bi214	0.7	0.08
NAREL GAM-01-RA	0013404B	SOIL	C2-SB1-6072-01	B6.04106A	Cs137	45.9	0.42
NAREL GAM-01-RA	0013404B	SOIL	C2-SB1-6072-01	B6.04106A	K40	0.8	0.11
NAREL GAM-01-RA	0013404B	SOIL	C2-SB1-6072-01	B6.04106A	Pb210	6.2	0.37
NAREL GAM-01-RA	0013404B	SOIL	C2-SB1-6072-01	B6.04106A	Pb212	0.6	0.07
NAREL GAM-01-RA	0013404B	SOIL	C2-SB1-6072-01	B6.04106A	Pb214	0.7	0.09
NAREL GAM-01-RA	0013404B	SOIL	C2-SB1-6072-01	B6.04106A	Ra226	4.2	0.36
NAREL GAM-01-RA	0013404B	SOIL	C2-SB1-6072-01	B6.04106A	Ra228	0.9	0.11
NAREL GAM-01-RA	0013404B	SOIL	C2-SB1-6072-01	B6.04106A	Th234	22.7	1.03
NAREL GAM-01-RA	0013404B	SOIL	C2-SB1-6072-01	B6.04106A	Tl208	0.6	0.07
NAREL GAM-01-RA	0013448P	SOIL	C3-SB11-3648-01	B6.04146J	Bi212	6.6	0.53
NAREL GAM-01-RA	0013448P	SOIL	C3-SB11-3648-01	B6.04146J	Bi214	1.6	0.19
NAREL GAM-01-RA	0013448P	SOIL	C3-SB11-3648-01	B6.04146J	Cs137	142.8	0.79
NAREL GAM-01-RA	0013448P	SOIL	C3-SB11-3648-01	B6.04146J	K40	0.7	0.09
NAREL GAM-01-RA	0013448P	SOIL	C3-SB11-3648-01	B6.04146J	Pb210	0.7	0.04
NAREL GAM-01-RA	0013448P	SOIL	C3-SB11-3648-01	B6.04146J	Pb212	2.3	0.28
NAREL GAM-01-RA	0013448P	SOIL	C3-SB11-3648-01	B6.04146J	Pb214	2.2	0.26
NAREL GAM-01-RA	0013448P	SOIL	C3-SB11-3648-01	B6.04146J	Ra226	18	1.33
NAREL GAM-01-RA	0013448P	SOIL	C3-SB11-3648-01	B6.04146J	Ra228	5.2	0.62
NAREL GAM-01-RA	0013448P	SOIL	C3-SB11-3648-01	B6.04146J	Th234	4.8	0.25
NAREL GAM-01-RA	0013448P	SOIL	C3-SB11-3648-01	B6.04146J	Tl208	0.8	0.09
NAREL GAM-01-RA	0013426H	SOIL	C3-SB1-3648-02	B6.04124C	Bi212	1	0.09
NAREL GAM-01-RA	0013426H	SOIL	C3-SB1-3648-02	B6.04124C	Bi214	0.6	0.07
NAREL GAM-01-RA	0013426H	SOIL	C3-SB1-3648-02	B6.04124C	Cs137	561.7	1.18
NAREL GAM-01-RA	0013426H	SOIL	C3-SB1-3648-02	B6.04124C	K40	2.2	0.28
NAREL GAM-01-RA	0013426H	SOIL	C3-SB1-3648-02	B6.04124C	Pb210	1.6	0.08
NAREL GAM-01-RA	0013426H	SOIL	C3-SB1-3648-02	B6.04124C	Pb212	4.1	0.51
NAREL GAM-01-RA	0013426H	SOIL	C3-SB1-3648-02	B6.04124C	Pb214	2	0.25
NAREL GAM-01-RA	0013426H	SOIL	C3-SB1-3648-02	B6.04124C	Ra226	3.8	0.35
NAREL GAM-01-RA	0013426H	SOIL	C3-SB1-3648-02	B6.04124C	Ra228	1.1	0.13
NAREL GAM-01-RA	0013426H	SOIL	C3-SB1-3648-02	B6.04124C	Th234	7.2	0.3
NAREL GAM-01-RA	0013426H	SOIL	C3-SB1-3648-02	B6.04124C	Tl208	0	0

The associated samples which were qualified due to their association with poorly performing laboratory replicates are provided in the following table.

Client ID	NAREL ID	SDG	Method	Analyte	Lab Dup Qualifier
C3-SB5-0012-01	B6.04131B	1600016	NAREL ACT-02F-TH	Th227	P,
C3-SB6-0012-01	B6.04132C	1600016	NAREL ACT-02F-TH	Th227	P,

Client ID	NAREL ID	SDG	Method	Analyte	Lab Dup Qualifier
C3-SB6-0012-01	B6.04132C	1600016	NAREL ACT-02F-TH	Th227	P,
C3-SB7-0012-01	B6.04134E	1600016	NAREL ACT-02F-TH	Th227	P,
C3-SB8-0012-01	B6.04136G	1600016	NAREL ACT-02F-TH	Th227	P,
C2-SB1-0012-01	B6.04104Y	1600015	NAREL ACT-02F-U	U238	P,
C2-SB1-0012-01	B6.04104Y	1600015	NAREL ACT-02F-U	U238	P,
C2-SB1-4860-01	B6.04105Z	1600015	NAREL ACT-02F-U	U238	P,
C2-SB1-6072-01	B6.04106A	1600015	NAREL ACT-02F-U	U238	P,
C2-SB1-7284-01	B6.04107B	1600015	NAREL ACT-02F-U	U238	P,
C2-SB1-8496-01	B6.04108C	1600015	NAREL ACT-02F-U	U238	P,
C2-SB2-0012-01	B6.04109D	1600015	NAREL ACT-02F-U	U238	P,
C2-SB2-1224-01	B6.04110W	1600015	NAREL ACT-02F-U	U238	P,
C2-SB2-2436-01	B6.04111X	1600015	NAREL ACT-02F-U	U238	P,
C2-SB2-3648-01	B6.04112Y	1600015	NAREL ACT-02F-U	U238	P,
C2-SB3-8496-01	B6.04121Z	1600016	NAREL ACT-02F-U	U238	PP,
C2-SB3-8496-01	B6.04121Z	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB1-0012-01	B6.04122A	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB1-3648-01	B6.04123B	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB1-3648-02	B6.04124C	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB2-0012-01	B6.04125D	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB2-1224-01	B6.04126E	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB3-0012-01	B6.04127F	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB3-1224-01	B6.04128G	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB4-0012-01	B6.04129H	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB4-1224-01	B6.04130A	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB5-0012-01	B6.04131B	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB6-0012-01	B6.04132C	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB6-3648-01	B6.04133D	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB7-0012-01	B6.04134E	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB7-3648-01	B6.04135F	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB8-0012-01	B6.04136G	1600016	NAREL ACT-02F-U	U238	PP,
C3-SB8-1224-01	B6.04137H	1600016	NAREL ACT-02F-U	U238	PP,

D. Matrix Spikes and Matrix Spike Duplicates (MARLAP 8.5.2.4)

Matrix spike samples provide information about the effect of each sample matrix on the preparation and measurement methodology. The test uncovers the possible existence of recovery problems, based on either a statistical test or a specified fixed control limit.

Discussion

There were no matrix spikes and matrix spike duplicate samples in the data package.

No qualifiers were assigned on this basis.

E. Field Replicate Sample Performance

Field replicates are given in the following table.

Table of field duplicate samples.

Client ID 1	Client ID 2	NAREL ID	Prep batch	SDG	QC type	Method
C2-SB2-7284-01	C2-SB2-7284-02	B6.04113Z	0013438M	1600015		NAREL ACT-02F-TH
C2-SB2-7284-01	C2-SB2-7284-02	B6.04113Z	0013438M	1600015	DUP	NAREL ACT-02F-TH
C2-SB2-7284-01	C2-SB2-7284-02	B6.04113Z	0013439N	1600015		NAREL ACT-02F-U
C2-SB2-7284-01	C2-SB2-7284-02	B6.04113Z	0013439N	1600015	DUP	NAREL ACT-02F-U
C2-SB2-7284-01	C2-SB2-7284-02	B6.04113Z	0013404B	1600015		NAREL GAM-01-RA
C3-SB1-3648-01	C3-SB1-3648-02	B6.04123B	0013451J	1600016		NAREL ACT-02F-TH
C3-SB1-3648-01	C3-SB1-3648-02	B6.04123B	0013452K	1600016		NAREL ACT-02F-U
C3-SB1-3648-01	C3-SB1-3648-02	B6.04123B	0013488Y	1600016		NAREL ACT-02F-U
C3-SB1-3648-01	C3-SB1-3648-02	B6.04123B	0013426H	1600016		NAREL GAM-01-RA

No criteria for field duplicates are given in the QAPP other than Worksheet 35, which states "Compare results of field duplicate (or replicate) analyses with RPD criteria."

The relative percent differences (R%D) and duplicate error ratio (DER) were calculated for the field duplicate pairs of samples. The duplicate error ratio (DER) for the samples given below is high, suggesting that the soil may have been a difficult media to representatively sample in the field. An intermediate data qualifiers were assigned to regular samples / analytes associated with these field duplicate QA sample pair results A 'P1" was assigned to associated samples if the field duplicate DER exceeded 1.96, but was less than 2.58. A "PP1" was assigned to associated samples if the DER exceeded 2.58. No sample results were rejected because of a high DER for an associated field duplicate, but such samples tended to be assigned a "J" final qualifier.

Table of relatively discrepant field replicate results.

Client ID 1	Client ID 2	Method	Analyte	Rel Diff (%)	DER
C2-SB2-7284-01	C2-SB2-7284-02	NAREL ACT-02F-TH	Th232	24.9	2.33

C2-SB2-7284-01	C2-SB2-7284-02	NAREL ACT-02F-U	U234	38.2	2.68
C3-SB1-3648-01	C3-SB1-3648-02	NAREL ACT-02F-TH	Th232	36.2	2.81

F. Rinse Blank Sample Performance

No rinse blank samples were submitted with this data package.

7. TEST OF DETECTION AND UNUSUAL UNCERTAINTY EVALUATION

A. Detection (MARLAP 8.5.3.1)

Detection qualifiers were assigned following the rationale described in Section 3.

Discussion

The following field samples carry an intermediate qualifier.

ED_006395_00001795-00021

Table of field samples that carry a result qualifier.

Client ID	NAREL ID	Method	QC type	Analyte	Interim Qualifiers	Final Qualifier
C2-SB1-0012-01	B6.04104Y	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB1-0012-01	B6.04104Y	NAREL GAM-01-RA		Cs137	U,	U
C2-SB1-0012-01	B6.04104Y	NAREL GAM-01-RA		K40	B+,	J
C2-SB1-0012-01	B6.04104Y	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB1-0012-01	B6.04104Y	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB1-0012-01	B6.04104Y	NAREL ACT-02F-U		U235	J,	J
C2-SB1-0012-01	B6.04104Y	NAREL ACT-02F-U		U238	P, B+,	J
C2-SB1-0012-01	B6.04104Y	NAREL ACT-02F-U	DUP	U238	P, B+,	J
C2-SB1-4860-01	B6.04105Z	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB1-4860-01	B6.04105Z	NAREL GAM-01-RA		Cs137	U,	U
C2-SB1-4860-01	B6.04105Z	NAREL GAM-01-RA		K40	B+,	J
C2-SB1-4860-01	B6.04105Z	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB1-4860-01	B6.04105Z	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB1-4860-01	B6.04105Z	NAREL ACT-02F-U		U235	J,	J
C2-SB1-4860-01	B6.04105Z	NAREL ACT-02F-U		U238	P, B+,	J
C2-SB1-6072-01	B6.04106A	NAREL GAM-01-RA	DUP	Bi214	B+,	J
C2-SB1-6072-01	B6.04106A	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB1-6072-01	B6.04106A	NAREL GAM-01-RA		Cs137	U,	U
C2-SB1-6072-01	B6.04106A	NAREL GAM-01-RA	DUP	Cs137	U,	U
C2-SB1-6072-01	B6.04106A	NAREL GAM-01-RA		K40	B+,	J
C2-SB1-6072-01	B6.04106A	NAREL GAM-01-RA	DUP	K40	B+,	J
C2-SB1-6072-01	B6.04106A	NAREL GAM-01-RA	DUP	Pb214	B+,	J
C2-SB1-6072-01	B6.04106A	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB1-6072-01	B6.04106A	NAREL GAM-01-RA	DUP	Tl208	B+,	J
C2-SB1-6072-01	B6.04106A	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB1-6072-01	B6.04106A	NAREL ACT-02F-U		U235	U,	U
C2-SB1-6072-01	B6.04106A	NAREL ACT-02F-U		U238	P, B+,	J
C2-SB1-7284-01	B6.04107B	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB1-7284-01	B6.04107B	NAREL GAM-01-RA		Cs137	U,	U
C2-SB1-7284-01	B6.04107B	NAREL GAM-01-RA		K40	B+,	J
C2-SB1-7284-01	B6.04107B	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB1-7284-01	B6.04107B	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB1-7284-01	B6.04107B	NAREL ACT-02F-U		U238	P, B+,	J
C2-SB1-8496-01	B6.04108C	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB1-8496-01	B6.04108C	NAREL GAM-01-RA		Cs137	U,	U
C2-SB1-8496-01	B6.04108C	NAREL GAM-01-RA		K40	B+,	J

Client ID	NAREL ID	Method	QC type	Analyte	Interim Qualifiers	Final Qualifier
C2-SB1-8496-01	B6.04108C	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB1-8496-01	B6.04108C	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB1-8496-01	B6.04108C	NAREL ACT-02F-U		U238	P, B+,	J
C2-SB2-0012-01	B6.04109D	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB2-0012-01	B6.04109D	NAREL GAM-01-RA		K40	B+,	J
C2-SB2-0012-01	B6.04109D	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB2-0012-01	B6.04109D	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB2-0012-01	B6.04109D	NAREL ACT-02F-U		U235	U,	U
C2-SB2-0012-01	B6.04109D	NAREL ACT-02F-U		U238	P, B+,	J
C2-SB2-1224-01	B6.04110W	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB2-1224-01	B6.04110W	NAREL GAM-01-RA		K40	B+,	J
C2-SB2-1224-01	B6.04110W	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB2-1224-01	B6.04110W	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB2-1224-01	B6.04110W	NAREL ACT-02F-U		U235	U,	U
C2-SB2-1224-01	B6.04110W	NAREL ACT-02F-U		U238	P, B+,	J
C2-SB2-2436-01	B6.04111X	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB2-2436-01	B6.04111X	NAREL GAM-01-RA		K40	B+,	J
C2-SB2-2436-01	B6.04111X	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB2-2436-01	B6.04111X	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB2-2436-01	B6.04111X	NAREL ACT-02F-U		U238	P, B+,	J
C2-SB2-3648-01	B6.04112Y	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB2-3648-01	B6.04112Y	NAREL GAM-01-RA		K40	B+,	J
C2-SB2-3648-01	B6.04112Y	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB2-3648-01	B6.04112Y	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB2-3648-01	B6.04112Y	NAREL GAM-01-RA		U235	R	R
C2-SB2-3648-01	B6.04112Y	NAREL ACT-02F-U		U238	P, B+,	J
C2-SB2-7284-01	B6.04113Z	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB2-7284-01	B6.04113Z	NAREL GAM-01-RA		Cs137	U,	U
C2-SB2-7284-01	B6.04113Z	NAREL GAM-01-RA		K40	B+,	J
C2-SB2-7284-01	B6.04113Z	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB2-7284-01	B6.04113Z	NAREL ACT-02F-TH		Th228	B+,	J
C2-SB2-7284-01	B6.04113Z	NAREL ACT-02F-TH	DUP	Th228	B+,	J
C2-SB2-7284-01	B6.04113Z	NAREL ACT-02F-TH	DUP	Th232	P1,	J
C2-SB2-7284-01	B6.04113Z	NAREL ACT-02F-TH		Th232	P1,	J
C2-SB2-7284-01	B6.04113Z	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB2-7284-01	B6.04113Z	NAREL ACT-02F-U	DUP	U234	PP1,	J
C2-SB2-7284-01	B6.04113Z	NAREL ACT-02F-U		U234	PP1,	J
C2-SB2-7284-01	B6.04113Z	NAREL GAM-01-RA		U235	R	R
C2-SB2-7284-02	B6.04114A	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB2-7284-02	B6.04114A	NAREL GAM-01-RA		Cs137	U,	U
C2-SB2-7284-02	B6.04114A	NAREL GAM-01-RA		K40	B+,	J

Client ID	NAREL ID	Method	QC type	Analyte	Interim Qualifiers	Final Qualifier
C2-SB2-7284-02	B6.04114A	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB2-7284-02	B6.04114A	NAREL ACT-02F-TH		Th228	B+,	J
C2-SB2-7284-02	B6.04114A	NAREL ACT-02F-TH		Th232	P1,	J
C2-SB2-7284-02	B6.04114A	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB2-7284-02	B6.04114A	NAREL ACT-02F-U		U234	PP1,	J
C2-SB2-7284-02	B6.04114A	NAREL ACT-02F-U		U235	J,	J
C2-SB2-8496-01	B6.04115B	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB2-8496-01	B6.04115B	NAREL GAM-01-RA		Cs137	U,	U
C2-SB2-8496-01	B6.04115B	NAREL GAM-01-RA		K40	B+,	J
C2-SB2-8496-01	B6.04115B	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB2-8496-01	B6.04115B	NAREL ACT-02F-TH		Th228	B+,	J
C2-SB2-8496-01	B6.04115B	NAREL ACT-02F-TH		Th232	P1,	J
C2-SB2-8496-01	B6.04115B	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB2-8496-01	B6.04115B	NAREL ACT-02F-U		U234	PP1,	J
C2-SB2-8496-01	B6.04115B	NAREL ACT-02F-U		U235	U,	U
C2-SB3-0012-01	B6.04116C	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB3-0012-01	B6.04116C	NAREL GAM-01-RA		K40	B+,	J
C2-SB3-0012-01	B6.04116C	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB3-0012-01	B6.04116C	NAREL ACT-02F-TH		Th228	B+,	J
C2-SB3-0012-01	B6.04116C	NAREL ACT-02F-TH		Th232	P1,	J
C2-SB3-0012-01	B6.04116C	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB3-0012-01	B6.04116C	NAREL ACT-02F-U		U234	PP1,	J
C2-SB3-1224-01	B6.04117D	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB3-1224-01	B6.04117D	NAREL GAM-01-RA		K40	B+,	J
C2-SB3-1224-01	B6.04117D	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB3-1224-01	B6.04117D	NAREL ACT-02F-TH		Th228	B+,	J
C2-SB3-1224-01	B6.04117D	NAREL ACT-02F-TH		Th232	P1,	J
C2-SB3-1224-01	B6.04117D	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB3-1224-01	B6.04117D	NAREL ACT-02F-U		U234	PP1,	J
C2-SB3-4860-01	B6.04118E	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB3-4860-01	B6.04118E	NAREL GAM-01-RA		Cs137	U,	U
C2-SB3-4860-01	B6.04118E	NAREL GAM-01-RA		K40	B+,	J
C2-SB3-4860-01	B6.04118E	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB3-4860-01	B6.04118E	NAREL ACT-02F-TH		Th228	B+,	J
C2-SB3-4860-01	B6.04118E	NAREL ACT-02F-TH		Th232	P1,	J
C2-SB3-4860-01	B6.04118E	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB3-4860-01	B6.04118E	NAREL ACT-02F-U		U234	PP1,	J
C2-SB3-4860-01	B6.04118E	NAREL ACT-02F-U		U235	J,	J
C2-SB3-6072-01	B6.04119F	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB3-6072-01	B6.04119F	NAREL GAM-01-RA		Cs137	U,	U
C2-SB3-6072-01	B6.04119F	NAREL GAM-01-RA		K40	B+,	J

Client ID	NAREL ID	Method	QC type	Analyte	Interim Qualifiers	Final Qualifier
C2-SB3-6072-01	B6.04119F	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB3-6072-01	B6.04119F	NAREL ACT-02F-TH		Th228	B+,	J
C2-SB3-6072-01	B6.04119F	NAREL ACT-02F-TH		Th232	P1,	J
C2-SB3-6072-01	B6.04119F	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB3-6072-01	B6.04119F	NAREL ACT-02F-U		U234	PP1,	J
C2-SB3-6072-01	B6.04119F	NAREL ACT-02F-U		U235	J,	J
C2-SB3-6072-01	B6.04119F	NAREL GAM-01-RA		U235	J, R	R
C2-SB3-7284-01	B6.04120Y	NAREL GAM-01-RA		Bi214	B+,	J
C2-SB3-7284-01	B6.04120Y	NAREL GAM-01-RA		Cs137	U,	U
C2-SB3-7284-01	B6.04120Y	NAREL GAM-01-RA		K40	B+,	J
C2-SB3-7284-01	B6.04120Y	NAREL GAM-01-RA		Pb214	B+,	J
C2-SB3-7284-01	B6.04120Y	NAREL ACT-02F-TH		Th228	B+,	J
C2-SB3-7284-01	B6.04120Y	NAREL ACT-02F-TH		Th232	P1,	J
C2-SB3-7284-01	B6.04120Y	NAREL GAM-01-RA		Tl208	B+,	J
C2-SB3-7284-01	B6.04120Y	NAREL ACT-02F-U		U234	PP1,	J
C2-SB3-7284-01	B6.04120Y	NAREL ACT-02F-U		U235	U,	U
C2-SB3-8496-01	B6.04121Z	NAREL GAM-01-RA		Cs137	U,	U
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-TH		Th227	S+,	J
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-TH	DUP	Th227	S+,	J
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-TH	DUP	Th228	B+, S+,	J
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-TH		Th228	B+, S+,	J
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-TH	DUP	Th230	S+,	J
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-TH		Th230	S+,	J
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-TH	DUP	Th232	PP1, S+,	J
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-TH		Th232	PP1, S+,	J
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-U	DUP	U234	B+,	J
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-U		U234	B+,	J
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-U		U235	U,	U
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-U	DUP	U235	U,	U
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-U		U238	PP, B+,	J
C2-SB3-8496-01	B6.04121Z	NAREL ACT-02F-U	DUP	U238	PP, B+,	J
C3-SB10-0012-01	B6.04140C	NAREL GAM-01-RA		Cs137	J,	J
C3-SB10-0012-01	B6.04140C	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB10-0012-01	B6.04140C	NAREL ACT-02F-TH		Th227	B+,	J
C3-SB10-0012-01	B6.04140C	NAREL ACT-02F-TH		Th230	B+,	J
C3-SB10-0012-01	B6.04140C	NAREL ACT-02F-U		U234	B+,	J
C3-SB10-0012-01	B6.04140C	NAREL ACT-02F-U		U235	J,	J
C3-SB10-0012-01	B6.04140C	NAREL ACT-02F-U		U238	B+,	J
C3-SB1-0012-01	B6.04122A	NAREL GAM-01-RA		Cs137	U,	U
C3-SB1-0012-01	B6.04122A	NAREL ACT-02F-TH		Th227	S+,	J
C3-SB1-0012-01	B6.04122A	NAREL ACT-02F-TH		Th228	B+, S+,	J

Client ID	NAREL ID	Method	QC type	Analyte	Interim Qualifiers	Final Qualifier
C3-SB1-0012-01	B6.04122A	NAREL ACT-02F-TH		Th230	S+,	J
C3-SB1-0012-01	B6.04122A	NAREL ACT-02F-TH		Th232	PP1, S+,	J
C3-SB1-0012-01	B6.04122A	NAREL ACT-02F-U		U234	B+,	J
C3-SB1-0012-01	B6.04122A	NAREL ACT-02F-U		U235	J,	J
C3-SB1-0012-01	B6.04122A	NAREL ACT-02F-U		U238	PP, B+,	J
C3-SB10-1224-01	B6.04141D	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB10-1224-01	B6.04141D	NAREL ACT-02F-TH		Th227	B+,	J
C3-SB10-1224-01	B6.04141D	NAREL ACT-02F-TH		Th230	B+,	J
C3-SB10-1224-01	B6.04141D	NAREL ACT-02F-U		U234	B+,	J
C3-SB10-1224-01	B6.04141D	NAREL GAM-01-RA		U235	R	R
C3-SB10-1224-01	B6.04141D	NAREL ACT-02F-U		U238	B+,	J
C3-SB10-6072-01	B6.04142E	NAREL GAM-01-RA		Cs137	U,	U
C3-SB10-6072-01	B6.04142E	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB10-6072-01	B6.04142E	NAREL ACT-02F-TH	DUP	Th227	B+,	J
C3-SB10-6072-01	B6.04142E	NAREL ACT-02F-TH		Th227	B+,	J
C3-SB10-6072-01	B6.04142E	NAREL ACT-02F-TH		Th230	B+,	J
C3-SB10-6072-01	B6.04142E	NAREL ACT-02F-TH	DUP	Th230	B+,	J
C3-SB10-6072-01	B6.04142E	NAREL ACT-02F-U	DUP	U234	B+,	J
C3-SB10-6072-01	B6.04142E	NAREL ACT-02F-U		U234	B+,	J
C3-SB10-6072-01	B6.04142E	NAREL GAM-01-RA		U235	R	R
C3-SB10-6072-01	B6.04142E	NAREL ACT-02F-U		U238	B+,	J
C3-SB10-6072-01	B6.04142E	NAREL ACT-02F-U	DUP	U238	B+,	J
C3-SB10-7284-01	B6.04143F	NAREL GAM-01-RA		Cs137	U,	U
C3-SB10-7284-01	B6.04143F	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB10-7284-01	B6.04143F	NAREL ACT-02F-TH		Th227	B+,	J
C3-SB10-7284-01	B6.04143F	NAREL ACT-02F-TH		Th230	B+,	J
C3-SB10-7284-01	B6.04143F	NAREL ACT-02F-U		U234	B+,	J
C3-SB10-7284-01	B6.04143F	NAREL GAM-01-RA		U235	R	R
C3-SB10-7284-01	B6.04143F	NAREL ACT-02F-U		U238	B+,	J
C3-SB10-8496-01	B6.04144G	NAREL GAM-01-RA		Cs137	U,	U
C3-SB10-8496-01	B6.04144G	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB10-8496-01	B6.04144G	NAREL ACT-02F-TH		Th227	B+,	J
C3-SB10-8496-01	B6.04144G	NAREL ACT-02F-TH		Th230	B+,	J
C3-SB10-8496-01	B6.04144G	NAREL ACT-02F-U		U234	B+,	J
C3-SB10-8496-01	B6.04144G	NAREL GAM-01-RA		U235	R	R
C3-SB10-8496-01	B6.04144G	NAREL ACT-02F-U		U238	B+,	J
C3-SB11-0012-01	B6.04145H	NAREL GAM-01-RA		Cs137	U,	U
C3-SB11-0012-01	B6.04145H	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB11-0012-01	B6.04145H	NAREL ACT-02F-U		U235	J,	J
C3-SB11-3648-01	B6.04146J	NAREL GAM-01-RA		Cs137	U,	U
C3-SB11-3648-01	B6.04146J	NAREL GAM-01-RA	DUP	Cs137	U,	U

Client ID	NAREL ID	Method	QC type	Analyte	Interim Qualifiers	Final Qualifier
C3-SB11-3648-01	B6.04146J	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB11-3648-01	B6.04146J	NAREL GAM-01-RA	DUP	Pb210	B+,	J
C3-SB12-0012-01	B6.04147K	NAREL GAM-01-RA		Cs137	U,	U
C3-SB12-0012-01	B6.04147K	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB12-0012-01	B6.04147K	NAREL ACT-02F-U		U235	U,	U
C3-SB13-0012-01	B6.04148L	NAREL GAM-01-RA		Cs137	U,	U
C3-SB13-0012-01	B6.04148L	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB13-0012-01	B6.04148L	NAREL GAM-01-RA		U235	R	R
C3-SB13-0012-01	B6.04148L	NAREL ACT-02F-U		U235	J,	J
C3-SB13-1224-01	B6.04149M	NAREL GAM-01-RA		Cs137	U,	U
C3-SB13-1224-01	B6.04149M	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB13-1224-01	B6.04149M	NAREL ACT-02F-U		U235	J,	J
C3-SB1-3648-01	B6.04123B	NAREL GAM-01-RA		Cs137	U,	U
C3-SB1-3648-01	B6.04123B	NAREL ACT-02F-TH		Th227	S+,	J
C3-SB1-3648-01	B6.04123B	NAREL ACT-02F-TH		Th228	B+, S+,	J
C3-SB1-3648-01	B6.04123B	NAREL ACT-02F-TH		Th230	S+,	J
C3-SB1-3648-01	B6.04123B	NAREL ACT-02F-TH		Th232	PP1, S+,	J
C3-SB1-3648-01	B6.04123B	NAREL ACT-02F-U		U234	B+,	J
C3-SB1-3648-01	B6.04123B	NAREL ACT-02F-U		U235	J,	J
C3-SB1-3648-01	B6.04123B	NAREL ACT-02F-U		U238	PP, B+,	J
C3-SB1-3648-02	B6.04124C	NAREL GAM-01-RA	DUP	Cs137	U,	U
C3-SB1-3648-02	B6.04124C	NAREL GAM-01-RA		Cs137	U,	U
C3-SB1-3648-02	B6.04124C	NAREL ACT-02F-TH		Th227	J, S+,	J
C3-SB1-3648-02	B6.04124C	NAREL ACT-02F-TH		Th228	B+, S+,	J
C3-SB1-3648-02	B6.04124C	NAREL ACT-02F-TH		Th230	S+,	J
C3-SB1-3648-02	B6.04124C	NAREL ACT-02F-TH		Th232	PP1, S+,	J
C3-SB1-3648-02	B6.04124C	NAREL ACT-02F-U		U234	B+,	J
C3-SB1-3648-02	B6.04124C	NAREL ACT-02F-U		U235	J,	J
C3-SB1-3648-02	B6.04124C	NAREL ACT-02F-U		U235	J,	J
C3-SB1-3648-02	B6.04124C	NAREL ACT-02F-U		U238	PP, B+,	J
C3-SB14-0012-01	B6.04150E	NAREL GAM-01-RA		Cs137	J,	J
C3-SB14-0012-01	B6.04150E	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB14-0012-01	B6.04150E	NAREL GAM-01-RA		U235	J, R	R
C3-SB15-0012-01	B6.04151F	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB15-0012-01	B6.04151F	NAREL ACT-02F-U		U235	J,	J
C3-SB15-2436-01	B6.04152G	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB15-2436-01	B6.04152G	NAREL ACT-02F-U		U235	J,	J
C3-SB16-0012-01	B6.04153H	NAREL GAM-01-RA		Cs137	U,	U
C3-SB16-0012-01	B6.04153H	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB16-0012-01	B6.04153H	NAREL ACT-02F-U		U235	U,	U
C3-SB16-3648-01	B6.04154J	NAREL GAM-01-RA		Cs137	U,	U

Client ID	NAREL ID	Method	QC type	Analyte	Interim Qualifiers	Final Qualifier
C3-SB16-3648-01	B6.04154J	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB16-3648-01	B6.04154J	NAREL ACT-02F-U		U235	U,	U
C3-SB2-0012-01	B6.04125D	NAREL GAM-01-RA		Cs137	U,	U
C3-SB2-0012-01	B6.04125D	NAREL ACT-02F-TH		Th227	S+,	J
C3-SB2-0012-01	B6.04125D	NAREL ACT-02F-TH		Th228	B+, S+,	J
C3-SB2-0012-01	B6.04125D	NAREL ACT-02F-TH		Th230	S+,	J
C3-SB2-0012-01	B6.04125D	NAREL ACT-02F-TH		Th232	PP1, S+,	J
C3-SB2-0012-01	B6.04125D	NAREL ACT-02F-U		U234	B+,	J
C3-SB2-0012-01	B6.04125D	NAREL ACT-02F-U		U235	J,	J
C3-SB2-0012-01	B6.04125D	NAREL ACT-02F-U		U238	PP, B+,	J
C3-SB2-1224-01	B6.04126E	NAREL GAM-01-RA		Cs137	J,	J
C3-SB2-1224-01	B6.04126E	NAREL ACT-02F-TH		Th227	J, S+,	J
C3-SB2-1224-01	B6.04126E	NAREL ACT-02F-TH		Th228	B+, S+,	J
C3-SB2-1224-01	B6.04126E	NAREL ACT-02F-TH		Th230	S+,	J
C3-SB2-1224-01	B6.04126E	NAREL ACT-02F-TH		Th232	PP1, S+,	J
C3-SB2-1224-01	B6.04126E	NAREL ACT-02F-U		U234	B+,	J
C3-SB2-1224-01	B6.04126E	NAREL ACT-02F-U		U235	J,	J
C3-SB2-1224-01	B6.04126E	NAREL ACT-02F-U		U235	J,	J
C3-SB2-1224-01	B6.04126E	NAREL ACT-02F-U		U238	PP, B+,	J
C3-SB3-0012-01	B6.04127F	NAREL GAM-01-RA		Cs137	U,	U
C3-SB3-0012-01	B6.04127F	NAREL ACT-02F-TH		Th227	S+,	J
C3-SB3-0012-01	B6.04127F	NAREL ACT-02F-TH		Th228	B+, S+,	J
C3-SB3-0012-01	B6.04127F	NAREL ACT-02F-TH		Th230	S+,	J
C3-SB3-0012-01	B6.04127F	NAREL ACT-02F-TH		Th232	PP1, S+,	J
C3-SB3-0012-01	B6.04127F	NAREL ACT-02F-U		U234	B+,	J
C3-SB3-0012-01	B6.04127F	NAREL ACT-02F-U		U235	U,	U
C3-SB3-0012-01	B6.04127F	NAREL ACT-02F-U		U235	U,	U
C3-SB3-0012-01	B6.04127F	NAREL ACT-02F-U		U238	PP, B+,	J
C3-SB3-1224-01	B6.04128G	NAREL ACT-02F-TH		Th227	S+,	J
C3-SB3-1224-01	B6.04128G	NAREL ACT-02F-TH		Th228	S+,	J
C3-SB3-1224-01	B6.04128G	NAREL ACT-02F-TH		Th230	S+,	J
C3-SB3-1224-01	B6.04128G	NAREL ACT-02F-TH		Th232	PP1, S+,	J
C3-SB3-1224-01	B6.04128G	NAREL ACT-02F-U		U235	J,	J
C3-SB3-1224-01	B6.04128G	NAREL ACT-02F-U		U235	J,	J
C3-SB3-1224-01	B6.04128G	NAREL ACT-02F-U		U238	PP,	J
C3-SB4-0012-01	B6.04129H	NAREL ACT-02F-TH		Th227	S+,	J
C3-SB4-0012-01	B6.04129H	NAREL ACT-02F-TH		Th228	S+,	J
C3-SB4-0012-01	B6.04129H	NAREL ACT-02F-TH		Th230	S+,	J
C3-SB4-0012-01	B6.04129H	NAREL ACT-02F-TH		Th232	PP1, S+,	J
C3-SB4-0012-01	B6.04129H	NAREL GAM-01-RA		U235	J, R	R
C3-SB4-0012-01	B6.04129H	NAREL ACT-02F-U		U238	PP,	J

Client ID	NAREL ID	Method	QC type	Analyte	Interim Qualifiers	Final Qualifier
C3-SB4-1224-01	B6.04130A	NAREL GAM-01-RA		Cs137	U,	U
C3-SB4-1224-01	B6.04130A	NAREL ACT-02F-TH		Th227	S+,	J
C3-SB4-1224-01	B6.04130A	NAREL ACT-02F-TH		Th228	S+,	J
C3-SB4-1224-01	B6.04130A	NAREL ACT-02F-TH		Th230	S+,	J
C3-SB4-1224-01	B6.04130A	NAREL ACT-02F-TH		Th232	PP1, S+,	J
C3-SB4-1224-01	B6.04130A	NAREL ACT-02F-U		U235	U,	U
C3-SB4-1224-01	B6.04130A	NAREL GAM-01-RA		U235	R	R
C3-SB4-1224-01	B6.04130A	NAREL ACT-02F-U		U235	U,	U
C3-SB4-1224-01	B6.04130A	NAREL ACT-02F-U		U238	PP,	J
C3-SB5-0012-01	B6.04131B	NAREL GAM-01-RA		Cs137	U,	U
C3-SB5-0012-01	B6.04131B	NAREL ACT-02F-TH		Th227	P, B+,	J
C3-SB5-0012-01	B6.04131B	NAREL ACT-02F-U		U235	U,	U
C3-SB5-0012-01	B6.04131B	NAREL ACT-02F-U		U238	PP,	J
C3-SB6-0012-01	B6.04132C	NAREL ACT-02F-TH		Th227	J, P, B+,	J
C3-SB6-0012-01	B6.04132C	NAREL ACT-02F-TH	DUP	Th227	P, B+,	J
C3-SB6-0012-01	B6.04132C	NAREL GAM-01-RA		Th234	U,	U
C3-SB6-0012-01	B6.04132C	NAREL ACT-02F-U		U235	U,	U
C3-SB6-0012-01	B6.04132C	NAREL ACT-02F-U		U235	J,	J
C3-SB6-0012-01	B6.04132C	NAREL ACT-02F-U		U238	PP,	J
C3-SB6-3648-01	B6.04133D	NAREL GAM-01-RA		Cs137	U,	U
C3-SB6-3648-01	B6.04133D	NAREL ACT-02F-TH		Th227	U, S+,	UJ
C3-SB6-3648-01	B6.04133D	NAREL ACT-02F-TH		Th228	S+,	J
C3-SB6-3648-01	B6.04133D	NAREL ACT-02F-TH		Th230	S+,	J
C3-SB6-3648-01	B6.04133D	NAREL ACT-02F-TH		Th232	PP1, S+,	J
C3-SB6-3648-01	B6.04133D	NAREL ACT-02F-U		U235	U,	U
C3-SB6-3648-01	B6.04133D	NAREL ACT-02F-U		U238	PP,	J
C3-SB7-0012-01	B6.04134E	NAREL GAM-01-RA		Cs137	U,	U
C3-SB7-0012-01	B6.04134E	NAREL ACT-02F-TH		Th227	P, B+,	J
C3-SB7-0012-01	B6.04134E	NAREL ACT-02F-U		U235	U,	U
C3-SB7-0012-01	B6.04134E	NAREL ACT-02F-U		U238	PP,	J
C3-SB7-3648-01	B6.04135F	NAREL GAM-01-RA		Cs137	U,	U
C3-SB7-3648-01	B6.04135F	NAREL ACT-02F-TH		Th227	U, S+,	UJ
C3-SB7-3648-01	B6.04135F	NAREL ACT-02F-TH		Th228	S+,	J
C3-SB7-3648-01	B6.04135F	NAREL ACT-02F-TH		Th230	S+,	J
C3-SB7-3648-01	B6.04135F	NAREL ACT-02F-TH		Th232	PP1, S+,	J
C3-SB7-3648-01	B6.04135F	NAREL ACT-02F-U		U238	PP,	J
C3-SB8-0012-01	B6.04136G	NAREL GAM-01-RA		Cs137	U,	U
C3-SB8-0012-01	B6.04136G	NAREL ACT-02F-TH		Th227	P, B+,	J
C3-SB8-0012-01	B6.04136G	NAREL ACT-02F-U		U235	J,	J
C3-SB8-0012-01	B6.04136G	NAREL ACT-02F-U		U238	PP,	J
C3-SB8-1224-01	B6.04137H	NAREL GAM-01-RA		Cs137	U,	U

Client ID	NAREL ID	Method	QC type	Analyte	Interim Qualifiers	Final Qualifier
C3-SB8-1224-01	B6.04137H	NAREL ACT-02F-TH		Th227	S+,	J
C3-SB8-1224-01	B6.04137H	NAREL ACT-02F-TH		Th228	S+,	J
C3-SB8-1224-01	B6.04137H	NAREL ACT-02F-TH		Th230	S+,	J
C3-SB8-1224-01	B6.04137H	NAREL ACT-02F-TH		Th232	PP1, S+,	J
C3-SB8-1224-01	B6.04137H	NAREL GAM-01-RA		Th234	U,	U
C3-SB8-1224-01	B6.04137H	NAREL ACT-02F-U		U235	J,	J
C3-SB8-1224-01	B6.04137H	NAREL ACT-02F-U		U238	PP,	J
C3-SB9-0012-01	B6.04138J	NAREL GAM-01-RA		Cs137	U,	U
C3-SB9-0012-01	B6.04138J	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB9-0012-01	B6.04138J	NAREL ACT-02F-TH		Th227	B+,	J
C3-SB9-0012-01	B6.04138J	NAREL ACT-02F-TH		Th230	B+,	J
C3-SB9-0012-01	B6.04138J	NAREL GAM-01-RA		Th234	J,	J
C3-SB9-0012-01	B6.04138J	NAREL ACT-02F-U		U234	B+,	J
C3-SB9-0012-01	B6.04138J	NAREL ACT-02F-U		U235	J,	J
C3-SB9-0012-01	B6.04138J	NAREL ACT-02F-U		U238	B+,	J
C3-SB9-1224-01	B6.04139K	NAREL GAM-01-RA		Cs137	U,	U
C3-SB9-1224-01	B6.04139K	NAREL GAM-01-RA		Pb210	B+,	J
C3-SB9-1224-01	B6.04139K	NAREL ACT-02F-TH		Th227	U, B+,	UJ
C3-SB9-1224-01	B6.04139K	NAREL ACT-02F-TH		Th230	B+,	J
C3-SB9-1224-01	B6.04139K	NAREL ACT-02F-U		U234	B+,	J
C3-SB9-1224-01	B6.04139K	NAREL ACT-02F-U		U235	J,	J
C3-SB9-1224-01	B6.04139K	NAREL ACT-02F-U		U238	B+,	J

B. Detection Capability (MARLAP 8.5.3.2)

If the project requires a certain detection capability, the requirement should be expressed as a required minimum detectable concentration (RMDC). A failure to meet the RMDC is more often an important issue when the analyte is not detected.

The RMDC is usually specified in the QAPP and is compared to the sample-specific MDC achieved by the method. Required detection limits are provided in the QAPP. Samples are qualified "UJ" where no activity was detected in a sample but the required detection limit was not attained.

Discussion

In practice the required MDC was sufficiently high that the actual detection limit was well below the required detection limit.

C. Large or Unusual Uncertainty (MARLAP 8.5.3.3)

The reported combined standard uncertainty is compared to the maximum allowable standard uncertainty. Either absolute (in concentration units) or relative uncertainties (expressed as a percent) are used in the comparison, depending on the reported concentration.

Discussion

No specific requirement in the project QAPP was recognized for qualifying results based on maximum allowable uncertainty. .

Samples were qualified as '*J*' if activity was found in the corresponding background or if the sample result was more than 1.645 times the total propagated uncertainty at one standard deviation, but less than the minimum detectable concentration. If the analytical result for a sample was greater than minimum detectable concentration, then no qualifier was ordinarily assigned unless some specific problem was identified. Samples were qualified as '*U*' if the sample result was less than 1.645 times the total propagated uncertainty at one standard deviation.

8. SUMMARY OF DATA USABILITY

There were a total of 1048 radionuclide results for field samples in this dataset. The meaning of each qualifier is described in section 3 of this report. The count of each final qualifier type for field samples is provided in the following table.

Table of the number of each of the various final data qualifiers.

Final Qualifier	Count Of Final Qualifier
	703
J	272
R	11
U	59
UJ	3

The distribution of qualifiers among field samples is further broken down in the following table.

Table of counts of various qualifiers by counting technique

Method	Description	Final Qualifier	Count Of Final Qualifier
NAREL ACT-02F-TH	Alpha Spectroscopy (Isotopic Thorium)		129
NAREL ACT-02F-TH	Alpha Spectroscopy (Isotopic Thorium)	J	92
NAREL ACT-02F-TH	Alpha Spectroscopy (Isotopic Thorium)	UJ	3
NAREL ACT-02F-U	Alpha Spectroscopy (Isotopic Uranium)		115
NAREL ACT-02F-U	Alpha Spectroscopy (Isotopic Uranium)	J	86
NAREL ACT-02F-U	Alpha Spectroscopy (Isotopic Uranium)	U	18
NAREL GAM-01-RA	Gamma Spectroscopy		459
NAREL GAM-01-RA	Gamma Spectroscopy	J	94
NAREL GAM-01-RA	Gamma Spectroscopy	R	11
NAREL GAM-01-RA	Gamma Spectroscopy	U	41

9. REFERENCES

SITE-SPECIFIC UFP QUALITY ASSURANCE PROJECT PLAN CANADIAN RADIUM AND URANIUM CORPORATION SITE, MOUNT KISCO, WESTCHESTER COUNTY, NEW YORK, DC No.: RST3-02-D-0010, TDD No.: TO-0006-0053. July 2015.

Multi-Agency Radiological Laboratory Analytical Protocols Manual, Volume I, NUREG-1576, EPA 402-B-04-001A, NTIS PB2004-105421, July 2004.

10. APPENDED DOCUMENTS

- Consolidated table of field analytical results with qualifiers (41 pages).
- Radiological Data Verification/Validation Checklist (2 pages).
- NAREL Data Reports and Transmittals (270 pages).

ED_006395_00001795-00032

Client Sample ID / Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
C2-SB1-0012-01								
NAREL ACT-02F-TH	Th227	1600015: B6.04104Y	0.1	0.05	0.02			PCI/GDRY
NAREL ACT-02F-TH	Th227	1600015: B6.04104Y	0.08	0.07	0.07			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04104Y	0.6	0.16	0.05			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04104Y	0.47	0.09	0.02			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600015: B6.04104Y	0.47	0.09	0.05			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600015: B6.04104Y	0.45	0.13	0.07			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600015: B6.04104Y	0.51	0.09	0.02			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600015: B6.04104Y	0.45	0.13	0.04			PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04104Y	0.53	0.1	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04104Y	0.45	0.09	0.02			PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04104Y	0.04	0.03	0.02			PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04104Y	0.02	0.02	0.02	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04104Y	0.55	0.1	0.02	P, B+,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04104Y	0.41	0.08	0.02	P, B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600015: B6.04104Y	0.41	0.14	0.15			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600015: B6.04104Y	0.3	0.04	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600015: B6.04104Y	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600015: B6.04104Y	7.46	0.85	0.12	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb210	1600015: B6.04104Y	0.43	0.15	0.19			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600015: B6.04104Y	0.36	0.04	0.01			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600015: B6.04104Y	0.36	0.04	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Ra226	1600015: B6.04104Y	0.63	0.17	0.19			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600015: B6.04104Y	0.34	0.05	0.04			PCI/GDRY

Client Sample ID	Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
	NAREL GAM-01-RA	Th234	1600015: B6.04104Y	0.28	0.14	0.19			PCI/GDRY
	NAREL GAM-01-RA	Tl208	1600015: B6.04104Y	0.1	0.01	0.01	B+,	J	PCI/GDRY
C2-SB1-4860-01									
	NAREL ACT-02F-TH	Th227	1600015: B6.04105Z	0.07	0.04	0.03			PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600015: B6.04105Z	0.5	0.09	0.02			PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600015: B6.04105Z	0.48	0.1	0.06			PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600015: B6.04105Z	0.52	0.1	0.02			PCI/GDRY
	NAREL ACT-02F-U	U234	1600015: B6.04105Z	0.5	0.09	0.03			PCI/GDRY
	NAREL ACT-02F-U	U235	1600015: B6.04105Z	0.02	0.02	0.03	J,	J	PCI/GDRY
	NAREL ACT-02F-U	U238	1600015: B6.04105Z	0.46	0.09	0.03	P, B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Bi212	1600015: B6.04105Z	0.66	0.13	0.12			PCI/GDRY
	NAREL GAM-01-RA	Bi214	1600015: B6.04105Z	0.67	0.08	0.02	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Cs137	1600015: B6.04105Z	-0.01	0.01	0.01	U,	U	PCI/GDRY
	NAREL GAM-01-RA	K40	1600015: B6.04105Z	11.3	1.26	0.1	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Pb210	1600015: B6.04105Z	0.76	0.2	0.22			PCI/GDRY
	NAREL GAM-01-RA	Pb212	1600015: B6.04105Z	0.55	0.06	0.02			PCI/GDRY
	NAREL GAM-01-RA	Pb214	1600015: B6.04105Z	0.75	0.09	0.02	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Ra226	1600015: B6.04105Z	1.08	0.2	0.19			PCI/GDRY
	NAREL GAM-01-RA	Ra228	1600015: B6.04105Z	0.55	0.07	0.04			PCI/GDRY
	NAREL GAM-01-RA	Th234	1600015: B6.04105Z	0.58	0.15	0.19			PCI/GDRY
	NAREL GAM-01-RA	Tl208	1600015: B6.04105Z	0.18	0.02	0.01	B+,	J	PCI/GDRY
C2-SB1-6072-01									
	NAREL ACT-02F-TH	Th227	1600015: B6.04106A	0.07	0.04	0.04			PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600015: B6.04106A	0.63	0.11	0.03			PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600015: B6.04106A	0.5	0.1	0.06			PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600015: B6.04106A	0.59	0.11	0.02			PCI/GDRY
	NAREL ACT-02F-U	U234	1600015: B6.04106A	0.31	0.07	0.02			PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL ACT-02F-U	U235	1600015: B6.04106A	0.01	0.02	0.03	U,	U	PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04106A	0.38	0.08	0.02	P, B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600015: B6.04106A	0.56	0.11	0.1			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600015: B6.04106A	0.63	0.1	0.09			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600015: B6.04106A	0.76	0.09	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi214	1600015: B6.04106A	0.76	0.09	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600015: B6.04106A	-0.01	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600015: B6.04106A	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600015: B6.04106A	11.9	1.32	0.08	B+,	J	PCI/GDRY
NAREL GAM-01-RA	K40	1600015: B6.04106A	12	1.32	0.06	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb210	1600015: B6.04106A	0.8	0.21	0.24			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600015: B6.04106A	0.85	0.18	0.2			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600015: B6.04106A	0.52	0.06	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600015: B6.04106A	0.52	0.06	0.01			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600015: B6.04106A	0.88	0.1	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb214	1600015: B6.04106A	0.88	0.1	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Ra226	1600015: B6.04106A	1.21	0.21	0.18			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600015: B6.04106A	1.16	0.18	0.16			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600015: B6.04106A	0.53	0.07	0.03			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600015: B6.04106A	0.53	0.06	0.02			PCI/GDRY
NAREL GAM-01-RA	Th234	1600015: B6.04106A	0.54	0.16	0.21			PCI/GDRY
NAREL GAM-01-RA	Th234	1600015: B6.04106A	0.43	0.14	0.2			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600015: B6.04106A	0.16	0.02	0.01	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Tl208	1600015: B6.04106A	0.16	0.02	0.01	B+,	J	PCI/GDRY

C2-SB1-7284-01

NAREL ACT-02F-TH	Th227	1600015: B6.04107B	0.12	0.06	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04107B	0.75	0.12	0.02			PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL ACT-02F-TH	Th230	1600015: B6.04107B	0.62	0.11	0.06			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600015: B6.04107B	0.71	0.12	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04107B	0.64	0.11	0.03			PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04107B	0.03	0.03	0.03			PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04107B	0.64	0.11	0.02	P, B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600015: B6.04107B	0.93	0.16	0.12			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600015: B6.04107B	0.53	0.06	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600015: B6.04107B	-0.01	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600015: B6.04107B	11.4	1.27	0.08	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb210	1600015: B6.04107B	0.29	0.1	0.14			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600015: B6.04107B	0.79	0.09	0.01			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600015: B6.04107B	0.6	0.07	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Ra226	1600015: B6.04107B	1.2	0.21	0.19			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600015: B6.04107B	0.8	0.09	0.04			PCI/GDRY
NAREL GAM-01-RA	Th234	1600015: B6.04107B	0.58	0.14	0.18			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600015: B6.04107B	0.26	0.03	0.01	B+,	J	PCI/GDRY
C2-SB1-8496-01								
NAREL ACT-02F-TH	Th227	1600015: B6.04108C	0.1	0.05	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04108C	0.74	0.12	0.02			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600015: B6.04108C	0.54	0.1	0.06			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600015: B6.04108C	0.71	0.11	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04108C	0.89	0.14	0.03			PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04108C	0.05	0.03	0.02			PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04108C	0.92	0.14	0.02	P, B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600015: B6.04108C	0.92	0.13	0.09			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600015: B6.04108C	0.48	0.05	0.01	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600015: B6.04108C	0	0.01	0.01	U,	U	PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL GAM-01-RA	K40	1600015: B6.04108C	12	1.33	0.06	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb210	1600015: B6.04108C	0.28	0.09	0.11			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600015: B6.04108C	0.81	0.09	0.01			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600015: B6.04108C	0.56	0.07	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Ra226	1600015: B6.04108C	1.19	0.18	0.16			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600015: B6.04108C	0.81	0.09	0.03			PCI/GDRY
NAREL GAM-01-RA	Th234	1600015: B6.04108C	0.78	0.13	0.15			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600015: B6.04108C	0.24	0.03	0.01	B+,	J	PCI/GDRY
C2-SB2-0012-01								
NAREL ACT-02F-TH	Th227	1600015: B6.04109D	0.12	0.06	0.04			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04109D	0.54	0.11	0.04			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600015: B6.04109D	0.55	0.12	0.06			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600015: B6.04109D	0.42	0.09	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04109D	0.38	0.08	0.02			PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04109D	0.01	0.01	0.02	U,	U	PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04109D	0.4	0.08	0.02	P, B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600015: B6.04109D	0.42	0.12	0.12			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600015: B6.04109D	0.36	0.04	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600015: B6.04109D	0.01	0.01	0.01			PCI/GDRY
NAREL GAM-01-RA	K40	1600015: B6.04109D	9.98	1.12	0.1	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb210	1600015: B6.04109D	0.48	0.12	0.15			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600015: B6.04109D	0.44	0.05	0.01			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600015: B6.04109D	0.42	0.05	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Ra226	1600015: B6.04109D	0.73	0.18	0.2			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600015: B6.04109D	0.46	0.06	0.04			PCI/GDRY
NAREL GAM-01-RA	Th234	1600015: B6.04109D	0.27	0.13	0.17			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600015: B6.04109D	0.14	0.02	0.01	B+,	J	PCI/GDRY

Client Sample ID / Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
C2-SB2-1224-01								
NAREL ACT-02F-TH	Th227	1600015: B6.04110W	0.12	0.05	0.02			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04110W	0.99	0.14	0.02			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600015: B6.04110W	1.08	0.15	0.05			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600015: B6.04110W	0.85	0.13	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04110W	0.74	0.12	0.04			PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04110W	0.02	0.03	0.05	U,	U	PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04110W	0.71	0.12	0.04	P, B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600015: B6.04110W	1.32	0.27	0.23			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600015: B6.04110W	1.29	0.15	0.03	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600015: B6.04110W	0.05	0.01	0.01			PCI/GDRY
NAREL GAM-01-RA	K40	1600015: B6.04110W	15.5	1.73	0.14	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb210	1600015: B6.04110W	0.97	0.17	0.18			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600015: B6.04110W	1.31	0.15	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600015: B6.04110W	1.47	0.16	0.03	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Ra226	1600015: B6.04110W	2.23	0.34	0.29			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600015: B6.04110W	1.32	0.15	0.07			PCI/GDRY
NAREL GAM-01-RA	Th234	1600015: B6.04110W	0.68	0.18	0.24			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600015: B6.04110W	0.41	0.05	0.02	B+,	J	PCI/GDRY
C2-SB2-2436-01								
NAREL ACT-02F-TH	Th227	1600015: B6.04111X	0.11	0.05	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04111X	0.56	0.1	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600015: B6.04111X	0.93	0.15	0.06			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600015: B6.04111X	0.62	0.11	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04111X	0.53	0.1	0.02			PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04111X	0.04	0.03	0.03			PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04111X	0.64	0.11	0.02	P, B+,	J	PCI/GDRY

Client Sample ID	Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
	NAREL GAM-01-RA	Bi212	1600015: B6.04111X	0.79	0.16	0.15			PCI/GDRY
	NAREL GAM-01-RA	Bi214	1600015: B6.04111X	1.64	0.18	0.02	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Cs137	1600015: B6.04111X	0.04	0.01	0.01			PCI/GDRY
	NAREL GAM-01-RA	K40	1600015: B6.04111X	13.2	1.46	0.1	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Pb210	1600015: B6.04111X	2.11	0.31	0.27			PCI/GDRY
	NAREL GAM-01-RA	Pb212	1600015: B6.04111X	0.73	0.08	0.02			PCI/GDRY
	NAREL GAM-01-RA	Pb214	1600015: B6.04111X	1.89	0.21	0.02	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Ra226	1600015: B6.04111X	2.57	0.34	0.23			PCI/GDRY
	NAREL GAM-01-RA	Ra228	1600015: B6.04111X	0.73	0.09	0.05			PCI/GDRY
	NAREL GAM-01-RA	Th234	1600015: B6.04111X	0.72	0.18	0.26			PCI/GDRY
	NAREL GAM-01-RA	Tl208	1600015: B6.04111X	0.22	0.03	0.01	B+,	J	PCI/GDRY
C2-SB2-3648-01									
	NAREL ACT-02F-TH	Th227	1600015: B6.04112Y	0.14	0.06	0.03			PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600015: B6.04112Y	0.89	0.14	0.02			PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600015: B6.04112Y	1.57	0.21	0.05			PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600015: B6.04112Y	0.76	0.12	0.02			PCI/GDRY
	NAREL ACT-02F-U	U234	1600015: B6.04112Y	0.57	0.1	0.02			PCI/GDRY
	NAREL ACT-02F-U	U235	1600015: B6.04112Y	0.03	0.03	0.03			PCI/GDRY
	NAREL ACT-02F-U	U238	1600015: B6.04112Y	0.64	0.11	0.02	P, B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Bi212	1600015: B6.04112Y	0.97	0.16	0.15			PCI/GDRY
	NAREL GAM-01-RA	Bi214	1600015: B6.04112Y	4.5	0.49	0.02	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Cs137	1600015: B6.04112Y	0.07	0.01	0.01			PCI/GDRY
	NAREL GAM-01-RA	K40	1600015: B6.04112Y	12.2	1.35	0.13	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Pb210	1600015: B6.04112Y	8.99	1.1	0.44			PCI/GDRY
	NAREL GAM-01-RA	Pb212	1600015: B6.04112Y	0.9	0.1	0.02			PCI/GDRY
	NAREL GAM-01-RA	Pb214	1600015: B6.04112Y	5.07	0.56	0.02	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Ra226	1600015: B6.04112Y	5.84	0.7	0.32			PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL GAM-01-RA	Ra228	1600015: B6.04112Y	0.91	0.11	0.05			PCI/GDRY
NAREL GAM-01-RA	Th234	1600015: B6.04112Y	0.61	0.27	0.39			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600015: B6.04112Y	0.28	0.03	0.01	B+,	J	PCI/GDRY
NAREL GAM-01-RA	U235	1600015: B6.04112Y	0.09	0.05	0.08	R	R	PCI/GDRY
C2-SB2-7284-01								
NAREL ACT-02F-TH	Th227	1600015: B6.04113Z	0.1	0.05	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th227	1600015: B6.04113Z	0.08	0.05	0.04			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04113Z	1.11	0.17	0.03	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04113Z	0.96	0.14	0.03	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600015: B6.04113Z	0.74	0.12	0.06			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600015: B6.04113Z	0.68	0.12	0.06			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600015: B6.04113Z	1.01	0.16	0.02	P1,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600015: B6.04113Z	0.87	0.14	0.02	P1,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04113Z	0.71	0.15	0.03	PP1,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04113Z	0.53	0.12	0.04	PP1,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04113Z	0.04	0.03	0.03			PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04113Z	0.04	0.04	0.03			PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04113Z	0.64	0.14	0.04			PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04113Z	0.64	0.13	0.03			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600015: B6.04113Z	1.09	0.19	0.16			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600015: B6.04113Z	0.77	0.09	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600015: B6.04113Z	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600015: B6.04113Z	14.1	1.56	0.1	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb210	1600015: B6.04113Z	0.84	0.18	0.23			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600015: B6.04113Z	1.02	0.11	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600015: B6.04113Z	0.88	0.1	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Ra226	1600015: B6.04113Z	1.67	0.25	0.21			PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL GAM-01-RA	Ra228	1600015: B6.04113Z	0.99	0.12	0.05			PCI/GDRY
NAREL GAM-01-RA	Th234	1600015: B6.04113Z	0.81	0.18	0.24			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600015: B6.04113Z	0.32	0.04	0.01	B+,	J	PCI/GDRY
NAREL GAM-01-RA	U235	1600015: B6.04113Z	0.06	0.04	0.06	R	R	PCI/GDRY
C2-SB2-7284-02								
NAREL ACT-02F-TH	Th227	1600015: B6.04114A	0.15	0.06	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04114A	1.09	0.16	0.02	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600015: B6.04114A	0.64	0.12	0.06			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600015: B6.04114A	1.12	0.16	0.02	P1,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04114A	0.78	0.14	0.04	PP1,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04114A	0.03	0.03	0.04	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04114A	0.73	0.14	0.04			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600015: B6.04114A	0.97	0.15	0.12			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600015: B6.04114A	0.71	0.08	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600015: B6.04114A	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600015: B6.04114A	13.4	1.48	0.09	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb210	1600015: B6.04114A	0.77	0.22	0.28			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600015: B6.04114A	0.94	0.11	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600015: B6.04114A	0.83	0.09	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Ra226	1600015: B6.04114A	1.5	0.23	0.2			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600015: B6.04114A	0.98	0.11	0.03			PCI/GDRY
NAREL GAM-01-RA	Th234	1600015: B6.04114A	0.87	0.21	0.27			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600015: B6.04114A	0.3	0.03	0.01	B+,	J	PCI/GDRY
C2-SB2-8496-01								
NAREL ACT-02F-TH	Th227	1600015: B6.04115B	0.1	0.05	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04115B	0.76	0.12	0.03	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600015: B6.04115B	0.61	0.11	0.06			PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL ACT-02F-TH	Th232	1600015: B6.04115B	0.74	0.12	0.02	P1,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04115B	0.62	0.14	0.04	PP1,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04115B	0.01	0.03	0.06	U,	U	PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04115B	0.62	0.14	0.03			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600015: B6.04115B	0.93	0.15	0.11			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600015: B6.04115B	0.51	0.06	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600015: B6.04115B	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600015: B6.04115B	11.9	1.32	0.08	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb210	1600015: B6.04115B	0.51	0.17	0.23			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600015: B6.04115B	0.8	0.09	0.01			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600015: B6.04115B	0.57	0.07	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Ra226	1600015: B6.04115B	0.94	0.18	0.18			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600015: B6.04115B	0.79	0.09	0.03			PCI/GDRY
NAREL GAM-01-RA	Th234	1600015: B6.04115B	0.52	0.17	0.23			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600015: B6.04115B	0.26	0.03	0.01	B+,	J	PCI/GDRY
C2-SB3-0012-01								
NAREL ACT-02F-TH	Th227	1600015: B6.04116C	0.12	0.05	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04116C	3.73	0.42	0.03	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600015: B6.04116C	1.08	0.16	0.06			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600015: B6.04116C	3.83	0.43	0.02	P1,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04116C	0.79	0.14	0.04	PP1,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04116C	0.05	0.04	0.04			PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04116C	0.8	0.14	0.03			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600015: B6.04116C	0.78	0.17	0.14			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600015: B6.04116C	0.97	0.11	0.03	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600015: B6.04116C	0.16	0.02	0.01			PCI/GDRY
NAREL GAM-01-RA	K40	1600015: B6.04116C	11	1.23	0.12	B+,	J	PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL GAM-01-RA	Pb210	1600015: B6.04116C	1.34	0.19	0.16			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600015: B6.04116C	0.76	0.09	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600015: B6.04116C	1.11	0.13	0.03	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Ra226	1600015: B6.04116C	1.71	0.29	0.24			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600015: B6.04116C	0.7	0.09	0.05			PCI/GDRY
NAREL GAM-01-RA	Th234	1600015: B6.04116C	0.68	0.17	0.2			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600015: B6.04116C	0.22	0.03	0.01	B+,	J	PCI/GDRY
C2-SB3-1224-01								
NAREL ACT-02F-TH	Th227	1600015: B6.04117D	0.11	0.05	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04117D	0.75	0.12	0.03	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600015: B6.04117D	1	0.15	0.06			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600015: B6.04117D	0.88	0.14	0.02	P1,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04117D	0.56	0.11	0.03	PP1,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04117D	0.03	0.03	0.03			PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04117D	0.6	0.12	0.03			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600015: B6.04117D	0.96	0.14	0.1			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600015: B6.04117D	1.3	0.14	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600015: B6.04117D	0.09	0.01	0.01			PCI/GDRY
NAREL GAM-01-RA	K40	1600015: B6.04117D	12.9	1.42	0.06	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb210	1600015: B6.04117D	1.27	0.24	0.25			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600015: B6.04117D	0.85	0.1	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600015: B6.04117D	1.46	0.16	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Ra226	1600015: B6.04117D	2.02	0.28	0.21			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600015: B6.04117D	0.82	0.09	0.03			PCI/GDRY
NAREL GAM-01-RA	Th234	1600015: B6.04117D	0.68	0.18	0.25			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600015: B6.04117D	0.26	0.03	0.01	B+,	J	PCI/GDRY
C2-SB3-4860-01								

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL ACT-02F-TH	Th227	1600015: B6.04118E	0.15	0.06	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04118E	0.85	0.13	0.03	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600015: B6.04118E	1.32	0.18	0.05			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600015: B6.04118E	0.77	0.12	0.01	P1,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04118E	0.67	0.13	0.03	PP1,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04118E	0.03	0.03	0.03	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04118E	0.7	0.13	0.03			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600015: B6.04118E	0.85	0.18	0.17			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600015: B6.04118E	1.78	0.2	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600015: B6.04118E	-0.01	0.01	0.02	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600015: B6.04118E	10.8	1.21	0.12	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb210	1600015: B6.04118E	1.84	0.23	0.14			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600015: B6.04118E	0.78	0.09	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600015: B6.04118E	2.03	0.22	0.03	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Ra226	1600015: B6.04118E	2.69	0.36	0.25			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600015: B6.04118E	0.79	0.1	0.05			PCI/GDRY
NAREL GAM-01-RA	Th234	1600015: B6.04118E	0.53	0.13	0.19			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600015: B6.04118E	0.24	0.03	0.01	B+,	J	PCI/GDRY
C2-SB3-6072-01								
NAREL ACT-02F-TH	Th227	1600015: B6.04119F	0.09	0.04	0.02			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04119F	0.86	0.12	0.02	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600015: B6.04119F	0.72	0.11	0.05			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600015: B6.04119F	0.94	0.13	0.01	P1,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04119F	0.96	0.16	0.04	PP1,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04119F	0.04	0.04	0.06	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04119F	0.81	0.14	0.05			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600015: B6.04119F	1.12	0.17	0.13			PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL GAM-01-RA	Bi214	1600015: B6.04119F	0.59	0.07	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600015: B6.04119F	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600015: B6.04119F	9.5	1.06	0.1	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb210	1600015: B6.04119F	0.55	0.13	0.16			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600015: B6.04119F	1.04	0.12	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600015: B6.04119F	0.74	0.08	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Ra226	1600015: B6.04119F	1.47	0.24	0.22			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600015: B6.04119F	0.99	0.11	0.03			PCI/GDRY
NAREL GAM-01-RA	Th234	1600015: B6.04119F	0.82	0.18	0.21			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600015: B6.04119F	0.31	0.04	0.01	B+,	J	PCI/GDRY
NAREL GAM-01-RA	U235	1600015: B6.04119F	0.04	0.04	0.06	J, R	R	PCI/GDRY
C2-SB3-7284-01								
NAREL ACT-02F-TH	Th227	1600015: B6.04120Y	0.16	0.06	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600015: B6.04120Y	0.82	0.13	0.03	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600015: B6.04120Y	0.74	0.12	0.06			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600015: B6.04120Y	0.73	0.12	0.02	P1,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600015: B6.04120Y	1	0.17	0.02	PP1,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600015: B6.04120Y	0.01	0.02	0.04	U,	U	PCI/GDRY
NAREL ACT-02F-U	U238	1600015: B6.04120Y	0.87	0.16	0.02			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600015: B6.04120Y	0.94	0.15	0.12			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600015: B6.04120Y	0.56	0.06	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600015: B6.04120Y	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600015: B6.04120Y	14.3	1.58	0.09	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb210	1600015: B6.04120Y	0.32	0.1	0.13			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600015: B6.04120Y	0.85	0.09	0.01			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600015: B6.04120Y	0.6	0.07	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Ra226	1600015: B6.04120Y	1.37	0.21	0.19			PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL GAM-01-RA	Ra228	1600015: B6.04120Y	0.93	0.11	0.03			PCI/GDRY
NAREL GAM-01-RA	Th234	1600015: B6.04120Y	0.55	0.14	0.18			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600015: B6.04120Y	0.27	0.03	0.01	B+,	J	PCI/GDRY
C2-SB3-8496-01								
NAREL ACT-02F-TH	Th227	1600016: B6.04121Z	0.06	0.04	0.03	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th227	1600016: B6.04121Z	0.05	0.04	0.03	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600016: B6.04121Z	1.08	0.16	0.02	B+, S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600016: B6.04121Z	1.03	0.15	0.02	B+, S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600016: B6.04121Z	0.77	0.13	0.05	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600016: B6.04121Z	0.95	0.14	0.06	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600016: B6.04121Z	0.91	0.14	0.02	PP1, S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600016: B6.04121Z	1.03	0.15	0.02	PP1, S+,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04121Z	0.75	0.14	0.03			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04121Z	0.82	0.15	0.03			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04121Z	0.76	0.13	0.04	B+,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04121Z	0.75	0.14	0.02	B+,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04121Z	0.04	0.03	0.03			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04121Z	0.05	0.03	0.04			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04121Z	0.01	0.02	0.03	U,	U	PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04121Z	0.02	0.02	0.03	U,	U	PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04121Z	0.84	0.15	0.03			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04121Z	0.8	0.14	0.03			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04121Z	0.96	0.15	0.03	PP, B+,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04121Z	0.65	0.12	0.03	PP, B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600016: B6.04121Z	1.13	0.19	0.16			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600016: B6.04121Z	0.71	0.08	0.02			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600016: B6.04121Z	0	0.01	0.01	U,	U	PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL GAM-01-RA	K40	1600016: B6.04121Z	15	1.66	0.1			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600016: B6.04121Z	0.48	0.11	0.14			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600016: B6.04121Z	1.01	0.11	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600016: B6.04121Z	0.82	0.09	0.02			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600016: B6.04121Z	1.5	0.23	0.22			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600016: B6.04121Z	1.02	0.12	0.05			PCI/GDRY
NAREL GAM-01-RA	Th234	1600016: B6.04121Z	0.6	0.14	0.19			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600016: B6.04121Z	0.32	0.04	0.02			PCI/GDRY
C3-SB10-0012-01								
NAREL ACT-02F-TH	Th227	1600017: B6.04140C	0.08	0.04	0.03	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600017: B6.04140C	0.46	0.08	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600017: B6.04140C	0.44	0.08	0.05	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600017: B6.04140C	0.54	0.09	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600017: B6.04140C	0.39	0.07	0.02	B+,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600017: B6.04140C	0.01	0.02	0.02	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600017: B6.04140C	0.49	0.08	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600017: B6.04140C	0.57	0.11	0.1			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600017: B6.04140C	0.36	0.04	0.02			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600017: B6.04140C	0.01	0.01	0.01	J,	J	PCI/GDRY
NAREL GAM-01-RA	K40	1600017: B6.04140C	9.23	1.03	0.06			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600017: B6.04140C	1.48	0.23	0.19	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb212	1600017: B6.04140C	0.52	0.06	0.01			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600017: B6.04140C	0.43	0.05	0.02			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600017: B6.04140C	0.7	0.13	0.14			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600017: B6.04140C	0.55	0.06	0.03			PCI/GDRY
NAREL GAM-01-RA	Th234	1600017: B6.04140C	0.46	0.13	0.17			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600017: B6.04140C	0.17	0.02	0.01			PCI/GDRY

Client Sample ID / Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
C3-SB1-0012-01								
NAREL ACT-02F-TH	Th227	1600016: B6.04122A	0.05	0.04	0.03	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600016: B6.04122A	0.98	0.16	0.02	B+, S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600016: B6.04122A	0.5	0.11	0.06	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600016: B6.04122A	0.99	0.16	0.02	PP1, S+,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04122A	0.64	0.11	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04122A	0.6	0.12	0.05	B+,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04122A	0.04	0.03	0.02			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04122A	0.04	0.03	0.04	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04122A	0.62	0.11	0.02			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04122A	0.63	0.12	0.04	PP, B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600016: B6.04122A	1.2	0.24	0.2			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600016: B6.04122A	0.53	0.07	0.03			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600016: B6.04122A	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600016: B6.04122A	13.6	1.53	0.16			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600016: B6.04122A	0.59	0.22	0.27			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600016: B6.04122A	1.18	0.13	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600016: B6.04122A	0.65	0.08	0.03			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600016: B6.04122A	1.1	0.27	0.28			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600016: B6.04122A	1.16	0.14	0.05			PCI/GDRY
NAREL GAM-01-RA	Th234	1600016: B6.04122A	0.54	0.22	0.3			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600016: B6.04122A	0.34	0.04	0.01			PCI/GDRY
C3-SB10-1224-01								
NAREL ACT-02F-TH	Th227	1600017: B6.04141D	0.7	0.15	0.03	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600017: B6.04141D	0.86	0.13	0.02			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600017: B6.04141D	15	1.52	0.05	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600017: B6.04141D	0.91	0.14	0.02			PCI/GDRY

Client Sample ID	Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
	NAREL ACT-02F-U	U234	1600017: B6.04141D	0.63	0.1	0.02	B+,	J	PCI/GDRY
	NAREL ACT-02F-U	U235	1600017: B6.04141D	0.04	0.02	0.02			PCI/GDRY
	NAREL ACT-02F-U	U238	1600017: B6.04141D	0.72	0.11	0.02	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Bi212	1600017: B6.04141D	1.09	0.26	0.3			PCI/GDRY
	NAREL GAM-01-RA	Bi214	1600017: B6.04141D	26.5	2.9	0.04			PCI/GDRY
	NAREL GAM-01-RA	Cs137	1600017: B6.04141D	0.07	0.02	0.02			PCI/GDRY
	NAREL GAM-01-RA	K40	1600017: B6.04141D	13.1	1.48	0.29			PCI/GDRY
	NAREL GAM-01-RA	Pb210	1600017: B6.04141D	32.7	3.81	0.58	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Pb212	1600017: B6.04141D	0.85	0.1	0.05			PCI/GDRY
	NAREL GAM-01-RA	Pb214	1600017: B6.04141D	30	3.29	0.05			PCI/GDRY
	NAREL GAM-01-RA	Ra226	1600017: B6.04141D	35.2	3.92	0.69			PCI/GDRY
	NAREL GAM-01-RA	Ra228	1600017: B6.04141D	0.87	0.12	0.12			PCI/GDRY
	NAREL GAM-01-RA	Th234	1600017: B6.04141D	0.78	0.43	0.67			PCI/GDRY
	NAREL GAM-01-RA	Tl208	1600017: B6.04141D	0.26	0.03	0.03			PCI/GDRY
	NAREL GAM-01-RA	U235	1600017: B6.04141D	0.3	0.12	0.18	R	R	PCI/GDRY
C3-SB10-6072-01									
	NAREL ACT-02F-TH	Th227	1600017: B6.04142E	0.28	0.08	0.03	B+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th227	1600017: B6.04142E	0.25	0.07	0.03	B+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600017: B6.04142E	1.79	0.21	0.02			PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600017: B6.04142E	1.67	0.22	0.02			PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600017: B6.04142E	4.24	0.47	0.05	B+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600017: B6.04142E	4.46	0.46	0.05	B+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600017: B6.04142E	1.56	0.2	0.02			PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600017: B6.04142E	1.67	0.2	0.02			PCI/GDRY
	NAREL ACT-02F-U	U234	1600017: B6.04142E	1.34	0.17	0.02	B+,	J	PCI/GDRY
	NAREL ACT-02F-U	U234	1600017: B6.04142E	1.38	0.17	0.02	B+,	J	PCI/GDRY
	NAREL ACT-02F-U	U235	1600017: B6.04142E	0.07	0.03	0.02			PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL ACT-02F-U	U235	1600017: B6.04142E	0.05	0.03	0.02			PCI/GDRY
NAREL ACT-02F-U	U238	1600017: B6.04142E	1.35	0.17	0.02	B+,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600017: B6.04142E	1.33	0.17	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600017: B6.04142E	1.89	0.3	0.23			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600017: B6.04142E	5.03	0.55	0.03			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600017: B6.04142E	0.01	0.01	0.02	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600017: B6.04142E	11.3	1.27	0.18			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600017: B6.04142E	4.27	0.51	0.2	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb212	1600017: B6.04142E	1.6	0.18	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600017: B6.04142E	5.85	0.64	0.04			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600017: B6.04142E	7.41	0.88	0.36			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600017: B6.04142E	1.61	0.18	0.06			PCI/GDRY
NAREL GAM-01-RA	Th234	1600017: B6.04142E	0.9	0.22	0.29			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600017: B6.04142E	0.49	0.06	0.02			PCI/GDRY
NAREL GAM-01-RA	U235	1600017: B6.04142E	0.14	0.06	0.08	R	R	PCI/GDRY
C3-SB10-7284-01								
NAREL ACT-02F-TH	Th227	1600017: B6.04143F	0.26	0.09	0.04	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600017: B6.04143F	2.35	0.32	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600017: B6.04143F	3.98	0.5	0.05	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600017: B6.04143F	2.38	0.32	0.03			PCI/GDRY
NAREL ACT-02F-U	U234	1600017: B6.04143F	1.74	0.2	0.02	B+,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600017: B6.04143F	0.08	0.03	0.02			PCI/GDRY
NAREL ACT-02F-U	U238	1600017: B6.04143F	1.85	0.22	0.02	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600017: B6.04143F	3.48	0.49	0.28			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600017: B6.04143F	3.21	0.36	0.04			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600017: B6.04143F	-0.01	0.02	0.02	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600017: B6.04143F	9.59	1.09	0.19			PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL GAM-01-RA	Pb210	1600017: B6.04143F	2.84	0.37	0.27	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb212	1600017: B6.04143F	3.42	0.38	0.04			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600017: B6.04143F	3.81	0.42	0.05			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600017: B6.04143F	5.16	0.68	0.41			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600017: B6.04143F	3.28	0.36	0.06			PCI/GDRY
NAREL GAM-01-RA	Th234	1600017: B6.04143F	1.79	0.39	0.41			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600017: B6.04143F	0.99	0.11	0.02			PCI/GDRY
NAREL GAM-01-RA	U235	1600017: B6.04143F	0.18	0.07	0.1	R	R	PCI/GDRY
C3-SB10-8496-01								
NAREL ACT-02F-TH	Th227	1600017: B6.04144G	0.13	0.06	0.04	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600017: B6.04144G	1.06	0.16	0.02			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600017: B6.04144G	1.13	0.16	0.06	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600017: B6.04144G	1.22	0.17	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600017: B6.04144G	1.41	0.18	0.02	B+,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600017: B6.04144G	0.08	0.04	0.02			PCI/GDRY
NAREL ACT-02F-U	U238	1600017: B6.04144G	1.44	0.18	0.01	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600017: B6.04144G	1.17	0.16	0.1			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600017: B6.04144G	0.98	0.11	0.02			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600017: B6.04144G	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600017: B6.04144G	13.4	1.49	0.07			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600017: B6.04144G	0.63	0.13	0.14	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb212	1600017: B6.04144G	1.16	0.13	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600017: B6.04144G	1.13	0.13	0.02			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600017: B6.04144G	2.28	0.31	0.21			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600017: B6.04144G	1.16	0.13	0.03			PCI/GDRY
NAREL GAM-01-RA	Th234	1600017: B6.04144G	1.28	0.18	0.18			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600017: B6.04144G	0.36	0.04	0.01			PCI/GDRY

Client Sample ID	Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
	NAREL GAM-01-RA	U235	1600017: B6.04144G	0.1	0.04	0.06	R	R	PCI/GDRY
C3-SB11-0012-01									
	NAREL ACT-02F-TH	Th227	1600017: B6.04145H	0.15	0.09	0.06			PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600017: B6.04145H	1.04	0.21	0.04			PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600017: B6.04145H	0.79	0.18	0.08			PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600017: B6.04145H	0.85	0.19	0.04			PCI/GDRY
	NAREL ACT-02F-U	U234	1600017: B6.04145H	0.84	0.14	0.02			PCI/GDRY
	NAREL ACT-02F-U	U235	1600017: B6.04145H	0.02	0.02	0.03	J,	J	PCI/GDRY
	NAREL ACT-02F-U	U238	1600017: B6.04145H	0.81	0.14	0.03			PCI/GDRY
	NAREL GAM-01-RA	Bi212	1600017: B6.04145H	0.99	0.21	0.18			PCI/GDRY
	NAREL GAM-01-RA	Bi214	1600017: B6.04145H	0.58	0.07	0.03			PCI/GDRY
	NAREL GAM-01-RA	Cs137	1600017: B6.04145H	-0.01	0.01	0.01	U,	U	PCI/GDRY
	NAREL GAM-01-RA	K40	1600017: B6.04145H	20.8	2.31	0.14			PCI/GDRY
	NAREL GAM-01-RA	Pb210	1600017: B6.04145H	0.58	0.19	0.24	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Pb212	1600017: B6.04145H	1.03	0.12	0.02			PCI/GDRY
	NAREL GAM-01-RA	Pb214	1600017: B6.04145H	0.68	0.08	0.03			PCI/GDRY
	NAREL GAM-01-RA	Ra226	1600017: B6.04145H	1.13	0.25	0.25			PCI/GDRY
	NAREL GAM-01-RA	Ra228	1600017: B6.04145H	0.98	0.12	0.05			PCI/GDRY
	NAREL GAM-01-RA	Th234	1600017: B6.04145H	0.73	0.21	0.28			PCI/GDRY
	NAREL GAM-01-RA	Tl208	1600017: B6.04145H	0.3	0.04	0.01			PCI/GDRY
C3-SB11-3648-01									
	NAREL ACT-02F-TH	Th227	1600017: B6.04146J	0.1	0.05	0.03			PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600017: B6.04146J	0.69	0.11	0.02			PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600017: B6.04146J	0.44	0.09	0.06			PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600017: B6.04146J	0.7	0.11	0.02			PCI/GDRY
	NAREL ACT-02F-U	U234	1600017: B6.04146J	0.48	0.11	0.03			PCI/GDRY
	NAREL ACT-02F-U	U235	1600017: B6.04146J	0.03	0.03	0.03			PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL ACT-02F-U	U238	1600017: B6.04146J	0.48	0.11	0.04			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600017: B6.04146J	0.94	0.17	0.15			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600017: B6.04146J	1.01	0.17	0.14			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600017: B6.04146J	0.43	0.05	0.02			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600017: B6.04146J	0.44	0.05	0.02			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600017: B6.04146J	-0.01	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600017: B6.04146J	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600017: B6.04146J	14.6	1.62	0.11			PCI/GDRY
NAREL GAM-01-RA	K40	1600017: B6.04146J	14.7	1.63	0.09			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600017: B6.04146J	0.69	0.18	0.24	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb210	1600017: B6.04146J	0.69	0.16	0.21	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb212	1600017: B6.04146J	0.84	0.1	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600017: B6.04146J	0.83	0.09	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600017: B6.04146J	0.51	0.06	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600017: B6.04146J	0.5	0.06	0.02			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600017: B6.04146J	0.84	0.16	0.18			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600017: B6.04146J	1	0.19	0.2			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600017: B6.04146J	0.88	0.1	0.05			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600017: B6.04146J	0.84	0.1	0.05			PCI/GDRY
NAREL GAM-01-RA	Th234	1600017: B6.04146J	0.54	0.17	0.24			PCI/GDRY
NAREL GAM-01-RA	Th234	1600017: B6.04146J	0.57	0.14	0.2			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600017: B6.04146J	0.27	0.03	0.01			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600017: B6.04146J	0.26	0.03	0.01			PCI/GDRY
C3-SB12-0012-01								
NAREL ACT-02F-TH	Th227	1600017: B6.04147K	0.13	0.05	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600017: B6.04147K	0.4	0.08	0.02			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600017: B6.04147K	0.36	0.08	0.05			PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL ACT-02F-TH	Th232	1600017: B6.04147K	0.46	0.08	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600017: B6.04147K	0.37	0.07	0.02			PCI/GDRY
NAREL ACT-02F-U	U235	1600017: B6.04147K	0.01	0.01	0.02	U,	U	PCI/GDRY
NAREL ACT-02F-U	U238	1600017: B6.04147K	0.34	0.07	0.01			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600017: B6.04147K	0.47	0.19	0.2			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600017: B6.04147K	0.35	0.05	0.03			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600017: B6.04147K	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600017: B6.04147K	11.1	1.25	0.16			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600017: B6.04147K	0.43	0.13	0.17	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb212	1600017: B6.04147K	0.47	0.06	0.03			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600017: B6.04147K	0.4	0.06	0.03			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600017: B6.04147K	0.67	0.23	0.24			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600017: B6.04147K	0.45	0.07	0.06			PCI/GDRY
NAREL GAM-01-RA	Th234	1600017: B6.04147K	0.51	0.22	0.24			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600017: B6.04147K	0.14	0.02	0.02			PCI/GDRY
C3-SB13-0012-01								
NAREL ACT-02F-TH	Th227	1600017: B6.04148L	0.06	0.04	0.04			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600017: B6.04148L	0.51	0.11	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600017: B6.04148L	0.53	0.12	0.06			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600017: B6.04148L	0.58	0.12	0.03			PCI/GDRY
NAREL ACT-02F-U	U234	1600017: B6.04148L	0.41	0.09	0.03			PCI/GDRY
NAREL ACT-02F-U	U235	1600017: B6.04148L	0.03	0.03	0.03	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600017: B6.04148L	0.41	0.09	0.03			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600017: B6.04148L	0.61	0.19	0.19			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600017: B6.04148L	0.43	0.06	0.03			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600017: B6.04148L	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600017: B6.04148L	12.6	1.42	0.15			PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL GAM-01-RA	Pb210	1600017: B6.04148L	0.44	0.22	0.27	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb212	1600017: B6.04148L	0.5	0.06	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600017: B6.04148L	0.47	0.06	0.03			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600017: B6.04148L	0.85	0.22	0.25			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600017: B6.04148L	0.54	0.08	0.06			PCI/GDRY
NAREL GAM-01-RA	Th234	1600017: B6.04148L	0.46	0.21	0.28			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600017: B6.04148L	0.16	0.02	0.01			PCI/GDRY
NAREL GAM-01-RA	U235	1600017: B6.04148L	0.07	0.04	0.05	R	R	PCI/GDRY
C3-SB13-1224-01								
NAREL ACT-02F-TH	Th227	1600017: B6.04149M	0.12	0.05	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600017: B6.04149M	0.66	0.11	0.02			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600017: B6.04149M	1.24	0.18	0.06			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600017: B6.04149M	0.5	0.09	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600017: B6.04149M	0.35	0.09	0.03			PCI/GDRY
NAREL ACT-02F-U	U235	1600017: B6.04149M	0.02	0.02	0.03	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600017: B6.04149M	0.44	0.1	0.03			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600017: B6.04149M	0.95	0.18	0.16			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600017: B6.04149M	1.8	0.2	0.02			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600017: B6.04149M	0	0.01	0.02	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600017: B6.04149M	12.3	1.36	0.11			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600017: B6.04149M	2.01	0.29	0.24	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb212	1600017: B6.04149M	0.74	0.08	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600017: B6.04149M	2.05	0.23	0.02			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600017: B6.04149M	2.79	0.36	0.22			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600017: B6.04149M	0.82	0.1	0.06			PCI/GDRY
NAREL GAM-01-RA	Th234	1600017: B6.04149M	0.55	0.16	0.22			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600017: B6.04149M	0.22	0.03	0.02			PCI/GDRY

Client Sample ID / Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
C3-SB1-3648-01								
NAREL ACT-02F-TH	Th227	1600016: B6.04123B	0.06	0.04	0.04	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600016: B6.04123B	0.65	0.12	0.03	B+, S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600016: B6.04123B	0.62	0.12	0.06	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600016: B6.04123B	0.58	0.11	0.02	PP1, S+,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04123B	0.51	0.1	0.03			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04123B	0.54	0.1	0.03	B+,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04123B	0.05	0.03	0.03			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04123B	0.02	0.02	0.02	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04123B	0.62	0.12	0.03			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04123B	0.53	0.1	0.03	PP, B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600016: B6.04123B	0.77	0.13	0.12			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600016: B6.04123B	0.78	0.09	0.02			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600016: B6.04123B	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600016: B6.04123B	13.6	1.5	0.08			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600016: B6.04123B	0.73	0.16	0.2			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600016: B6.04123B	0.74	0.08	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600016: B6.04123B	0.9	0.1	0.02			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600016: B6.04123B	1.31	0.2	0.18			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600016: B6.04123B	0.75	0.09	0.04			PCI/GDRY
NAREL GAM-01-RA	Th234	1600016: B6.04123B	0.51	0.15	0.22			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600016: B6.04123B	0.24	0.03	0.01			PCI/GDRY
C3-SB1-3648-02								
NAREL ACT-02F-TH	Th227	1600016: B6.04124C	0.04	0.04	0.04	J, S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600016: B6.04124C	0.8	0.14	0.03	B+, S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600016: B6.04124C	0.63	0.13	0.06	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600016: B6.04124C	0.83	0.15	0.02	PP1, S+,	J	PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL ACT-02F-U	U234	1600016: B6.04124C	0.53	0.1	0.03			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04124C	0.64	0.11	0.02	B+,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04124C	0.02	0.02	0.03	J,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04124C	0.03	0.03	0.03	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04124C	0.56	0.11	0.03			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04124C	0.55	0.1	0.02	PP, B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600016: B6.04124C	0.78	0.12	0.1			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600016: B6.04124C	0.79	0.13	0.11			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600016: B6.04124C	0.9	0.1	0.02			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600016: B6.04124C	0.91	0.1	0.02			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600016: B6.04124C	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	Cs137	1600016: B6.04124C	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600016: B6.04124C	13.9	1.53	0.09			PCI/GDRY
NAREL GAM-01-RA	K40	1600016: B6.04124C	13.6	1.5	0.08			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600016: B6.04124C	0.73	0.22	0.27			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600016: B6.04124C	0.74	0.2	0.26			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600016: B6.04124C	0.75	0.08	0.01			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600016: B6.04124C	0.72	0.08	0.01			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600016: B6.04124C	1.01	0.11	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600016: B6.04124C	1.03	0.12	0.02			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600016: B6.04124C	1.59	0.25	0.21			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600016: B6.04124C	1.53	0.23	0.2			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600016: B6.04124C	0.74	0.09	0.04			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600016: B6.04124C	0.74	0.08	0.03			PCI/GDRY
NAREL GAM-01-RA	Th234	1600016: B6.04124C	0.55	0.18	0.25			PCI/GDRY
NAREL GAM-01-RA	Th234	1600016: B6.04124C	0.51	0.18	0.25			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600016: B6.04124C	0.23	0.03	0.01			PCI/GDRY

Client Sample ID	Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
	NAREL GAM-01-RA	Tl208	1600016: B6.04124C	0.23	0.03	0.01			PCI/GDRY
C3-SB14-0012-01									
	NAREL ACT-02F-TH	Th227	1600017: B6.04150E	0.08	0.05	0.04			PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600017: B6.04150E	0.47	0.09	0.03			PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600017: B6.04150E	0.65	0.12	0.06			PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600017: B6.04150E	0.47	0.09	0.03			PCI/GDRY
	NAREL ACT-02F-U	U234	1600017: B6.04150E	0.4	0.09	0.03			PCI/GDRY
	NAREL ACT-02F-U	U235	1600017: B6.04150E	0.04	0.03	0.03			PCI/GDRY
	NAREL ACT-02F-U	U238	1600017: B6.04150E	0.44	0.09	0.03			PCI/GDRY
	NAREL GAM-01-RA	Bi212	1600017: B6.04150E	0.59	0.14	0.13			PCI/GDRY
	NAREL GAM-01-RA	Bi214	1600017: B6.04150E	0.58	0.07	0.02			PCI/GDRY
	NAREL GAM-01-RA	Cs137	1600017: B6.04150E	0.01	0.01	0.01	J,	J	PCI/GDRY
	NAREL GAM-01-RA	K40	1600017: B6.04150E	11.5	1.29	0.09			PCI/GDRY
	NAREL GAM-01-RA	Pb210	1600017: B6.04150E	0.59	0.19	0.23	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Pb212	1600017: B6.04150E	0.55	0.06	0.01			PCI/GDRY
	NAREL GAM-01-RA	Pb214	1600017: B6.04150E	0.66	0.08	0.02			PCI/GDRY
	NAREL GAM-01-RA	Ra226	1600017: B6.04150E	1.02	0.2	0.2			PCI/GDRY
	NAREL GAM-01-RA	Ra228	1600017: B6.04150E	0.56	0.07	0.04			PCI/GDRY
	NAREL GAM-01-RA	Th234	1600017: B6.04150E	0.37	0.15	0.22			PCI/GDRY
	NAREL GAM-01-RA	Tl208	1600017: B6.04150E	0.17	0.02	0.01			PCI/GDRY
	NAREL GAM-01-RA	U235	1600017: B6.04150E	0.04	0.04	0.05	J, R	R	PCI/GDRY
C3-SB15-0012-01									
	NAREL ACT-02F-TH	Th227	1600017: B6.04151F	0.12	0.06	0.04			PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600017: B6.04151F	0.92	0.14	0.03			PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600017: B6.04151F	0.78	0.13	0.06			PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600017: B6.04151F	0.84	0.14	0.03			PCI/GDRY
	NAREL ACT-02F-U	U234	1600017: B6.04151F	0.53	0.1	0.05			PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL ACT-02F-U	U235	1600017: B6.04151F	0.03	0.03	0.04	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600017: B6.04151F	0.6	0.11	0.04			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600017: B6.04151F	1.04	0.18	0.14			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600017: B6.04151F	0.87	0.1	0.03			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600017: B6.04151F	0.07	0.01	0.01			PCI/GDRY
NAREL GAM-01-RA	K40	1600017: B6.04151F	13.5	1.51	0.12			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600017: B6.04151F	1.38	0.28	0.28	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb212	1600017: B6.04151F	0.86	0.1	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600017: B6.04151F	1.05	0.12	0.03			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600017: B6.04151F	1.79	0.29	0.24			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600017: B6.04151F	0.86	0.11	0.05			PCI/GDRY
NAREL GAM-01-RA	Th234	1600017: B6.04151F	0.79	0.27	0.3			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600017: B6.04151F	0.26	0.03	0.01			PCI/GDRY
C3-SB15-2436-01								
NAREL ACT-02F-TH	Th227	1600017: B6.04152G	0.09	0.05	0.04			PCI/GDRY
NAREL ACT-02F-TH	Th228	1600017: B6.04152G	0.81	0.13	0.03			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600017: B6.04152G	0.54	0.1	0.06			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600017: B6.04152G	0.85	0.13	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600017: B6.04152G	0.52	0.1	0.03			PCI/GDRY
NAREL ACT-02F-U	U235	1600017: B6.04152G	0.03	0.03	0.03	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600017: B6.04152G	0.46	0.1	0.02			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600017: B6.04152G	1.03	0.14	0.09			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600017: B6.04152G	0.55	0.06	0.02			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600017: B6.04152G	0.01	0	0.01			PCI/GDRY
NAREL GAM-01-RA	K40	1600017: B6.04152G	12.9	1.42	0.06			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600017: B6.04152G	0.56	0.16	0.2	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb212	1600017: B6.04152G	0.88	0.1	0.01			PCI/GDRY

Client Sample ID	Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
	NAREL GAM-01-RA	Pb214	1600017: B6.04152G	0.65	0.07	0.02			PCI/GDRY
	NAREL GAM-01-RA	Ra226	1600017: B6.04152G	1.16	0.18	0.16			PCI/GDRY
	NAREL GAM-01-RA	Ra228	1600017: B6.04152G	0.9	0.1	0.03			PCI/GDRY
	NAREL GAM-01-RA	Th234	1600017: B6.04152G	0.6	0.16	0.21			PCI/GDRY
	NAREL GAM-01-RA	Tl208	1600017: B6.04152G	0.28	0.03	0.01			PCI/GDRY
C3-SB16-0012-01									
	NAREL ACT-02F-TH	Th227	1600017: B6.04153H	0.11	0.06	0.03			PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600017: B6.04153H	0.67	0.12	0.02			PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600017: B6.04153H	0.49	0.1	0.06			PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600017: B6.04153H	0.6	0.11	0.02			PCI/GDRY
	NAREL ACT-02F-U	U234	1600017: B6.04153H	0.49	0.1	0.03			PCI/GDRY
	NAREL ACT-02F-U	U235	1600017: B6.04153H	0	0.01	0.03	U,	U	PCI/GDRY
	NAREL ACT-02F-U	U238	1600017: B6.04153H	0.48	0.1	0.03			PCI/GDRY
	NAREL GAM-01-RA	Bi212	1600017: B6.04153H	0.97	0.19	0.16			PCI/GDRY
	NAREL GAM-01-RA	Bi214	1600017: B6.04153H	0.39	0.05	0.03			PCI/GDRY
	NAREL GAM-01-RA	Cs137	1600017: B6.04153H	0	0.01	0.01	U,	U	PCI/GDRY
	NAREL GAM-01-RA	K40	1600017: B6.04153H	16.9	1.88	0.14			PCI/GDRY
	NAREL GAM-01-RA	Pb210	1600017: B6.04153H	0.62	0.18	0.22	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Pb212	1600017: B6.04153H	0.77	0.09	0.02			PCI/GDRY
	NAREL GAM-01-RA	Pb214	1600017: B6.04153H	0.48	0.06	0.03			PCI/GDRY
	NAREL GAM-01-RA	Ra226	1600017: B6.04153H	0.87	0.22	0.22			PCI/GDRY
	NAREL GAM-01-RA	Ra228	1600017: B6.04153H	0.8	0.1	0.05			PCI/GDRY
	NAREL GAM-01-RA	Th234	1600017: B6.04153H	0.69	0.27	0.28			PCI/GDRY
	NAREL GAM-01-RA	Tl208	1600017: B6.04153H	0.22	0.03	0.01			PCI/GDRY
C3-SB16-3648-01									
	NAREL ACT-02F-TH	Th227	1600017: B6.04154J	0.12	0.06	0.03			PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600017: B6.04154J	0.81	0.13	0.03			PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL ACT-02F-TH	Th230	1600017: B6.04154J	0.7	0.12	0.06			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600017: B6.04154J	0.86	0.14	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600017: B6.04154J	0.59	0.13	0.03			PCI/GDRY
NAREL ACT-02F-U	U235	1600017: B6.04154J	0.02	0.03	0.04	U,	U	PCI/GDRY
NAREL ACT-02F-U	U238	1600017: B6.04154J	0.51	0.12	0.03			PCI/GDRY
NAREL GAM-01-RA	Bi212	1600017: B6.04154J	0.99	0.14	0.09			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600017: B6.04154J	0.54	0.06	0.02			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600017: B6.04154J	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600017: B6.04154J	13	1.44	0.06			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600017: B6.04154J	0.55	0.17	0.21	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb212	1600017: B6.04154J	0.9	0.1	0.01			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600017: B6.04154J	0.62	0.07	0.02			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600017: B6.04154J	1.11	0.18	0.17			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600017: B6.04154J	0.94	0.11	0.02			PCI/GDRY
NAREL GAM-01-RA	Th234	1600017: B6.04154J	0.61	0.17	0.23			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600017: B6.04154J	0.29	0.03	0.01			PCI/GDRY
C3-SB2-0012-01								
NAREL ACT-02F-TH	Th227	1600016: B6.04125D	0.08	0.06	0.06	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600016: B6.04125D	0.62	0.15	0.05	B+, S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600016: B6.04125D	0.61	0.15	0.08	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600016: B6.04125D	0.5	0.13	0.04	PP1, S+,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04125D	0.5	0.09	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04125D	0.4	0.09	0.02	B+,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04125D	0.04	0.03	0.04			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04125D	0.02	0.02	0.03	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04125D	0.46	0.09	0.02			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04125D	0.42	0.1	0.02	PP, B+,	J	PCI/GDRY

Client Sample ID	Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
	NAREL GAM-01-RA	Bi212	1600016: B6.04125D	0.62	0.16	0.16			PCI/GDRY
	NAREL GAM-01-RA	Bi214	1600016: B6.04125D	0.43	0.06	0.03			PCI/GDRY
	NAREL GAM-01-RA	Cs137	1600016: B6.04125D	-0.01	0.01	0.01	U,	U	PCI/GDRY
	NAREL GAM-01-RA	K40	1600016: B6.04125D	12.7	1.42	0.13			PCI/GDRY
	NAREL GAM-01-RA	Pb210	1600016: B6.04125D	0.8	0.2	0.22			PCI/GDRY
	NAREL GAM-01-RA	Pb212	1600016: B6.04125D	0.56	0.06	0.02			PCI/GDRY
	NAREL GAM-01-RA	Pb214	1600016: B6.04125D	0.49	0.06	0.03			PCI/GDRY
	NAREL GAM-01-RA	Ra226	1600016: B6.04125D	0.89	0.22	0.22			PCI/GDRY
	NAREL GAM-01-RA	Ra228	1600016: B6.04125D	0.52	0.07	0.05			PCI/GDRY
	NAREL GAM-01-RA	Th234	1600016: B6.04125D	0.52	0.25	0.28			PCI/GDRY
	NAREL GAM-01-RA	Tl208	1600016: B6.04125D	0.16	0.02	0.01			PCI/GDRY
C3-SB2-1224-01									
	NAREL ACT-02F-TH	Th227	1600016: B6.04126E	0.05	0.05	0.06	J, S+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600016: B6.04126E	0.81	0.17	0.06	B+, S+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600016: B6.04126E	0.72	0.16	0.07	S+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600016: B6.04126E	0.66	0.15	0.03	PP1, S+,	J	PCI/GDRY
	NAREL ACT-02F-U	U234	1600016: B6.04126E	0.43	0.09	0.04			PCI/GDRY
	NAREL ACT-02F-U	U234	1600016: B6.04126E	0.55	0.12	0.05	B+,	J	PCI/GDRY
	NAREL ACT-02F-U	U235	1600016: B6.04126E	0.03	0.04	0.06	J,	J	PCI/GDRY
	NAREL ACT-02F-U	U235	1600016: B6.04126E	0.04	0.03	0.05	J,	J	PCI/GDRY
	NAREL ACT-02F-U	U238	1600016: B6.04126E	0.47	0.09	0.04			PCI/GDRY
	NAREL ACT-02F-U	U238	1600016: B6.04126E	0.55	0.12	0.06	PP, B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Bi212	1600016: B6.04126E	1.02	0.14	0.1			PCI/GDRY
	NAREL GAM-01-RA	Bi214	1600016: B6.04126E	0.88	0.1	0.02			PCI/GDRY
	NAREL GAM-01-RA	Cs137	1600016: B6.04126E	0.01	0.01	0.01	J,	J	PCI/GDRY
	NAREL GAM-01-RA	K40	1600016: B6.04126E	13	1.44	0.07			PCI/GDRY
	NAREL GAM-01-RA	Pb210	1600016: B6.04126E	0.85	0.2	0.24			PCI/GDRY

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Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL GAM-01-RA	Pb212	1600016: B6.04126E	0.91	0.1	0.01			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600016: B6.04126E	1.01	0.11	0.02			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600016: B6.04126E	1.64	0.24	0.19			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600016: B6.04126E	0.91	0.1	0.03			PCI/GDRY
NAREL GAM-01-RA	Th234	1600016: B6.04126E	0.55	0.17	0.24			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600016: B6.04126E	0.29	0.03	0.01			PCI/GDRY
C3-SB3-0012-01								
NAREL ACT-02F-TH	Th227	1600016: B6.04127F	0.06	0.04	0.03	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600016: B6.04127F	0.67	0.11	0.02	B+, S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600016: B6.04127F	0.47	0.09	0.05	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600016: B6.04127F	0.69	0.12	0.02	PP1, S+,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04127F	0.57	0.12	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04127F	0.5	0.11	0.04	B+,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04127F	0.02	0.03	0.04	U,	U	PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04127F	0.01	0.02	0.04	U,	U	PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04127F	0.57	0.12	0.03			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04127F	0.48	0.11	0.03	PP, B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600016: B6.04127F	0.83	0.17	0.15			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600016: B6.04127F	0.51	0.06	0.02			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600016: B6.04127F	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600016: B6.04127F	16.5	1.83	0.1			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600016: B6.04127F	0.32	0.12	0.15			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600016: B6.04127F	0.76	0.09	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600016: B6.04127F	0.58	0.07	0.02			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600016: B6.04127F	1.01	0.2	0.2			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600016: B6.04127F	0.78	0.09	0.05			PCI/GDRY
NAREL GAM-01-RA	Th234	1600016: B6.04127F	0.41	0.14	0.19			PCI/GDRY

Client Sample ID	Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
	NAREL GAM-01-RA	Tl208	1600016: B6.04127F	0.24	0.03	0.01			PCI/GDRY
C3-SB3-1224-01									
	NAREL ACT-02F-TH	Th227	1600016: B6.04128G	0.07	0.04	0.04	S+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600016: B6.04128G	0.86	0.14	0.03	S+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600016: B6.04128G	0.8	0.13	0.06	S+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600016: B6.04128G	0.88	0.14	0.02	PP1, S+,	J	PCI/GDRY
	NAREL ACT-02F-U	U234	1600016: B6.04128G	0.58	0.12	0.02			PCI/GDRY
	NAREL ACT-02F-U	U234	1600016: B6.04128G	0.61	0.11	0.03			PCI/GDRY
	NAREL ACT-02F-U	U235	1600016: B6.04128G	0.03	0.03	0.03	J,	J	PCI/GDRY
	NAREL ACT-02F-U	U235	1600016: B6.04128G	0.02	0.02	0.03	J,	J	PCI/GDRY
	NAREL ACT-02F-U	U238	1600016: B6.04128G	0.6	0.11	0.03			PCI/GDRY
	NAREL ACT-02F-U	U238	1600016: B6.04128G	0.66	0.13	0.02	PP,	J	PCI/GDRY
	NAREL GAM-01-RA	Bi212	1600016: B6.04128G	0.88	0.18	0.16			PCI/GDRY
	NAREL GAM-01-RA	Bi214	1600016: B6.04128G	0.63	0.07	0.02			PCI/GDRY
	NAREL GAM-01-RA	Cs137	1600016: B6.04128G	0.01	0.01	0.01			PCI/GDRY
	NAREL GAM-01-RA	K40	1600016: B6.04128G	13.2	1.47	0.12			PCI/GDRY
	NAREL GAM-01-RA	Pb210	1600016: B6.04128G	0.65	0.16	0.21			PCI/GDRY
	NAREL GAM-01-RA	Pb212	1600016: B6.04128G	0.79	0.09	0.02			PCI/GDRY
	NAREL GAM-01-RA	Pb214	1600016: B6.04128G	0.71	0.08	0.03			PCI/GDRY
	NAREL GAM-01-RA	Ra226	1600016: B6.04128G	1.24	0.2	0.2			PCI/GDRY
	NAREL GAM-01-RA	Ra228	1600016: B6.04128G	0.84	0.1	0.06			PCI/GDRY
	NAREL GAM-01-RA	Th234	1600016: B6.04128G	0.56	0.16	0.22			PCI/GDRY
	NAREL GAM-01-RA	Tl208	1600016: B6.04128G	0.27	0.03	0.02			PCI/GDRY
C3-SB4-0012-01									
	NAREL ACT-02F-TH	Th227	1600016: B6.04129H	0.07	0.04	0.03	S+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600016: B6.04129H	0.51	0.09	0.02	S+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600016: B6.04129H	0.56	0.1	0.05	S+,	J	PCI/GDRY

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Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL ACT-02F-TH	Th232	1600016: B6.04129H	0.52	0.09	0.01	PP1, S+,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04129H	0.6	0.11	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04129H	0.47	0.09	0.02			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04129H	0.04	0.03	0.03			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04129H	0.04	0.03	0.02			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04129H	0.6	0.11	0.02			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04129H	0.52	0.1	0.02	PP,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600016: B6.04129H	0.82	0.16	0.15			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600016: B6.04129H	0.78	0.09	0.02			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600016: B6.04129H	0.01	0.01	0.01			PCI/GDRY
NAREL GAM-01-RA	K40	1600016: B6.04129H	13.1	1.46	0.13			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600016: B6.04129H	0.77	0.2	0.25			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600016: B6.04129H	0.63	0.07	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600016: B6.04129H	0.92	0.1	0.03			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600016: B6.04129H	1.39	0.24	0.23			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600016: B6.04129H	0.68	0.08	0.04			PCI/GDRY
NAREL GAM-01-RA	Th234	1600016: B6.04129H	0.33	0.17	0.25			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600016: B6.04129H	0.19	0.02	0.01			PCI/GDRY
NAREL GAM-01-RA	U235	1600016: B6.04129H	0.06	0.04	0.06	J, R	R	PCI/GDRY
C3-SB4-1224-01								
NAREL ACT-02F-TH	Th227	1600016: B6.04130A	0.07	0.04	0.04	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600016: B6.04130A	0.78	0.13	0.03	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600016: B6.04130A	0.58	0.11	0.06	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600016: B6.04130A	0.72	0.12	0.02	PP1, S+,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04130A	0.67	0.13	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04130A	0.59	0.12	0.03			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04130A	0.02	0.02	0.04	U,	U	PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL ACT-02F-U	U235	1600016: B6.04130A	0.02	0.02	0.03	U,	U	PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04130A	0.64	0.12	0.03			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04130A	0.64	0.12	0.02	PP,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600016: B6.04130A	1.11	0.19	0.15			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600016: B6.04130A	0.63	0.07	0.02			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600016: B6.04130A	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600016: B6.04130A	13.3	1.48	0.08			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600016: B6.04130A	0.64	0.16	0.21			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600016: B6.04130A	1	0.11	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600016: B6.04130A	0.74	0.08	0.02			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600016: B6.04130A	1.31	0.2	0.19			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600016: B6.04130A	0.99	0.11	0.05			PCI/GDRY
NAREL GAM-01-RA	Th234	1600016: B6.04130A	0.58	0.16	0.23			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600016: B6.04130A	0.3	0.04	0.01			PCI/GDRY
NAREL GAM-01-RA	U235	1600016: B6.04130A	0.06	0.04	0.06	R	R	PCI/GDRY
C3-SB5-0012-01								
NAREL ACT-02F-TH	Th227	1600016: B6.04131B	0.13	0.07	0.04	P, B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600016: B6.04131B	0.3	0.09	0.06			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600016: B6.04131B	0.31	0.1	0.09			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600016: B6.04131B	0.27	0.08	0.04			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04131B	0.39	0.1	0.05			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04131B	0.34	0.07	0.02			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04131B	0.02	0.02	0.02			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04131B	0.02	0.02	0.04	U,	U	PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04131B	0.48	0.11	0.03			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04131B	0.32	0.07	0.01	PP,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600016: B6.04131B	0.42	0.18	0.18			PCI/GDRY

Client Sample ID	Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
	NAREL GAM-01-RA	Bi214	1600016: B6.04131B	0.36	0.05	0.03			PCI/GDRY
	NAREL GAM-01-RA	Cs137	1600016: B6.04131B	0	0.01	0.01	U,	U	PCI/GDRY
	NAREL GAM-01-RA	K40	1600016: B6.04131B	4.78	0.57	0.15			PCI/GDRY
	NAREL GAM-01-RA	Pb210	1600016: B6.04131B	0.65	0.18	0.21			PCI/GDRY
	NAREL GAM-01-RA	Pb212	1600016: B6.04131B	0.31	0.04	0.02			PCI/GDRY
	NAREL GAM-01-RA	Pb214	1600016: B6.04131B	0.44	0.06	0.03			PCI/GDRY
	NAREL GAM-01-RA	Ra226	1600016: B6.04131B	0.87	0.24	0.24			PCI/GDRY
	NAREL GAM-01-RA	Ra228	1600016: B6.04131B	0.29	0.06	0.06			PCI/GDRY
	NAREL GAM-01-RA	Th234	1600016: B6.04131B	0.47	0.25	0.27			PCI/GDRY
	NAREL GAM-01-RA	Tl208	1600016: B6.04131B	0.1	0.02	0.02			PCI/GDRY
C3-SB6-0012-01									
	NAREL ACT-02F-TH	Th227	1600016: B6.04132C	0.04	0.04	0.05	J, P, B+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th227	1600016: B6.04132C	0.13	0.08	0.06	P, B+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600016: B6.04132C	0.51	0.12	0.05			PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600016: B6.04132C	0.59	0.13	0.06			PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600016: B6.04132C	0.72	0.16	0.1			PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600016: B6.04132C	0.73	0.15	0.1			PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600016: B6.04132C	0.51	0.12	0.03			PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600016: B6.04132C	0.45	0.11	0.04			PCI/GDRY
	NAREL ACT-02F-U	U234	1600016: B6.04132C	0.44	0.09	0.02			PCI/GDRY
	NAREL ACT-02F-U	U234	1600016: B6.04132C	0.48	0.1	0.02			PCI/GDRY
	NAREL ACT-02F-U	U235	1600016: B6.04132C	0.02	0.02	0.03	J,	J	PCI/GDRY
	NAREL ACT-02F-U	U235	1600016: B6.04132C	0.01	0.02	0.02	U,	U	PCI/GDRY
	NAREL ACT-02F-U	U238	1600016: B6.04132C	0.39	0.08	0.02			PCI/GDRY
	NAREL ACT-02F-U	U238	1600016: B6.04132C	0.42	0.09	0.02	PP,	J	PCI/GDRY
	NAREL GAM-01-RA	Bi212	1600016: B6.04132C	0.56	0.18	0.17			PCI/GDRY
	NAREL GAM-01-RA	Bi214	1600016: B6.04132C	2.24	0.25	0.03			PCI/GDRY

Client Sample ID	Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
	NAREL GAM-01-RA	Cs137	1600016: B6.04132C	0.02	0.01	0.01			PCI/GDRY
	NAREL GAM-01-RA	K40	1600016: B6.04132C	10.1	1.14	0.17			PCI/GDRY
	NAREL GAM-01-RA	Pb210	1600016: B6.04132C	2.79	0.4	0.29			PCI/GDRY
	NAREL GAM-01-RA	Pb212	1600016: B6.04132C	0.57	0.07	0.02			PCI/GDRY
	NAREL GAM-01-RA	Pb214	1600016: B6.04132C	2.65	0.29	0.03			PCI/GDRY
	NAREL GAM-01-RA	Ra226	1600016: B6.04132C	3.72	0.49	0.3			PCI/GDRY
	NAREL GAM-01-RA	Ra228	1600016: B6.04132C	0.57	0.08	0.05			PCI/GDRY
	NAREL GAM-01-RA	Th234	1600016: B6.04132C	0.07	0.24	0.34	U,	U	PCI/GDRY
	NAREL GAM-01-RA	Tl208	1600016: B6.04132C	0.17	0.02	0.01			PCI/GDRY
C3-SB6-3648-01									
	NAREL ACT-02F-TH	Th227	1600016: B6.04133D	0	0.01	0.02	U, S+,	UJ	PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600016: B6.04133D	0.63	0.1	0.02	S+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600016: B6.04133D	0.43	0.08	0.04	S+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600016: B6.04133D	0.57	0.09	0.01	PP1, S+,	J	PCI/GDRY
	NAREL ACT-02F-U	U234	1600016: B6.04133D	0.6	0.12	0.02			PCI/GDRY
	NAREL ACT-02F-U	U234	1600016: B6.04133D	0.6	0.12	0.02			PCI/GDRY
	NAREL ACT-02F-U	U235	1600016: B6.04133D	0.04	0.03	0.02			PCI/GDRY
	NAREL ACT-02F-U	U235	1600016: B6.04133D	0.01	0.02	0.03	U,	U	PCI/GDRY
	NAREL ACT-02F-U	U238	1600016: B6.04133D	0.53	0.11	0.02			PCI/GDRY
	NAREL ACT-02F-U	U238	1600016: B6.04133D	0.57	0.11	0.02	PP,	J	PCI/GDRY
	NAREL GAM-01-RA	Bi212	1600016: B6.04133D	1.02	0.15	0.11			PCI/GDRY
	NAREL GAM-01-RA	Bi214	1600016: B6.04133D	0.48	0.06	0.02			PCI/GDRY
	NAREL GAM-01-RA	Cs137	1600016: B6.04133D	0	0.01	0.01	U,	U	PCI/GDRY
	NAREL GAM-01-RA	K40	1600016: B6.04133D	13.8	1.52	0.06			PCI/GDRY
	NAREL GAM-01-RA	Pb210	1600016: B6.04133D	0.36	0.1	0.12			PCI/GDRY
	NAREL GAM-01-RA	Pb212	1600016: B6.04133D	0.87	0.1	0.01			PCI/GDRY
	NAREL GAM-01-RA	Pb214	1600016: B6.04133D	0.58	0.07	0.02			PCI/GDRY

Client Sample ID								
Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL GAM-01-RA	Ra226	1600016: B6.04133D	1.12	0.18	0.16			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600016: B6.04133D	0.92	0.1	0.03			PCI/GDRY
NAREL GAM-01-RA	Th234	1600016: B6.04133D	0.58	0.13	0.16			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600016: B6.04133D	0.28	0.03	0.01			PCI/GDRY
C3-SB7-0012-01								
NAREL ACT-02F-TH	Th227	1600016: B6.04134E	0.11	0.08	0.08	P, B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600016: B6.04134E	0.5	0.12	0.07			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600016: B6.04134E	1.67	0.27	0.11			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600016: B6.04134E	0.41	0.11	0.04			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04134E	0.41	0.09	0.05			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04134E	0.5	0.1	0.02			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04134E	0.03	0.02	0.03			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04134E	0	0.02	0.04	U,	U	PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04134E	0.41	0.09	0.03			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04134E	0.42	0.09	0.02	PP,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600016: B6.04134E	0.45	0.1	0.12			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600016: B6.04134E	2.78	0.31	0.02			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600016: B6.04134E	-0.01	0.01	0.02	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600016: B6.04134E	10.6	1.18	0.11			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600016: B6.04134E	2.65	0.37	0.26			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600016: B6.04134E	0.42	0.05	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600016: B6.04134E	3.19	0.35	0.03			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600016: B6.04134E	3.84	0.47	0.24			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600016: B6.04134E	0.45	0.06	0.04			PCI/GDRY
NAREL GAM-01-RA	Th234	1600016: B6.04134E	0.56	0.16	0.24			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600016: B6.04134E	0.14	0.02	0.01			PCI/GDRY
C3-SB7-3648-01								

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL ACT-02F-TH	Th227	1600016: B6.04135F	0	0.01	0.03	U, S+,	UJ	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600016: B6.04135F	0.76	0.12	0.03	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600016: B6.04135F	0.6	0.1	0.05	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600016: B6.04135F	0.7	0.11	0.02	PP1, S+,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04135F	0.61	0.12	0.03			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04135F	0.56	0.11	0.03			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04135F	0.03	0.03	0.03			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04135F	0.03	0.03	0.02			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04135F	0.54	0.11	0.02			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04135F	0.62	0.12	0.03	PP,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600016: B6.04135F	0.77	0.18	0.16			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600016: B6.04135F	0.73	0.09	0.02			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600016: B6.04135F	-0.01	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600016: B6.04135F	9	1.01	0.11			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600016: B6.04135F	0.45	0.15	0.16			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600016: B6.04135F	0.69	0.08	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600016: B6.04135F	0.88	0.1	0.03			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600016: B6.04135F	1.3	0.23	0.2			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600016: B6.04135F	0.68	0.08	0.04			PCI/GDRY
NAREL GAM-01-RA	Th234	1600016: B6.04135F	0.61	0.19	0.21			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600016: B6.04135F	0.21	0.03	0.01			PCI/GDRY
C3-SB8-0012-01								
NAREL ACT-02F-TH	Th227	1600016: B6.04136G	0.18	0.09	0.04	P, B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600016: B6.04136G	0.36	0.1	0.05			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600016: B6.04136G	0.56	0.13	0.09			PCI/GDRY
NAREL ACT-02F-TH	Th232	1600016: B6.04136G	0.34	0.09	0.03			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04136G	0.37	0.08	0.02			PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL ACT-02F-U	U234	1600016: B6.04136G	0.48	0.11	0.03			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04136G	0.04	0.03	0.04			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04136G	0.02	0.02	0.02	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04136G	0.41	0.1	0.04			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04136G	0.38	0.08	0.02	PP,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600016: B6.04136G	0.31	0.14	0.14			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600016: B6.04136G	0.47	0.06	0.02			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600016: B6.04136G	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600016: B6.04136G	9.27	1.05	0.15			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600016: B6.04136G	0.45	0.17	0.21			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600016: B6.04136G	0.44	0.05	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600016: B6.04136G	0.49	0.06	0.02			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600016: B6.04136G	0.71	0.21	0.22			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600016: B6.04136G	0.44	0.06	0.05			PCI/GDRY
NAREL GAM-01-RA	Th234	1600016: B6.04136G	0.3	0.16	0.23			PCI/GDRY
NAREL GAM-01-RA	Tl208	1600016: B6.04136G	0.12	0.02	0.01			PCI/GDRY
C3-SB8-1224-01								
NAREL ACT-02F-TH	Th227	1600016: B6.04137H	0.23	0.08	0.04	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600016: B6.04137H	0.68	0.12	0.03	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th230	1600016: B6.04137H	3.64	0.44	0.06	S+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600016: B6.04137H	0.58	0.11	0.02	PP1, S+,	J	PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04137H	0.54	0.1	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600016: B6.04137H	0.48	0.1	0.02			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04137H	0.03	0.03	0.02			PCI/GDRY
NAREL ACT-02F-U	U235	1600016: B6.04137H	0.02	0.02	0.03	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04137H	0.48	0.09	0.02			PCI/GDRY
NAREL ACT-02F-U	U238	1600016: B6.04137H	0.57	0.11	0.02	PP,	J	PCI/GDRY

Client Sample ID

Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
NAREL GAM-01-RA	Bi212	1600016: B6.04137H	0.75	0.14	0.16			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600016: B6.04137H	9.46	1.04	0.03			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600016: B6.04137H	0	0.01	0.02	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600016: B6.04137H	12.4	1.38	0.15			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600016: B6.04137H	12	1.43	0.47			PCI/GDRY
NAREL GAM-01-RA	Pb212	1600016: B6.04137H	0.68	0.08	0.04			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600016: B6.04137H	10.8	1.19	0.04			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600016: B6.04137H	12.2	1.41	0.46			PCI/GDRY
NAREL GAM-01-RA	Ra228	1600016: B6.04137H	0.66	0.08	0.06			PCI/GDRY
NAREL GAM-01-RA	Th234	1600016: B6.04137H	0.26	0.48	0.57	U,	U	PCI/GDRY
NAREL GAM-01-RA	Tl208	1600016: B6.04137H	0.21	0.03	0.01			PCI/GDRY
C3-SB9-0012-01								
NAREL ACT-02F-TH	Th227	1600017: B6.04138J	0.07	0.05	0.04	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th228	1600017: B6.04138J	0.38	0.08	0.04			PCI/GDRY
NAREL ACT-02F-TH	Th230	1600017: B6.04138J	0.55	0.11	0.07	B+,	J	PCI/GDRY
NAREL ACT-02F-TH	Th232	1600017: B6.04138J	0.32	0.07	0.02			PCI/GDRY
NAREL ACT-02F-U	U234	1600017: B6.04138J	0.37	0.09	0.03	B+,	J	PCI/GDRY
NAREL ACT-02F-U	U235	1600017: B6.04138J	0.02	0.02	0.03	J,	J	PCI/GDRY
NAREL ACT-02F-U	U238	1600017: B6.04138J	0.37	0.08	0.03	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Bi212	1600017: B6.04138J	0.31	0.17	0.17			PCI/GDRY
NAREL GAM-01-RA	Bi214	1600017: B6.04138J	0.66	0.08	0.03			PCI/GDRY
NAREL GAM-01-RA	Cs137	1600017: B6.04138J	0	0.01	0.01	U,	U	PCI/GDRY
NAREL GAM-01-RA	K40	1600017: B6.04138J	9.17	1.04	0.15			PCI/GDRY
NAREL GAM-01-RA	Pb210	1600017: B6.04138J	0.55	0.2	0.23	B+,	J	PCI/GDRY
NAREL GAM-01-RA	Pb212	1600017: B6.04138J	0.38	0.04	0.02			PCI/GDRY
NAREL GAM-01-RA	Pb214	1600017: B6.04138J	0.79	0.09	0.03			PCI/GDRY
NAREL GAM-01-RA	Ra226	1600017: B6.04138J	1.04	0.26	0.26			PCI/GDRY

Client Sample ID	Method	Isotope	S D G : Lab Sample ID	Conc	2 S	M D C	Interim Qualifiers	Final Qualifier	Units
	NAREL GAM-01-RA	Ra228	1600017: B6.04138J	0.4	0.06	0.04			PCI/GDRY
	NAREL GAM-01-RA	Th234	1600017: B6.04138J	0.18	0.2	0.28	J,	J	PCI/GDRY
	NAREL GAM-01-RA	Tl208	1600017: B6.04138J	0.1	0.02	0.01			PCI/GDRY
C3-SB9-1224-01									
	NAREL ACT-02F-TH	Th227	1600017: B6.04139K	0	0.01	0.04	U, B+,	UJ	PCI/GDRY
	NAREL ACT-02F-TH	Th228	1600017: B6.04139K	0.46	0.09	0.03			PCI/GDRY
	NAREL ACT-02F-TH	Th230	1600017: B6.04139K	0.95	0.14	0.06	B+,	J	PCI/GDRY
	NAREL ACT-02F-TH	Th232	1600017: B6.04139K	0.5	0.09	0.01			PCI/GDRY
	NAREL ACT-02F-U	U234	1600017: B6.04139K	0.46	0.08	0.02	B+,	J	PCI/GDRY
	NAREL ACT-02F-U	U235	1600017: B6.04139K	0.02	0.02	0.02	J,	J	PCI/GDRY
	NAREL ACT-02F-U	U238	1600017: B6.04139K	0.54	0.09	0.01	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Bi212	1600017: B6.04139K	0.66	0.17	0.17			PCI/GDRY
	NAREL GAM-01-RA	Bi214	1600017: B6.04139K	1.46	0.16	0.03			PCI/GDRY
	NAREL GAM-01-RA	Cs137	1600017: B6.04139K	-0.01	0.01	0.02	U,	U	PCI/GDRY
	NAREL GAM-01-RA	K40	1600017: B6.04139K	12	1.34	0.12			PCI/GDRY
	NAREL GAM-01-RA	Pb210	1600017: B6.04139K	1.45	0.22	0.2	B+,	J	PCI/GDRY
	NAREL GAM-01-RA	Pb212	1600017: B6.04139K	0.53	0.06	0.02			PCI/GDRY
	NAREL GAM-01-RA	Pb214	1600017: B6.04139K	1.66	0.19	0.03			PCI/GDRY
	NAREL GAM-01-RA	Ra226	1600017: B6.04139K	2.15	0.29	0.22			PCI/GDRY
	NAREL GAM-01-RA	Ra228	1600017: B6.04139K	0.57	0.08	0.06			PCI/GDRY
	NAREL GAM-01-RA	Th234	1600017: B6.04139K	0.41	0.17	0.24			PCI/GDRY
	NAREL GAM-01-RA	Tl208	1600017: B6.04139K	0.17	0.02	0.02			PCI/GDRY

Qualifier Explanation: See section 3 of the memo DCN: RST-03F-0013

Conc	Concentratio
2 S	Total propagated Uncertainty at 2 standard deviatio
M D C	Minimum detectable concentration
S D G	Sample data group

ED_006395_00001795-00073

Radiological Data Verification/Validation Checklist

Site Name:_Canadain Uranium and Radium Corporation Site ____ Analytical Laboratory: National Air and Radiation Environmental Laboratory (NAREL)

Case Number_____TDD: TO-0006-0053 _____ Reviewer _____Rick Haaker, CHP, CIH__ Date _____Aug 31, 2016

RF Haaker

Part 1 - Sample Handling and Analysis Evaluation

MARLAP Ref.	Criteria	Yes	No	NA	Comments
8.5.1.1	Sample Descriptors - Each sample has a unique ID code which is cross-reference to unique Lab ID	X			
8.5.1.2	Aliquant Size - amount of sample used in analysis provided	X			
8.5.1.3	Dates of sample collection, sample prep and sample analysis provided	X			
8.5.1.4	Samples properly preserved	X			
8.5.1.5	Each analytical result linked to instrument/detector	X			
8.5.1.6	Traceability of standards and reference materials provided		X		Documentation not provided in the packages
8.5.1.7	QC samples analyzed	X	X		Not a complete set of QA samples. Apparently there were no method blanks no field samples were handled as matrix spikes or matrix spike duplicates.
8.5.1.8	Yield (chemical separation, carrier and/or radiotracer) within acceptable ranges	X			Tracer / carrier performance was acceptable. The identity of the tracer or carrier is not evident from the reports provided by NAREL however.
8.5.1.9	Self-absorption curve provided		X		Curves not provided in the reports.
8.5.1.10	Efficiency, calibration curves and instrument background information provided	X	X		Only backgrounds were provided
8.5.1.11	Spectrometry resolution data provided		X		
8.5.1.12	Dilution factors and corrections factors addressed and documentation provided.		X		Not provided in data packages.
8.5.1.13	Count Time for each sample, QC analysis and instrument background provided	X			
8.5.1.14	For each measurement: 1) Measurement uncertainty reported 2) Analyte MDC reported 3) Appropriate units used	 X X X			

*** Covers NAREL data packages** 1600015, 1600016, and 1600017 .

Part 2 - Quality Control

MARLAP Ref.	Criteria	Yes	No	NA	Comments
8.5.2.1	Method Blanks analyzed and no detected concentration/activity found		X		Backgrounds provided but no method blanks results provided.
8.5.2.2	Laboratory Control Samples analyzed and within acceptable ranges	X			Except where noted in the memo to which this checklist is attached
8.5.2.3	Laboratory replicates analyzed and within control limits	X			Except where noted in the memo to which this checklist is attached
8.5.2.4	Matrix Spikes/Matrix Spike Duplicate analyzed and within established criteria		X		Matrix spikes were apparently not analyzed.
8.5.3.1	Test of detection information (critical value) provided.		X	X	The MDC was provided but it was not based on alpha = beta = 0.05. The critical value was not required by QAPP and not provided in all cases. The critical level was approximated as 1.645 times the TPU.
8.5.3.2	Detection Capability: Required Minimum Detectable Concentration (RMDC) less than the Minimum Detectable Concentration (MDC) for each analyte	X			
8.5.3.3	Uncertainty 1. Laboratory's combined standard uncertainty at concentrations lower that the action level less than required method uncertainty (expressed in concentration units) 2. Laboratory's relative combined standard uncertainty at concentrations above the action level less than required relative method uncertainty (express as a percent)			X X	No precision criteria was recognized in the QAPP for individual analytical results. Such samples would have received a final qualifier of J or U, depending on whether the critical level was exceeded, however.

Additional Comments: These data packages were missing much of the information that should normally be in CLP Level 4 equivalent data package.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RADIATION AND INDOOR AIR
National Analytical Radiation Environmental Laboratory
540 South Morris Avenue, Montgomery, AL 36115-2600
334-270-3400

June 22, 2016

MEMORANDUM

SUBJECT: Radiochemical Results for
Canadian Radium & Uranium Samples

FROM: Cynthia White, Director Cynthia White
Center for Environmental Radioanalytical Laboratory Science

TO: Daniel Gaughan, OSC
Region 2

Attached is a data package for gamma analysis of samples collected from Canadian Radium and Uranium Site in Mt. Kisco, NY. The samples constitute NAREL batch number 1600017. Also attached are data packages for isotopic uranium and thorium analysis of batch number 1600015.

Specific information concerning all aspects of the radiological analysis of the samples is contained in the batch case narratives of the data packages. If you have any questions concerning the analytical results, please contact me at (334)270-7052.

Due to a reorganization within the Office of Radiation and Indoor Air, the National Air and Radiation Environmental Laboratory is now called the National Analytical Radiation Environmental Laboratory (acronym remains the same, NAREL).

Attachments

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RADIATION AND INDOOR AIR
National Analytical Radiation Environmental Laboratory
640 South Morris Avenue, Montgomery, AL 36115-2600
334-270-3400

July 7, 2016

MEMORANDUM

SUBJECT: Radiochemical Results for
Canadian Radium & Uranium Samples

FROM: Cynthia White, Director
Center for Environmental Radioanalytical Laboratory Science

TO: Daniel Gaughan, OSC
Region 2

Attached is a data package for isotopic uranium analysis of samples collected from Canadian Radium and Uranium Site in Mt. Kisco, NY. The samples constitute NAREL batch number 1600016.

Specific information concerning all aspects of the radiological analysis of the samples is contained in the batch case narratives of the data packages. If you have any questions concerning the analytical results, please contact me at (334)270-7052.

Due to a reorganization within the Office of Radiation and Indoor Air, the National Air and Radiation Environmental Laboratory is now called the National Analytical Radiation Environmental Laboratory (acronym remains the same, NAREL).

Attachments

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RADIATION AND INDOOR AIR
National Analytical Radiation Environmental Laboratory
540 South Morris Avenue, Montgomery, AL 36115-2600
334-270-3400

June 30, 2016

MEMORANDUM

SUBJECT: Radiochemical Results for
Canadian Radium & Uranium Samples

FROM: Cynthia White, Director
Center for Environmental Radioanalytical Laboratory Science

TO: Daniel Gaughan, OSC
Region 2

Attached is a data package for isotopic thorium analysis of samples collected from Canadian Radium and Uranium Site in Mt. Kisco, NY. The samples constitute NAREL batch number 1600016. Also attached are data packages for isotopic uranium and thorium analysis of batch number 1600017.

Specific information concerning all aspects of the radiological analysis of the samples is contained in the batch case narratives of the data packages. If you have any questions concerning the analytical results, please contact me at (334)270-7052.

Due to a reorganization within the Office of Radiation and Indoor Air, the National Air and Radiation Environmental Laboratory is now called the National Analytical Radiation Environmental Laboratory (acronym remains the same, NAREL).

Attachments

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RADIATION AND INDOOR AIR
National Analytical Radiation Environmental Laboratory
540 South Morris Avenue, Montgomery, AL 36115-2600
334-270-3400

June 16, 2016

MEMORANDUM

SUBJECT: Radiochemical Results for
Canadian Radium & Uranium Samples

FROM: Cynthia White, Director
Center for Environmental Radioanalytical Laboratory Science

TO: Daniel Gaughan, OSC
Region 2

Attached are data packages for gamma analysis of samples collected from Canadian Radium and Uranium Site in Mt. Kisco, NY. The samples constitute NAREL batch numbers 1600015 and 1600016.

Specific information concerning all aspects of the radiological analysis of the samples is contained in the batch case narratives of the data packages. If you have any questions concerning the analytical results, please contact me at (334)270-7052.

Due to a reorganization within the Office of Radiation and Indoor Air, the National Air and Radiation Environmental Laboratory is now called the National Analytical Radiation Environmental Laboratory (acronym remains the same, NAREL).

Attachments

U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY
540 S. MORRIS AVE., MONTGOMERY, AL 36115
GAMMA ANALYSES

REPORT OF SAMPLE DELIVERY GROUP #1600015

Project:	Canadian Radium & Uranium, Mt. Kisco, NY
Analysis method:	Gamma-ray Spectrometry - Sealed Radium Cans
Report ID:	1600015-GAMMA-RA
Report type:	Original
Date reported:	06/08/2016
Total pages in report:	30

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B6.04104Y	C2-SB1-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04105Z	C2-SB1-4860-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04106A	C2-SB1-6072-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04107B	C2-SB1-7284-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04108C	C2-SB1-8496-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04109D	C2-SB2-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04110W	C2-SB2-1224-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04111X	C2-SB2-2436-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04112Y	C2-SB2-3648-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04113Z	C2-SB2-7284-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04114A	C2-SB2-7284-02	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04115B	C2-SB2-8496-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04116C	C2-SB3-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04117D	C2-SB3-1224-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04118E	C2-SB3-4860-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04119F	C2-SB3-6072-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04120Y	C2-SB3-7284-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016

EXCEPTIONS

1. **Packaging and shipping** – No problems were observed.
2. **Documentation** – No problems were observed.
3. **Sample preparation** – No problems were encountered.
4. **Analysis** – Samples were held for 21 days to allow for ingrowth. Client requested that NAREL report the following: Cs-137, Th-234, Tl-208, Ra-228, Ac-228, Bi-210, Ra-226, Pb-214, Bi-214, Bi-212, Pb-212, Pb-210, and K-40. Client was informed that NAREL does not provide Ac-228 or Bi-210 results by gamma analysis. Also, client requested specific methods to be used, but NAREL uses in-house methods. Client agreed NAREL methods were acceptable. Please see page 4 of this report with regards to exceptions for reporting of some of the nuclides in this list. For Pb-210 in soil samples, NAREL flags the results because of the larger uncertainty associated with gamma-ray attenuation in uncharacterized materials at low energies (46.5 keV).
5. **Holding times** – No holding times were specified.

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ACCREDITATION

All analyses included in this data package are accredited by the Oregon Environmental Laboratory Accreditation Program (ORELAP) to the TNI standard.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Project Acceptance Form and/or the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Director of the Center for Environmental Radioanalytical Laboratory Science and the NAREL Quality Assurance Manager, or their designees, as verified by the following signatures.

Velinda Herbert — 6/14/16
Velinda Herbert — Date
Quality Assurance Manager, NAREL

Cynthia White — 6-16-16
Cynthia White — Date
Director, Center for Environmental Radioanalytical Laboratory Science

ED_006395_00001795-00081

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample, or blank spike
MS	Matrix spike
MSD	Matrix spike duplicate (not currently analyzed)
RBK	Method blank
STD	External standard (used for ^{228}Ra yield determination)

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

RADIOCHEMICAL DATA

Radiochemical analyses usually require the subtraction of an instrument background measurement result from a gross sample measurement result. Both values are positive, but when the sample activity is low, random variations in the two measurements can cause the gross value to be less than the background, resulting in a measured activity less than zero. Although negative activities have no physical significance, they do have statistical importance, as for example in the evaluation of trends or the comparison of two groups of samples.

To the extent practical, it is the policy of NAREL to report results as generated, whether positive, negative, or zero, together with the "2-sigma" measurement uncertainty and a sample-specific estimate of the minimum detectable concentration (MDC). The measurement result, uncertainty, and MDC are always expressed in the same unit of measurement.

EVALUATION OF QC ANALYSES

A method blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "*Z* scores." A *Z* score is the number of standard deviations by which the QC result differs from its ideal value. Generally the score is considered acceptable if its absolute value is not greater than 3.

The *Z* score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference. The *Z* score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation of most analyses. An exception is the use of %R in the evaluation of gross alpha matrix spike results. A gross alpha matrix spike result is considered acceptable if either $|Z| \leq 3$ or $60 \leq \%R \leq 110$.

ED_006395_00001795-00082

GENERAL INFORMATION (CONTINUED)

GAMMA ANALYSIS

The reporting format lists the gamma emitters in alphabetical order. The activity, 2-sigma uncertainty, and a sample-specific estimate of the MDC for radionuclides measured by gamma spectroscopy are reported only if the nuclide is detected above background with the exception of client requested nuclides of interest. The activity for each of the requested nuclides is reported whether negative, positive, or zero along with the associated 2-sigma uncertainty and the sample-specific estimate of the MDC.

Due to potential spectral interferences and other possible problems associated with the determination of the activity of certain radionuclides, the activities for ^{214}Bi, ^{214}Pb, ^{234}Th, ^{234m}Pa, ^{226}Ra, ^{231}Th, and ^{235}U are subject to greater uncertainty than other commonly reported radionuclides. It should be noted that this potential uncertainty is not included in the two-sigma expanded uncertainty that is reported with each result. Although in this report we do provide the calculated activities for these radionuclides, we recommend that the results be used only as a qualitative means of indicating the presence of these radionuclides and not as a quantitative measure of their concentration. The results for these nuclides are not used in the evaluation of quality control samples. Furthermore, because of mutual interference between ^{226}Ra and ^{235}U, NAREL's gamma analysis software tends to overestimate the amounts of these nuclides whenever both are present in a sample. Lower estimates for ^{226}Ra activities can be obtained from the reported activities of its decay products, ^{214}Pb and ^{214}Bi, which are likely to be somewhat less than the ^{226}Ra activity because of the potential escape of radon gas.

NAREL's gamma-ray spectrometry software corrects activities and MDCs for decay between collection and analysis, but only up to a limit of twelve half-lives. If the decay time for a sample exceeds twelve half-lives of a radionuclide, that radionuclide is not reported. This software feature may affect results for short-lived radionuclides, such as ^{131}I and ^{140}Ba, when there is a long delay between collection and analysis.

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Chain of Custody Forms

Page 1 of 9

53 original COC

From cooler #4

4.20.16

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
5	C002-SB001-0012-01	4/6/2016	13:56	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-0012-01	4/6/2016	13:56	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-0012-01	4/6/2016	13:56	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
5	C002-SB001-4860-01	4/6/2016	13:57	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-4860-01	4/6/2016	13:57	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-4860-01	4/6/2016	13:57	Gamma Spec (Modified)	Soil	4 C	N	Broken 1	16 oz glass jar
5	C002-SB001-6072-01	4/6/2016	13:57	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-6072-01	4/6/2016	13:57	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-6072-01	4/6/2016	13:57	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
5	C002-SB001-7284-01	4/6/2016	13:57	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-7284-01	4/6/2016	13:57	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-7284-01	4/6/2016	13:57	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
5	C002-SB001-8496-01	4/6/2016	13:57	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-8496-01	4/6/2016	13:57	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-8496-01	4/6/2016	13:57	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB002-0012-01	4/6/2016	14:31	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB002-0012-01	4/6/2016	14:31	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB002-0012-01	4/6/2016	14:31	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
4	C002-SB002-1224-01	4/6/2016	14:31	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	RST3		NAREL	04/19/16 0115	Good

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

cooler #4

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
cooler 4	C002-SB002-1224-01	4/6/2016	14:31	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
4	C002-SB002-1224-01	4/6/2016	14:31	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
4	C002-SB002-2436-01	4/6/2016	14:32	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
4	C002-SB002-2436-01	4/6/2016	14:32	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
4	C002-SB002-2436-01	4/6/2016	14:32	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
4	C002-SB002-3648-01	4/6/2016	14:32	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
4	C002-SB002-3648-01	4/6/2016	14:32	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
4	C002-SB002-3648-01	4/6/2016	14:32	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
4	C002-SB002-7284-01	4/6/2016	14:33	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
4	C002-SB002-7284-01	4/6/2016	14:33	Isotopic Uranium ~~[illegible]~~ OK	Soil	4 C	N	~~1~~	~~8~~ oz glass jar
4	C002-SB002-7284-01	4/6/2016	14:33	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
4	C002-SB002-7284-02	4/6/2016	14:33	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
4	C002-SB002-7284-02	4/6/2016	14:33	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
4	C002-SB002-7284-02	4/6/2016	14:33	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
5	C002-SB002-8496-01	4/6/2016	14:33	Isotopic Thorium	Soil	4 C	Y	2	8 oz glass jar
5	C002-SB002-8496-01	4/6/2016	14:33	Isotopic Uranium	Soil	4 C	Y	2	8 oz glass jar
5	C002-SB002-8496-01	4/6/2016	14:33	~~Gamma Spec (Modified)~~	Soil	4 C	N	OK-16oz 8oz 1	~~16~~ oz glass jar
	C002-SB003-0012-01	4/6/2016	13:17	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-0012-01	4/6/2016	13:17	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar

5 total

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RSB		NAREL	04/19/16 @1115	Good

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
	C002-SB003-0012-01	4/6/2016	13:17	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB003-1224-01	4/6/2016	13:17	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-1224-01	4/6/2016	13:17	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-1224-01	4/6/2016	13:17	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB003-4860-01	4/6/2016	13:18	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-4860-01	4/6/2016	13:18	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-4860-01	4/6/2016	13:18	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB003-6072-01	4/6/2016	13:18	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-6072-01	4/6/2016	13:18	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-6072-01	4/6/2016	13:18	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
4	C002-SB003-7284-01 ✓	4/6/2016	13:18	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-7284-01 ✓	4/6/2016	13:18	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-7284-01 ✓	4/6/2016	13:18	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
4	C002-SB003-8496-01 ✓	4/6/2016	13:19	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-8496-01 ✓	4/6/2016	13:19	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-8496-01 ✓	4/6/2016	13:19	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
	C003-SB001-0012-01	4/5/2016	12:19	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB001-0012-01	4/5/2016	12:19	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
4	C003-SB001-0012-01 ✓	4/5/2016 ✓	12:19	Gamma Spec (Modified) ✓	Soil	4 C	N	1	✓16 oz glass jar

Crushed Sample

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		NAREL	04/19/16 @ 11:15	Crushed Sample

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

ANALYSIS SUMMARY

Analysis method: NAREL GAM-01-RA
Title: Gamma-ray Spectrometry - Sealed Radium Cans

NAREL Sample #	Client Sample ID	QC Type	Date Completed	Preparation Batch #	Assay Batch #
B6.04104Y	C2-SB1-0012-01		05/25/2016	0013404B	0020877K
B6.04105Z	C2-SB1-4860-01		05/25/2016	0013404B	0020877K
B6.04106A	C2-SB1-6072-01		05/25/2016	0013404B	0020877K
B6.04106A	C2-SB1-6072-01	DUP	05/26/2016	0013404B	0020877K
B6.04107B	C2-SB1-7284-01		05/26/2016	0013404B	0020877K
B6.04108C	C2-SB1-8496-01		05/26/2016	0013404B	0020877K
B6.04109D	C2-SB2-0012-01		05/26/2016	0013404B	0020877K
B6.04110W	C2-SB2-1224-01		05/26/2016	0013404B	0020877K
B6.04111X	C2-SB2-2436-01		05/26/2016	0013404B	0020877K
B6.04112Y	C2-SB2-3648-01		05/26/2016	0013404B	0020877K
B6.04113Z	C2-SB2-7284-01		05/27/2016	0013404B	0020877K
B6.04114A	C2-SB2-7284-02		05/27/2016	0013404B	0020877K
B6.04115B	C2-SB2-8496-01		05/27/2016	0013404B	0020877K
B6.04116C	C2-SB3-0012-01		05/27/2016	0013404B	0020877K
B6.04117D	C2-SB3-1224-01		05/27/2016	0013404B	0020877K
B6.04118E	C2-SB3-4860-01		05/27/2016	0013404B	0020877K
B6.04119F	C2-SB3-6072-01		05/27/2016	0013404B	0020877K
B6.04120Y	C2-SB3-7284-01		06/01/2016	0013404B	0020877K
LCS-00734848Y *		LCS	06/01/2016	0013404B	0020877K
RBK-00734849Z *		RBK	06/01/2016	0013404B	0020877K

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

ED_006395_00001795-00087

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04104Y	Amount analyzed:	1.920e+02 GDRY
Client sample ID:	C2-SB1-0012-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 13:56 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	95.75 %	Analyst:	MO
Ash/dry weight:	88.99 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/24/2016 14:26	1000.0	GE04	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	4.07e-01	1.4e-01	1.5e-01	PCI/GDRY	04/06/2016 13:56 EDT
Bi214	J	3.00e-01	4.1e-02	2.2e-02	PCI/GDRY	04/06/2016 13:56 EDT
Cs137		-8.23e-04	7.7e-03	9.7e-03	PCI/GDRY	04/06/2016 13:56 EDT
K40		7.46e+00	8.5e-01	1.2e-01	PCI/GDRY	04/06/2016 13:56 EDT
Pb210	J	4.27e-01	1.5e-01	1.9e-01	PCI/GDRY	04/06/2016 13:56 EDT
Pb212	J	3.58e-01	4.2e-02	1.5e-02	PCI/GDRY	04/06/2016 13:56 EDT
Pb214	J	3.55e-01	4.4e-02	1.9e-02	PCI/GDRY	04/06/2016 13:56 EDT
Ra226	J	6.30e-01	1.7e-01	1.9e-01	PCI/GDRY	04/06/2016 13:56 EDT
Ra228		3.36e-01	5.2e-02	3.9e-02	PCI/GDRY	04/06/2016 13:56 EDT
Th234	J	2.75e-01	1.4e-01	1.9e-01	PCI/GDRY	04/06/2016 13:56 EDT
Tl208	J	1.01e-01	1.5e-02	1.0e-02	PCI/GDRY	04/06/2016 13:56 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00088

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04105Z	Amount analyzed:	3.260e+02 GDRY
Client sample ID:	C2-SB1-4860-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 13:57 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	94.41 %	Analyst:	MO
Ash/dry weight:	97.26 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/24/2016 14:27	1000.0	GE15	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	6.61e-01	1.3e-01	1.2e-01	PCI/GDRY	04/06/2016 13:57 EDT
Bi214	J	6.68e-01	7.7e-02	2.2e-02	PCI/GDRY	04/06/2016 13:57 EDT
Cs137		-5.02e-03	7.8e-03	9.0e-03	PCI/GDRY	04/06/2016 13:57 EDT
K40		1.13e+01	1.3e+00	9.5e-02	PCI/GDRY	04/06/2016 13:57 EDT
Pb210	J	7.58e-01	2.0e-01	2.2e-01	PCI/GDRY	04/06/2016 13:57 EDT
Pb212	J	5.54e-01	6.3e-02	1.8e-02	PCI/GDRY	04/06/2016 13:57 EDT
Pb214	J	7.47e-01	8.5e-02	2.2e-02	PCI/GDRY	04/06/2016 13:57 EDT
Ra226	J	1.08e+00	2.0e-01	1.9e-01	PCI/GDRY	04/06/2016 13:57 EDT
Ra228		5.48e-01	7.2e-02	3.6e-02	PCI/GDRY	04/06/2016 13:57 EDT
Th234	J	5.83e-01	1.5e-01	1.9e-01	PCI/GDRY	04/06/2016 13:57 EDT
Tl208	J	1.81e-01	2.4e-02	1.2e-02	PCI/GDRY	04/06/2016 13:57 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00089

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04106A	Amount analyzed:	6.450e+02 GDRY
Client sample ID:	C2-SB1-6072-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 13:57 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	91.38 %	Analyst:	MO
Ash/dry weight:	98.14 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/24/2016 14:29	1000.0	GE16	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	6.27e-01	1.0e-01	8.8e-02	PCI/GDRY	04/06/2016 13:57 EDT
Bi214	J	7.65e-01	8.6e-02	1.6e-02	PCI/GDRY	04/06/2016 13:57 EDT
Cs137		-3.37e-03	5.8e-03	9.6e-03	PCI/GDRY	04/06/2016 13:57 EDT
K40		1.20e+01	1.3e+00	6.0e-02	PCI/GDRY	04/06/2016 13:57 EDT
Pb210	J	8.47e-01	1.8e-01	2.0e-01	PCI/GDRY	04/06/2016 13:57 EDT
Pb212	J	5.24e-01	6.0e-02	1.2e-02	PCI/GDRY	04/06/2016 13:57 EDT
Pb214	J	8.75e-01	9.9e-02	1.7e-02	PCI/GDRY	04/06/2016 13:57 EDT
Ra226	J	1.16e+00	1.8e-01	1.6e-01	PCI/GDRY	04/06/2016 13:57 EDT
Ra228		5.26e-01	6.2e-02	2.5e-02	PCI/GDRY	04/06/2016 13:57 EDT
Th234	J	4.29e-01	1.4e-01	2.0e-01	PCI/GDRY	04/06/2016 13:57 EDT
Tl208	J	1.64e-01	2.0e-02	8.3e-03	PCI/GDRY	04/06/2016 13:57 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00090

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04106A	Amount analyzed:	6.450e+02 GDRY
Client sample ID:	C2-SB1-6072-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 13:57 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	91.38 %	Analyst:	MO
Ash/dry weight:	98.14 %	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/25/2016 14:25	1000.0	GE15	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	5.64e-01	1.1e-01	1.0e-01	PCI/GDRY	04/06/2016 13:57 EDT
Bi214	J	7.60e-01	8.6e-02	1.8e-02	PCI/GDRY	04/06/2016 13:57 EDT
Cs137		-5.38e-03	7.6e-03	8.7e-03	PCI/GDRY	04/06/2016 13:57 EDT
K40		1.19e+01	1.3e+00	7.5e-02	PCI/GDRY	04/06/2016 13:57 EDT
Pb210	J	7.96e-01	2.1e-01	2.4e-01	PCI/GDRY	04/06/2016 13:57 EDT
Pb212	J	5.21e-01	5.9e-02	1.7e-02	PCI/GDRY	04/06/2016 13:57 EDT
Pb214	J	8.81e-01	1.0e-01	2.2e-02	PCI/GDRY	04/06/2016 13:57 EDT
Ra226	J	1.21e+00	2.1e-01	1.8e-01	PCI/GDRY	04/06/2016 13:57 EDT
Ra228		5.31e-01	6.6e-02	3.0e-02	PCI/GDRY	04/06/2016 13:57 EDT
Th234	J	5.39e-01	1.6e-01	2.1e-01	PCI/GDRY	04/06/2016 13:57 EDT
Tl208	J	1.63e-01	2.1e-02	9.6e-03	PCI/GDRY	04/06/2016 13:57 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00091

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04107B	Amount analyzed:	4.920e+02 GDRY
Client sample ID:	C2-SB1-7284-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 13:57 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	80.06 %	Analyst:	MO
Ash/dry weight:	94.96 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/25/2016 14:26	1000.0	GE04	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	9.30e-01	1.6e-01	1.2e-01	PCI/GDRY	04/06/2016 13:57 EDT
Bi214	J	5.31e-01	6.1e-02	1.6e-02	PCI/GDRY	04/06/2016 13:57 EDT
Cs137		-5.04e-03	7.3e-03	9.1e-03	PCI/GDRY	04/06/2016 13:57 EDT
K40		1.14e+01	1.3e+00	8.3e-02	PCI/GDRY	04/06/2016 13:57 EDT
Pb210	J	2.94e-01	1.1e-01	1.4e-01	PCI/GDRY	04/06/2016 13:57 EDT
Pb212	J	7.88e-01	8.8e-02	1.3e-02	PCI/GDRY	04/06/2016 13:57 EDT
Pb214	J	6.00e-01	7.3e-02	2.0e-02	PCI/GDRY	04/06/2016 13:57 EDT
Ra226	J	1.20e+00	2.1e-01	1.9e-01	PCI/GDRY	04/06/2016 13:57 EDT
Ra228		8.01e-01	9.4e-02	3.6e-02	PCI/GDRY	04/06/2016 13:57 EDT
Th234	J	5.77e-01	1.4e-01	1.8e-01	PCI/GDRY	04/06/2016 13:57 EDT
Tl208	J	2.57e-01	3.0e-02	1.0e-02	PCI/GDRY	04/06/2016 13:57 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00092

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04108C	Amount analyzed:	5.090e+02 GDRY
Client sample ID:	C2-SB1-8496-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 13:57 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	81.74 %	Analyst:	MO
Ash/dry weight:	96.75 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/25/2016 14:27	1000.0	GE16	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	9.23e-01	1.3e-01	9.3e-02	PCI/GDRY	04/06/2016 13:57 EDT
Bi214	J	4.78e-01	5.5e-02	1.4e-02	PCI/GDRY	04/06/2016 13:57 EDT
Cs137		-8.01e-04	6.5e-03	7.8e-03	PCI/GDRY	04/06/2016 13:57 EDT
K40		1.20e+01	1.3e+00	6.5e-02	PCI/GDRY	04/06/2016 13:57 EDT
Pb210	J	2.77e-01	8.8e-02	1.1e-01	PCI/GDRY	04/06/2016 13:57 EDT
Pb212	J	8.06e-01	9.0e-02	1.2e-02	PCI/GDRY	04/06/2016 13:57 EDT
Pb214	J	5.65e-01	6.5e-02	1.8e-02	PCI/GDRY	04/06/2016 13:57 EDT
Ra226	J	1.19e+00	1.8e-01	1.6e-01	PCI/GDRY	04/06/2016 13:57 EDT
Ra228		8.07e-01	9.2e-02	2.6e-02	PCI/GDRY	04/06/2016 13:57 EDT
Th234	J	7.80e-01	1.3e-01	1.5e-01	PCI/GDRY	04/06/2016 13:57 EDT
Tl208	J	2.38e-01	2.8e-02	7.7e-03	PCI/GDRY	04/06/2016 13:57 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00093

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04109D	Amount analyzed:	2.520e+02 GDRY
Client sample ID:	C2-SB2-0012-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 14:31 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	95.55 %	Analyst:	MO
Ash/dry weight:	85.26 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/25/2016 14:28	1000.0	GE12	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	4.22e-01	1.2e-01	1.2e-01	PCI/GDRY	04/06/2016 14:31 EDT
Bi214	J	3.58e-01	4.4e-02	2.0e-02	PCI/GDRY	04/06/2016 14:31 EDT
Cs137		9.43e-03	6.0e-03	8.2e-03	PCI/GDRY	04/06/2016 14:31 EDT
K40		9.98e+00	1.1e+00	1.0e-01	PCI/GDRY	04/06/2016 14:31 EDT
Pb210	J	4.77e-01	1.2e-01	1.5e-01	PCI/GDRY	04/06/2016 14:31 EDT
Pb212	J	4.35e-01	5.0e-02	1.5e-02	PCI/GDRY	04/06/2016 14:31 EDT
Pb214	J	4.16e-01	5.0e-02	2.1e-02	PCI/GDRY	04/06/2016 14:31 EDT
Ra226	J	7.32e-01	1.8e-01	2.0e-01	PCI/GDRY	04/06/2016 14:31 EDT
Ra228		4.63e-01	6.0e-02	4.0e-02	PCI/GDRY	04/06/2016 14:31 EDT
Th234	J	2.71e-01	1.3e-01	1.7e-01	PCI/GDRY	04/06/2016 14:31 EDT
Tl208	J	1.38e-01	1.9e-02	1.1e-02	PCI/GDRY	04/06/2016 14:31 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00094

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04110W	Amount analyzed:	3.990e+02 GDRY
Client sample ID:	C2-SB2-1224-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 14:31 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	83.51 %	Analyst:	MO
Ash/dry weight:	89.80 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/25/2016 14:43	1000.0	GE17	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	1.32e+00	2.7e-01	2.3e-01	PCI/GDRY	04/06/2016 14:31 EDT
Bi214	J	1.29e+00	1.5e-01	2.8e-02	PCI/GDRY	04/06/2016 14:31 EDT
Cs137		4.64e-02	9.4e-03	1.2e-02	PCI/GDRY	04/06/2016 14:31 EDT
K40		1.55e+01	1.7e+00	1.4e-01	PCI/GDRY	04/06/2016 14:31 EDT
Pb210	J	9.70e-01	1.7e-01	1.8e-01	PCI/GDRY	04/06/2016 14:31 EDT
Pb212	J	1.31e+00	1.5e-01	2.4e-02	PCI/GDRY	04/06/2016 14:31 EDT
Pb214	J	1.47e+00	1.6e-01	3.0e-02	PCI/GDRY	04/06/2016 14:31 EDT
Ra226	J	2.23e+00	3.4e-01	2.9e-01	PCI/GDRY	04/06/2016 14:31 EDT
Ra228		1.32e+00	1.5e-01	7.2e-02	PCI/GDRY	04/06/2016 14:31 EDT
Th234	J	6.85e-01	1.8e-01	2.5e-01	PCI/GDRY	04/06/2016 14:31 EDT
Tl208	J	4.12e-01	4.9e-02	1.9e-02	PCI/GDRY	04/06/2016 14:31 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00095

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04111X	Amount analyzed:	5.780e+02 GDRY
Client sample ID:	C2-SB2-2436-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 14:32 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	89.06 %	Analyst:	MO
Ash/dry weight:	97.20 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/25/2016 14:30	1000.0	GE18	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	7.90e-01	1.6e-01	1.5e-01	PCI/GDRY	04/06/2016 14:32 EDT
Bi214	J	1.64e+00	1.8e-01	2.1e-02	PCI/GDRY	04/06/2016 14:32 EDT
Cs137		3.65e-02	7.0e-03	8.5e-03	PCI/GDRY	04/06/2016 14:32 EDT
K40		1.32e+01	1.5e+00	9.5e-02	PCI/GDRY	04/06/2016 14:32 EDT
Pb210	J	2.11e+00	3.1e-01	2.7e-01	PCI/GDRY	04/06/2016 14:32 EDT
Pb212	J	7.28e-01	8.2e-02	1.8e-02	PCI/GDRY	04/06/2016 14:32 EDT
Pb214	J	1.89e+00	2.1e-01	2.5e-02	PCI/GDRY	04/06/2016 14:32 EDT
Ra226	J	2.57e+00	3.4e-01	2.3e-01	PCI/GDRY	04/06/2016 14:32 EDT
Ra228		7.27e-01	8.7e-02	5.3e-02	PCI/GDRY	04/06/2016 14:32 EDT
Th234	J	7.19e-01	1.8e-01	2.6e-01	PCI/GDRY	04/06/2016 14:32 EDT
Tl208	J	2.21e-01	2.7e-02	1.3e-02	PCI/GDRY	04/06/2016 14:32 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00096

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04112Y	Amount analyzed:	5.620e+02 GDRY
Client sample ID:	C2-SB2-3648-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 14:32 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	90.76 %	Analyst:	MO
Ash/dry weight:	91.79 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/25/2016 14:31	1000.0	GE23	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	9.68e-01	1.7e-01	1.5e-01	PCI/GDRY	04/06/2016 14:32 EDT
Bi214	J	4.50e+00	4.9e-01	2.5e-02	PCI/GDRY	04/06/2016 14:32 EDT
Cs137		7.11e-02	1.1e-02	1.0e-02	PCI/GDRY	04/06/2016 14:32 EDT
K40		1.22e+01	1.4e+00	1.3e-01	PCI/GDRY	04/06/2016 14:32 EDT
Pb210	J	8.99e+00	1.1e+00	4.4e-01	PCI/GDRY	04/06/2016 14:32 EDT
Pb212	J	9.01e-01	1.0e-01	2.0e-02	PCI/GDRY	04/06/2016 14:32 EDT
Pb214	J	5.07e+00	5.6e-01	2.3e-02	PCI/GDRY	04/06/2016 14:32 EDT
Ra226	J	5.84e+00	7.0e-01	3.2e-01	PCI/GDRY	04/06/2016 14:32 EDT
Ra228		9.12e-01	1.1e-01	4.7e-02	PCI/GDRY	04/06/2016 14:32 EDT
Th234	J	6.06e-01	2.7e-01	3.9e-01	PCI/GDRY	04/06/2016 14:32 EDT
Tl208	J	2.79e-01	3.2e-02	1.0e-02	PCI/GDRY	04/06/2016 14:32 EDT
U235	J	8.66e-02	4.9e-02	7.7e-02	PCI/GDRY	04/06/2016 14:32 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04113Z	Amount analyzed:	5.810e+02 GDRY
Client sample ID:	C2-SB2-7284-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 14:33 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	84.35 %	Analyst:	MO
Ash/dry weight:	95.90 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/26/2016 15:32	1000.0	GE18	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	1.09e+00	1.9e-01	1.6e-01	PCI/GDRY	04/06/2016 14:33 EDT
Bi214	J	7.72e-01	8.8e-02	2.1e-02	PCI/GDRY	04/06/2016 14:33 EDT
Cs137		4.85e-03	7.8e-03	1.3e-02	PCI/GDRY	04/06/2016 14:33 EDT
K40		1.41e+01	1.6e+00	9.7e-02	PCI/GDRY	04/06/2016 14:33 EDT
Pb210	J	8.36e-01	1.8e-01	2.3e-01	PCI/GDRY	04/06/2016 14:33 EDT
Pb212	J	1.02e+00	1.1e-01	1.6e-02	PCI/GDRY	04/06/2016 14:33 EDT
Pb214	J	8.82e-01	1.0e-01	2.4e-02	PCI/GDRY	04/06/2016 14:33 EDT
Ra226	J	1.67e+00	2.5e-01	2.1e-01	PCI/GDRY	04/06/2016 14:33 EDT
Ra228		9.92e-01	1.1e-01	5.0e-02	PCI/GDRY	04/06/2016 14:33 EDT
Th234	J	8.07e-01	1.8e-01	2.4e-01	PCI/GDRY	04/06/2016 14:33 EDT
Tl208	J	3.18e-01	3.7e-02	1.4e-02	PCI/GDRY	04/06/2016 14:33 EDT
U235	J	5.98e-02	3.8e-02	5.8e-02	PCI/GDRY	04/06/2016 14:33 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04114A	Amount analyzed:	6.010e+02 GDRY
Client sample ID:	C2-SB2-7284-02	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 14:33 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	83.99 %	Analyst:	MO
Ash/dry weight:	95.93 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/26/2016 15:33	1000.0	GE04	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	9.68e-01	1.5e-01	1.2e-01	PCI/GDRY	04/06/2016 14:33 EDT
Bi214	J	7.13e-01	8.1e-02	2.0e-02	PCI/GDRY	04/06/2016 14:33 EDT
Cs137		4.42e-03	6.4e-03	8.0e-03	PCI/GDRY	04/06/2016 14:33 EDT
K40		1.34e+01	1.5e+00	8.7e-02	PCI/GDRY	04/06/2016 14:33 EDT
Pb210	J	7.67e-01	2.2e-01	2.8e-01	PCI/GDRY	04/06/2016 14:33 EDT
Pb212	J	9.43e-01	1.1e-01	1.6e-02	PCI/GDRY	04/06/2016 14:33 EDT
Pb214	J	8.31e-01	9.4e-02	2.1e-02	PCI/GDRY	04/06/2016 14:33 EDT
Ra226	J	1.50e+00	2.3e-01	2.0e-01	PCI/GDRY	04/06/2016 14:33 EDT
Ra228		9.82e-01	1.1e-01	3.2e-02	PCI/GDRY	04/06/2016 14:33 EDT
Th234	J	8.69e-01	2.1e-01	2.7e-01	PCI/GDRY	04/06/2016 14:33 EDT
Tl208	J	3.01e-01	3.5e-02	9.4e-03	PCI/GDRY	04/06/2016 14:33 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00099

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04115B	Amount analyzed:	6.110e+02 GDRY
Client sample ID:	C2-SB2-8496-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 14:33 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	80.48 %	Analyst:	MO
Ash/dry weight:	96.73 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/26/2016 15:35	1000.0	GE12	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	9.31e-01	1.5e-01	1.1e-01	PCI/GDRY	04/06/2016 14:33 EDT
Bi214	J	5.10e-01	5.9e-02	1.7e-02	PCI/GDRY	04/06/2016 14:33 EDT
Cs137		4.03e-03	6.1e-03	7.7e-03	PCI/GDRY	04/06/2016 14:33 EDT
K40		1.19e+01	1.3e+00	7.7e-02	PCI/GDRY	04/06/2016 14:33 EDT
Pb210	J	5.12e-01	1.7e-01	2.3e-01	PCI/GDRY	04/06/2016 14:33 EDT
Pb212	J	8.02e-01	9.0e-02	1.3e-02	PCI/GDRY	04/06/2016 14:33 EDT
Pb214	J	5.73e-01	6.6e-02	2.0e-02	PCI/GDRY	04/06/2016 14:33 EDT
Ra226	J	9.37e-01	1.8e-01	1.8e-01	PCI/GDRY	04/06/2016 14:33 EDT
Ra228		7.91e-01	9.1e-02	3.3e-02	PCI/GDRY	04/06/2016 14:33 EDT
Th234	J	5.17e-01	1.7e-01	2.3e-01	PCI/GDRY	04/06/2016 14:33 EDT
Tl208	J	2.56e-01	3.0e-02	9.4e-03	PCI/GDRY	04/06/2016 14:33 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00100

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04116C	Amount analyzed:	2.600e+02 GDRY
Client sample ID:	C2-SB3-0012-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 13:17 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	78.00 %	Analyst:	MO
Ash/dry weight:	92.46 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/26/2016 15:38	1000.0	GE15	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	7.83e-01	1.7e-01	1.5e-01	PCI/GDRY	04/06/2016 13:17 EDT
Bi214	J	9.69e-01	1.1e-01	2.7e-02	PCI/GDRY	04/06/2016 13:17 EDT
Cs137		1.60e-01	2.2e-02	1.3e-02	PCI/GDRY	04/06/2016 13:17 EDT
K40		1.10e+01	1.2e+00	1.1e-01	PCI/GDRY	04/06/2016 13:17 EDT
Pb210	J	1.34e+00	1.9e-01	1.6e-01	PCI/GDRY	04/06/2016 13:17 EDT
Pb212	J	7.64e-01	8.6e-02	2.2e-02	PCI/GDRY	04/06/2016 13:17 EDT
Pb214	J	1.11e+00	1.3e-01	2.7e-02	PCI/GDRY	04/06/2016 13:17 EDT
Ra226	J	1.71e+00	2.9e-01	2.5e-01	PCI/GDRY	04/06/2016 13:17 EDT
Ra228		6.98e-01	9.0e-02	4.7e-02	PCI/GDRY	04/06/2016 13:17 EDT
Th234	J	6.83e-01	1.7e-01	2.0e-01	PCI/GDRY	04/06/2016 13:17 EDT
Tl208	J	2.23e-01	2.9e-02	1.4e-02	PCI/GDRY	04/06/2016 13:17 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00101

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04117D	Amount analyzed:	5.880e+02 GDRY
Client sample ID:	C2-SB3-1224-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 13:17 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	86.91 %	Analyst:	MO
Ash/dry weight:	96.78 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/26/2016 15:40	1000.0	GE16	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	9.56e-01	1.4e-01	1.0e-01	PCI/GDRY	04/06/2016 13:17 EDT
Bi214	J	1.30e+00	1.4e-01	1.9e-02	PCI/GDRY	04/06/2016 13:17 EDT
Cs137		8.75e-02	1.1e-02	7.2e-03	PCI/GDRY	04/06/2016 13:17 EDT
K40		1.29e+01	1.4e+00	6.4e-02	PCI/GDRY	04/06/2016 13:17 EDT
Pb210	J	1.27e+00	2.4e-01	2.5e-01	PCI/GDRY	04/06/2016 13:17 EDT
Pb212	J	8.49e-01	9.6e-02	1.5e-02	PCI/GDRY	04/06/2016 13:17 EDT
Pb214	J	1.46e+00	1.6e-01	2.2e-02	PCI/GDRY	04/06/2016 13:17 EDT
Ra226	J	2.02e+00	2.8e-01	2.1e-01	PCI/GDRY	04/06/2016 13:17 EDT
Ra228		8.17e-01	9.4e-02	3.1e-02	PCI/GDRY	04/06/2016 13:17 EDT
Th234	J	6.81e-01	1.8e-01	2.5e-01	PCI/GDRY	04/06/2016 13:17 EDT
Tl208	J	2.64e-01	3.1e-02	9.7e-03	PCI/GDRY	04/06/2016 13:17 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00102

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04118E	Amount analyzed:	5.430e+02 GDRY
Client sample ID:	C2-SB3-4860-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 13:18 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	79.16 %	Analyst:	MO
Ash/dry weight:	86.50 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/26/2016 15:42	1000.0	GE17	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	8.52e-01	1.8e-01	1.7e-01	PCI/GDRY	04/06/2016 13:18 EDT
Bi214	J	1.78e+00	2.0e-01	2.3e-02	PCI/GDRY	04/06/2016 13:18 EDT
Cs137		-5.90e-03	9.5e-03	1.6e-02	PCI/GDRY	04/06/2016 13:18 EDT
K40		1.08e+01	1.2e+00	1.1e-01	PCI/GDRY	04/06/2016 13:18 EDT
Pb210	J	1.84e+00	2.3e-01	1.4e-01	PCI/GDRY	04/06/2016 13:18 EDT
Pb212	J	7.80e-01	8.8e-02	2.0e-02	PCI/GDRY	04/06/2016 13:18 EDT
Pb214	J	2.03e+00	2.3e-01	2.8e-02	PCI/GDRY	04/06/2016 13:18 EDT
Ra226	J	2.69e+00	3.6e-01	2.5e-01	PCI/GDRY	04/06/2016 13:18 EDT
Ra228		7.94e-01	9.5e-02	5.4e-02	PCI/GDRY	04/06/2016 13:18 EDT
Th234	J	5.32e-01	1.3e-01	1.9e-01	PCI/GDRY	04/06/2016 13:18 EDT
Tl208	J	2.45e-01	3.0e-02	1.4e-02	PCI/GDRY	04/06/2016 13:18 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00103

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04119F	Amount analyzed:	4.010e+02 GDRY
Client sample ID:	C2-SB3-6072-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 13:18 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	60.06 %	Analyst:	MO
Ash/dry weight:	87.01 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/26/2016 15:43	1000.0	GE23	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	1.12e+00	1.7e-01	1.3e-01	PCI/GDRY	04/06/2016 13:18 EDT
Bi214	J	5.91e-01	6.8e-02	1.9e-02	PCI/GDRY	04/06/2016 13:18 EDT
Cs137		-3.71e-03	7.8e-03	9.8e-03	PCI/GDRY	04/06/2016 13:18 EDT
K40		9.50e+00	1.1e+00	1.0e-01	PCI/GDRY	04/06/2016 13:18 EDT
Pb210	J	5.51e-01	1.3e-01	1.6e-01	PCI/GDRY	04/06/2016 13:18 EDT
Pb212	J	1.04e+00	1.2e-01	1.5e-02	PCI/GDRY	04/06/2016 13:18 EDT
Pb214	J	7.37e-01	8.4e-02	2.1e-02	PCI/GDRY	04/06/2016 13:18 EDT
Ra226	J	1.47e+00	2.4e-01	2.2e-01	PCI/GDRY	04/06/2016 13:18 EDT
Ra228		9.87e-01	1.1e-01	2.9e-02	PCI/GDRY	04/06/2016 13:18 EDT
Th234	J	8.17e-01	1.7e-01	2.1e-01	PCI/GDRY	04/06/2016 13:18 EDT
Tl208	J	3.11e-01	3.6e-02	9.7e-03	PCI/GDRY	04/06/2016 13:18 EDT
U235	J	4.45e-02	4.3e-02	6.1e-02	PCI/GDRY	04/06/2016 13:18 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04120Y	Amount analyzed:	5.550e+02 GDRY
Client sample ID:	C2-SB3-7284-01	Preparation batch #:	0013404B
Matrix:	SOIL	Assay batch #:	0020877K
Collected:	2016-04-06 13:18 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	83.07 %	Analyst:	MO
Ash/dry weight:	98.05 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/31/2016 14:06	1000.0	GE04	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	9.44e-01	1.5e-01	1.2e-01	PCI/GDRY	04/06/2016 13:18 EDT
Bi214	J	5.61e-01	6.5e-02	1.6e-02	PCI/GDRY	04/06/2016 13:18 EDT
Cs137		-4.70e-03	6.8e-03	8.5e-03	PCI/GDRY	04/06/2016 13:18 EDT
K40		1.43e+01	1.6e+00	8.6e-02	PCI/GDRY	04/06/2016 13:18 EDT
Pb210	J	3.19e-01	9.9e-02	1.3e-01	PCI/GDRY	04/06/2016 13:18 EDT
Pb212	J	8.46e-01	9.4e-02	1.3e-02	PCI/GDRY	04/06/2016 13:18 EDT
Pb214	J	5.98e-01	7.2e-02	1.8e-02	PCI/GDRY	04/06/2016 13:18 EDT
Ra226	J	1.37e+00	2.1e-01	1.9e-01	PCI/GDRY	04/06/2016 13:18 EDT
Ra228		9.31e-01	1.1e-01	3.3e-02	PCI/GDRY	04/06/2016 13:18 EDT
Th234	J	5.49e-01	1.4e-01	1.8e-01	PCI/GDRY	04/06/2016 13:18 EDT
Tl208	J	2.73e-01	3.2e-02	9.7e-03	PCI/GDRY	04/06/2016 13:18 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00105

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	LCS-00734848Y	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013404B
Matrix:	N/A	Assay batch #:	0020877K
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	N/A	Analyst:	MO
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/31/2016 14:07	1000.0	GE15	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi207		6.77e+03	7.3e+02	1.1e+02	PCI	12/15/2010 11:00 CDT
Bi212	J	7.31e+02	2.2e+02	2.4e+02	PCI	12/15/2010 11:00 CDT
Bi214	J	2.59e+02	3.3e+01	1.8e+01	PCI	12/15/2010 11:00 CDT
Eu155		1.65e+03	1.9e+02	7.2e+01	PCI	12/15/2010 11:00 CDT
Pb212	J	7.34e+02	8.5e+01	3.6e+01	PCI	12/15/2010 11:00 CDT
Pb214	J	2.85e+02	4.0e+01	2.8e+01	PCI	12/15/2010 11:00 CDT
Ra226	J	5.12e+02	2.1e+02	2.4e+02	PCI	12/15/2010 11:00 CDT
Ra228		7.21e+02	8.9e+01	6.4e+01	PCI	12/15/2010 11:00 CDT
Tl208	J	2.37e+02	3.2e+01	1.9e+01	PCI	12/15/2010 11:00 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00106

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	RBK-00734849Z	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013404B
Matrix:	N/A	Assay batch #:	0020877K
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	N/A	Analyst:	MO
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
05/31/2016 14:08	1000.0	GE16	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	6.23e-01	2.1e+01	3.6e+01	PCI	05/24/2016 07:00 CDT
Bi214	J	4.14e+00	3.8e+00	4.9e+00	PCI	05/24/2016 07:00 CDT
Cs137		4.21e-01	1.6e+00	2.7e+00	PCI	05/24/2016 07:00 CDT
K40		1.42e+01	1.2e+01	1.9e+01	PCI	05/24/2016 07:00 CDT
Pb210	J	1.95e+01	5.2e+01	6.6e+01	PCI	05/24/2016 07:00 CDT
Pb212	J	-8.13e-01	4.2e+00	4.8e+00	PCI	05/24/2016 07:00 CDT
Pb214	J	4.62e+00	3.6e+00	5.8e+00	PCI	05/24/2016 07:00 CDT
Ra226	J	1.46e+01	3.4e+01	5.6e+01	PCI	05/24/2016 07:00 CDT
Ra228		1.77e+00	5.4e+00	9.0e+00	PCI	05/24/2016 07:00 CDT
Th234	J	9.84e+00	3.6e+01	6.1e+01	PCI	05/24/2016 07:00 CDT
Tl208	J	1.93e+00	1.6e+00	2.5e+00	PCI	05/24/2016 07:00 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00107

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1600015

PREPARATION BATCH SUMMARY

Preparation batch #: 0013404B
Analysis method: NAREL GAM-01-RA
Preparation procedure: N/A

NAREL Sample #	Client Sample ID	Analysis #	QC Type	Yield	± 2 σ Uncertainty	Analyst
B6.04104Y	C2-SB1-0012-01	00733634F		N/A		MO
B6.04105Z	C2-SB1-4860-01	00733637J		N/A		MO
B6.04106A	C2-SB1-6072-01	00733640D		N/A		MO
B6.04106A	C2-SB1-6072-01	00734847X	DUP	N/A		MO
B6.04107B	C2-SB1-7284-01	00733643G		N/A		MO
B6.04108C	C2-SB1-8496-01	00733646K		N/A		MO
B6.04109D	C2-SB2-0012-01	00733649N		N/A		MO
B6.04110W	C2-SB2-1224-01	00733652H		N/A		MO
B6.04111X	C2-SB2-2436-01	00733655L		N/A		MO
B6.04112Y	C2-SB2-3648-01	00733658P		N/A		MO
B6.04113Z	C2-SB2-7284-01	00733661J		N/A		MO
B6.04114A	C2-SB2-7284-02	00733664M		N/A		MO
B6.04115B	C2-SB2-8496-01	00733667Q		N/A		MO
B6.04116C	C2-SB3-0012-01	00733670K		N/A		MO
B6.04117D	C2-SB3-1224-01	00733673N		N/A		MO
B6.04118E	C2-SB3-4860-01	00733676R		N/A		MO
B6.04119F	C2-SB3-6072-01	00733679V		N/A		MO
B6.04120Y	C2-SB3-7284-01	00733682P		N/A		MO
LCS-00734848Y *		00734848Y	LCS	N/A		MO
RBK-00734849Z *		00734849Z	RBK	N/A		MO

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

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QC RESULTS FOR BATCH 0013404B

NAREL Sample #	Analysis #	QC Type	Analyte	%R	RPD	Z	Evaluation
B6.04106A	00734847X	DUP	BI212		10.6	-0.82	PASS-J
B6.04106A	00734847X	DUP	BI214		0.7	-0.08	PASS-J
B6.04106A	00734847X	DUP	CS137		-46.1	-0.42	PASS
B6.04106A	00734847X	DUP	K40		0.5	-0.06	PASS
B6.04106A	00734847X	DUP	PB210		6.2	-0.37	PASS-J
B6.04106A	00734847X	DUP	PB212		0.5	-0.06	PASS-J
B6.04106A	00734847X	DUP	PB214		0.7	0.09	PASS-J
B6.04106A	00734847X	DUP	RA226		3.9	0.34	PASS-J
B6.04106A	00734847X	DUP	RA228		0.9	0.10	PASS
B6.04106A	00734847X	DUP	TH234		22.6	1.02	PASS-J
B6.04106A	00734847X	DUP	TL208		0.4	-0.04	PASS-J
LCS-00734848Y	00734848Y	LCS	BI207	100.6		0.10	PASS
LCS-00734848Y	00734848Y	LCS	EU155	112.7		1.77	PASS
RBK-00734849Z	00734849Z	RBK	BI212				PASS-J
RBK-00734849Z	00734849Z	RBK	BI214				WARN-J
RBK-00734849Z	00734849Z	RBK	CS137				PASS
RBK-00734849Z	00734849Z	RBK	K40				WARN
RBK-00734849Z	00734849Z	RBK	PB210				PASS-J
RBK-00734849Z	00734849Z	RBK	PB212				PASS-J
RBK-00734849Z	00734849Z	RBK	PB214				WARN-J
RBK-00734849Z	00734849Z	RBK	RA226				PASS-J
RBK-00734849Z	00734849Z	RBK	RA228				PASS
RBK-00734849Z	00734849Z	RBK	TH234				PASS-J
RBK-00734849Z	00734849Z	RBK	TL208				WARN-J

Note: Results qualified with -J may be significantly under or over-estimated and are not evaluated for QC purposes.

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U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY
540 S. MORRIS AVE., MONTGOMERY, AL 36115
TH ANALYSES

REPORT OF SAMPLE DELIVERY GROUP #1600015

Project:	Canadian Radium & Uranium, Mt. Kisco, NY
Analysis method:	Isotopic Thorium Using NaOH Fusion
Report ID:	1600015-TH
Report type:	Original
Date reported:	06/16/2016
Total pages in report:	32

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B6.04104Y	C2-SB1-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04105Z	C2-SB1-4860-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04106A	C2-SB1-6072-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04107B	C2-SB1-7284-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04108C	C2-SB1-8496-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04109D	C2-SB2-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04110W	C2-SB2-1224-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04111X	C2-SB2-2436-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04112Y	C2-SB2-3648-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04113Z	C2-SB2-7284-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04114A	C2-SB2-7284-02	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04115B	C2-SB2-8496-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04116C	C2-SB3-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04117D	C2-SB3-1224-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04118E	C2-SB3-4860-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04119F	C2-SB3-6072-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04120Y	C2-SB3-7284-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016

EXCEPTIONS

1. **Packaging and shipping** – No problems were observed.
2. **Documentation** – No problems were observed.
3. **Sample preparation** – No problems were encountered.
4. **Analysis** – Samples B6.04104 through B6.04112 were reanalyzed as a result of a Th-228 duplicate failure during the original analysis. The results of the reanalyses are reported in this data package. During the reanalysis of those samples, sample B6.04104 has a yield that was below NAREL's lower acceptance criterion. The QA officer for the center determined that it met the uncertainty requirement and approved the analysis.
5. **Holding times** – No holding times were specified.

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QUALITY CONTROL

1. **QC samples** – All QC analysis results met NAREL acceptance criteria.
2. **Yields** – All chemical yields were within acceptance limits except the yield for sample B6.04104 which has a yield that was below NAREL's lower acceptance criterion. The QA officer for the center determined that it met the uncertainty requirement that the relative standard uncertainty of the measured yield does not exceed 7.5 % and approved the analysis.
3. **Instruments** – Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

ACCREDITATION

All analyses included in this data package are accredited by the Oregon Environmental Laboratory Accreditation Program (ORELAP) to the TNI standard.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Project Acceptance Form and/or the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Director of the Center for Environmental Radioanalytical Laboratory Science and the NAREL Quality Assurance Manager, or their designees, as verified by the following signatures.

Velinda Herbert — Date: 6/22/16
Quality Assurance Manager, NAREL

Cynthia White — Date: 6-22-16
Director, Center for Environmental Radioanalytical Laboratory Science

ED_006395_00001795-00111

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample, or blank spike
MS	Matrix spike
MSD	Matrix spike duplicate (not currently analyzed)
RBK	Method blank
STD	External standard (used for ^{228}Ra yield determination)

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

RADIOCHEMICAL DATA

Radiochemical analyses usually require the subtraction of an instrument background measurement result from a gross sample measurement result. Both values are positive, but when the sample activity is low, random variations in the two measurements can cause the gross value to be less than the background, resulting in a measured activity less than zero. Although negative activities have no physical significance, they do have statistical importance, as for example in the evaluation of trends or the comparison of two groups of samples.

To the extent practical, it is the policy of NAREL to report results as generated, whether positive, negative, or zero, together with the "2-sigma" measurement uncertainty and a sample-specific estimate of the minimum detectable concentration (MDC). The measurement result, uncertainty, and MDC are always expressed in the same unit of measurement.

EVALUATION OF QC ANALYSES

A method blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "*Z* scores." A *Z* score is the number of standard deviations by which the QC result differs from its ideal value. Generally the score is considered acceptable if its absolute value is not greater than 3.

The *Z* score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference. The *Z* score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation of most analyses. An exception is the use of %R in the evaluation of gross alpha matrix spike results. A gross alpha matrix spike result is considered acceptable if either $|Z| \leq 3$ or $60 \leq \%R \leq 110$.

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53 Original COC

From Cooler #4

4.20.16

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
5	C002-SB001-0012-01	4/6/2016	13:56	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-0012-01	4/6/2016	13:56	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-0012-01	4/6/2016	13:56	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
5	C002-SB001-4860-01	4/6/2016	13:57	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-4860-01	4/6/2016	13:57	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-4860-01	4/6/2016	13:57	Gamma Spec (Modified)	Soil	4 C	N	Broken 1	16 oz glass jar
5	C002-SB001-6072-01	4/6/2016	13:57	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-6072-01	4/6/2016	13:57	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-6072-01	4/6/2016	13:57	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
5	C002-SB001-7284-01	4/6/2016	13:57	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-7284-01	4/6/2016	13:57	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-7284-01	4/6/2016	13:57	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
5	C002-SB001-8496-01	4/6/2016	13:57	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-8496-01	4/6/2016	13:57	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
5	C002-SB001-8496-01	4/6/2016	13:57	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB002-0012-01	4/6/2016	14:31	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB002-0012-01	4/6/2016	14:31	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB002-0012-01	4/6/2016	14:31	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
4	C002-SB002-1224-01	4/6/2016	14:31	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RSTS		NAREL	04/19/16 0815	Good

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

cooler #4

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

	Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
cooler 4		C002-SB002-1224-01 ✓	4/6/2016	14:31	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4		C002-SB002-1224-01 ✓	4/6/2016	14:31	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
4		C002-SB002-2436-01 ✓	4/6/2016	14:32	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4		C002-SB002-2436-01 ✓	4/6/2016	14:32	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4		C002-SB002-2436-01 ✓	4/6/2016	14:32	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
4		C002-SB002-3648-01 ✓	4/6/2016	14:32	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4		C002-SB002-3648-01 ✓	4/6/2016	14:32	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4		C002-SB002-3648-01 ✓	4/6/2016	14:32	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
4		C002-SB002-7284-01 ✓	4/6/2016	14:33	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4		C002-SB002-7284-01 ✓	4/6/2016	14:33	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4		C002-SB002-7284-01 ✓	4/6/2016	14:33	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
4		C002-SB002-7284-02 ✓	4/6/2016	14:33	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4		C002-SB002-7284-02 ✓	4/6/2016	14:33	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4		C002-SB002-7284-02 ✓	4/6/2016	14:33	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
5		C002-SB002-8496-01 ✓	4/6/2016	14:33 ✓	Isotopic Thorium ✓	Soil	4 C	Y	2	8 oz glass jar ✓
5		C002-SB002-8496-01 ✓	4/6/2016	14:33 ✓	Isotopic Uranium ✓	Soil	4 C	Y	2	8 oz glass jar ✓
5		C002-SB002-8496-01	4/6/2016	14:33 ✓	~~Gamma Spec (Modified)~~ ✓	Soil	4 C	N	OK 1/6oz 8oz 1	~~16~~ oz glass jar
		C002-SB003-0012-01	4/6/2016	13:17	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
		C002-SB003-0012-01	4/6/2016	13:17	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar

5 TOTAL

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RSTB		NAREL	04/19/16 @1115	Good

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
	C002-SB003-0012-01	4/6/2016	13:17	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB003-1224-01	4/6/2016	13:17	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-1224-01	4/6/2016	13:17	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-1224-01	4/6/2016	13:17	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB003-4860-01	4/6/2016	13:18	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-4860-01	4/6/2016	13:18	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-4860-01	4/6/2016	13:18	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB003-6072-01	4/6/2016	13:18	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-6072-01	4/6/2016	13:18	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-6072-01	4/6/2016	13:18	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
4	C002-SB003-7284-01 ✓	4/6/2016	13:18	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-7284-01 ✓	4/6/2016	13:18	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-7284-01 ✓	4/6/2016	13:18	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
4	C002-SB003-8496-01 ✓	4/6/2016	13:19	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-8496-01 ✓	4/6/2016	13:19	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-8496-01 ✓	4/6/2016	13:19	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
	C003-SB001-0012-01	4/5/2016	12:19	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB001-0012-01	4/5/2016	12:19	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
4	C003-SB001-0012-01 ✓	4/5/2016 ✓	12:19	Gamma Spec (Modified) ✓	Soil	4 C	N	1	✓6 oz glass jar

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	RSTB		NAREL	04/18/16 @ 11:15	Excellent Crushed Sample

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

ANALYSIS SUMMARY

Analysis method: NAREL ACT-02F-TH
Title: Isotopic Thorium Using NaOH Fusion

NAREL Sample #	Client Sample ID	QC Type	Date Completed	Preparation Batch #	Assay Batch #
B6.04104Y	C2-SB1-0012-01		06/11/2016	0013447N	0020924Z
B6.04104Y	C2-SB1-0012-01	DUP	06/11/2016	0013447N	0020924Z
B6.04105Z	C2-SB1-4860-01		06/11/2016	0013447N	0020924Z
B6.04106A	C2-SB1-6072-01		06/11/2016	0013447N	0020924Z
B6.04107B	C2-SB1-7284-01		06/11/2016	0013447N	0020924Z
B6.04108C	C2-SB1-8496-01		06/11/2016	0013447N	0020924Z
B6.04109D	C2-SB2-0012-01		06/11/2016	0013447N	0020924Z
B6.04110W	C2-SB2-1224-01		06/11/2016	0013447N	0020924Z
B6.04111X	C2-SB2-2436-01		06/11/2016	0013447N	0020924Z
B6.04112Y	C2-SB2-3648-01		06/11/2016	0013447N	0020924Z
B6.04113Z	C2-SB2-7284-01		06/08/2016	0013438M	0020914X
B6.04113Z	C2-SB2-7284-01	DUP	06/08/2016	0013438M	0020914X
B6.04114A	C2-SB2-7284-02		06/08/2016	0013438M	0020914X
B6.04115B	C2-SB2-8496-01		06/08/2016	0013438M	0020914X
B6.04116C	C2-SB3-0012-01		06/08/2016	0013438M	0020914X
B6.04117D	C2-SB3-1224-01		06/08/2016	0013438M	0020914X
B6.04118E	C2-SB3-4860-01		06/08/2016	0013438M	0020914X
B6.04119F	C2-SB3-6072-01		06/08/2016	0013438M	0020914X
B6.04120Y	C2-SB3-7284-01		06/08/2016	0013438M	0020914X
LCS-00735295Q *		LCS	06/08/2016	0013438M	0020914X
RBK-00735294P *		RBK	06/08/2016	0013438M	0020914X
LCS-00735406D *		LCS	06/11/2016	0013447N	0020924Z
RBK-00735405C *		RBK	06/11/2016	0013447N	0020924Z

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

ED_006395_00001795-00116

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04104Y	Amount analyzed:	1.094e+00 GASH
Client sample ID:	C2-SB1-0012-01	Preparation batch #:	0013447N
Matrix:	SOIL	Assay batch #:	0020924Z
Collected:	2016-04-06 13:56 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	95.75 %	Analyst:	SPK
Ash/dry weight:	88.99 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:38	1000.0	AS97	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	8.10e-02	7.1e-02	7.5e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th228	5.97e-01	1.6e-01	5.2e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th230	4.48e-01	1.3e-01	7.1e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th232	4.50e-01	1.3e-01	4.2e-02	PCI/GDRY	06/10/2016 15:38 CDT

ED_006395_00001795-00117

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04104Y	Amount analyzed:	9.600e-01 GASH
Client sample ID:	C2-SB1-0012-01	Preparation batch #:	0013447N
Matrix:	SOIL	Assay batch #:	0020924Z
Collected:	2016-04-06 13:56 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	95.75 %	Analyst:	SPK
Ash/dry weight:	88.99 %	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:38	1000.0	AS98	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.04e-01	4.9e-02	2.5e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th228	4.68e-01	8.6e-02	2.3e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th230	4.74e-01	9.1e-02	5.4e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th232	5.12e-01	9.1e-02	1.9e-02	PCI/GDRY	06/10/2016 15:38 CDT

ED_006395_00001795-00118

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04105Z	Amount analyzed:	9.818e-01 GASH
Client sample ID:	C2-SB1-4860-01	Preparation batch #:	0013447N
Matrix:	SOIL	Assay batch #:	0020924Z
Collected:	2016-04-06 13:57 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	94.41 %	Analyst:	SPK
Ash/dry weight:	97.26 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:38	1000.0	AS99	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	6.71e-02	4.1e-02	2.8e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th228	5.04e-01	9.4e-02	1.9e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th230	4.84e-01	9.7e-02	5.8e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th232	5.18e-01	9.6e-02	1.6e-02	PCI/GDRY	06/10/2016 15:38 CDT

ED_006395_00001795-00119

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04106A	Amount analyzed:	9.944e-01 GASH
Client sample ID:	C2-SB1-6072-01	Preparation batch #:	0013447N
Matrix:	SOIL	Assay batch #:	0020924Z
Collected:	2016-04-06 13:57 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	91.38 %	Analyst:	SPK
Ash/dry weight:	98.14 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:38	1000.0	AS100	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	7.06e-02	4.5e-02	3.7e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th228	6.30e-01	1.1e-01	2.9e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th230	5.03e-01	1.0e-01	6.1e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th232	5.89e-01	1.1e-01	2.4e-02	PCI/GDRY	06/10/2016 15:38 CDT

ED_006395_00001795-00120

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04107B	Amount analyzed:	1.009e+00 GASH
Client sample ID:	C2-SB1-7284-01	Preparation batch #:	0013447N
Matrix:	SOIL	Assay batch #:	0020924Z
Collected:	2016-04-06 13:57 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	80.06 %	Analyst:	SPK
Ash/dry weight:	94.96 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:38	1000.0	AS101	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	J	1.23e-01	5.6e-02	3.3e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th228		7.50e-01	1.2e-01	2.1e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th230		6.18e-01	1.1e-01	5.6e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th232		7.09e-01	1.2e-01	1.5e-02	PCI/GDRY	06/10/2016 15:38 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00121

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04108C	Amount analyzed:	1.005e+00 GASH
Client sample ID:	C2-SB1-8496-01	Preparation batch #:	0013447N
Matrix:	SOIL	Assay batch #:	0020924Z
Collected:	2016-04-06 13:57 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	81.74 %	Analyst:	SPK
Ash/dry weight:	96.75 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:38	1000.0	AS103	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	9.79e-02	4.8e-02	2.6e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th228	7.43e-01	1.2e-01	2.5e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th230	5.42e-01	1.0e-01	5.7e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th232	7.11e-01	1.1e-01	2.0e-02	PCI/GDRY	06/10/2016 15:38 CDT

ED_006395_00001795-00122

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04109D	Amount analyzed:	9.756e-01 GASH
Client sample ID:	C2-SB2-0012-01	Preparation batch #:	0013447N
Matrix:	SOIL	Assay batch #:	0020924Z
Collected:	2016-04-06 14:31 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	95.55 %	Analyst:	SPK
Ash/dry weight:	85.26 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:38	1000.0	AS104	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.15e-01	6.1e-02	4.3e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th228	5.37e-01	1.1e-01	4.1e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th230	5.54e-01	1.2e-01	5.9e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th232	4.17e-01	9.3e-02	2.0e-02	PCI/GDRY	06/10/2016 15:38 CDT

ED_006395_00001795-00123

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04110W	Amount analyzed:	1.016e+00 GASH
Client sample ID:	C2-SB2-1224-01	Preparation batch #:	0013447N
Matrix:	SOIL	Assay batch #:	0020924Z
Collected:	2016-04-06 14:31 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	83.51 %	Analyst:	SPK
Ash/dry weight:	89.80 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:38	1000.0	AS105	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.25e-01	5.3e-02	2.4e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th228	9.90e-01	1.4e-01	1.7e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th230	1.08e+00	1.5e-01	5.2e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th232	8.48e-01	1.3e-01	1.7e-02	PCI/GDRY	06/10/2016 15:38 CDT

ED_006395_00001795-00124

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04111X	Amount analyzed:	9.908e-01 GASH
Client sample ID:	C2-SB2-2436-01	Preparation batch #:	0013447N
Matrix:	SOIL	Assay batch #:	0020924Z
Collected:	2016-04-06 14:32 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	89.06 %	Analyst:	SPK
Ash/dry weight:	97.20 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:38	1000.0	AS106	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	J	1.13e-01	5.4e-02	2.8e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th228		5.62e-01	1.0e-01	2.9e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th230		9.32e-01	1.5e-01	5.9e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th232		6.17e-01	1.1e-01	2.2e-02	PCI/GDRY	06/10/2016 15:38 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00125

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04112Y	Amount analyzed:	1.005e+00 GASH
Client sample ID:	C2-SB2-3648-01	Preparation batch #:	0013447N
Matrix:	SOIL	Assay batch #:	0020924Z
Collected:	2016-04-06 14:32 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	90.76 %	Analyst:	SPK
Ash/dry weight:	91.79 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:38	1000.0	AS107	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.38e-01	5.8e-02	3.2e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th228	8.93e-01	1.3e-01	2.0e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th230	1.57e+00	2.1e-01	5.4e-02	PCI/GDRY	06/10/2016 15:38 CDT
Th232	7.59e-01	1.2e-01	2.0e-02	PCI/GDRY	06/10/2016 15:38 CDT

ED_006395_00001795-00126

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04113Z	Amount analyzed:	1.001e+00 GASH
Client sample ID:	C2-SB2-7284-01	Preparation batch #:	0013438M
Matrix:	SOIL	Assay batch #:	0020914X
Collected:	2016-04-06 14:33 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	84.35 %	Analyst:	SPK
Ash/dry weight:	95.90 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/07/2016 16:23	1000.0	AS97	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	8.11e-02	4.8e-02	3.7e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th228	1.11e+00	1.7e-01	2.5e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th230	6.80e-01	1.2e-01	5.8e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th232	1.01e+00	1.6e-01	2.1e-02	PCI/GDRY	06/07/2016 16:23 CDT

ED_006395_00001795-00127

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04113Z	Amount analyzed:	9.982e-01 GASH
Client sample ID:	C2-SB2-7284-01	Preparation batch #:	0013438M
Matrix:	SOIL	Assay batch #:	0020914X
Collected:	2016-04-06 14:33 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	84.35 %	Analyst:	SPK
Ash/dry weight:	95.90 %	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/07/2016 16:23	1000.0	AS98	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.05e-01	5.2e-02	2.8e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th228	9.55e-01	1.4e-01	2.5e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th230	7.38e-01	1.2e-01	5.7e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th232	8.72e-01	1.4e-01	2.2e-02	PCI/GDRY	06/07/2016 16:23 CDT

ED_006395_00001795-00128

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04114A	Amount analyzed:	1.011e+00 GASH
Client sample ID:	C2-SB2-7284-02	Preparation batch #:	0013438M
Matrix:	SOIL	Assay batch #:	0020914X
Collected:	2016-04-06 14:33 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	83.99 %	Analyst:	SPK
Ash/dry weight:	95.93 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/07/2016 16:22	1000.0	AS99	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.47e-01	6.2e-02	2.8e-02	PCI/GDRY	06/07/2016 16:22 CDT
Th228	1.09e+00	1.6e-01	2.0e-02	PCI/GDRY	06/07/2016 16:22 CDT
Th230	6.44e-01	1.2e-01	5.7e-02	PCI/GDRY	06/07/2016 16:22 CDT
Th232	1.12e+00	1.6e-01	1.6e-02	PCI/GDRY	06/07/2016 16:22 CDT

ED_006395_00001795-00129

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04115B	Amount analyzed:	1.011e+00 GASH
Client sample ID:	C2-SB2-8496-01	Preparation batch #:	0013438M
Matrix:	SOIL	Assay batch #:	0020914X
Collected:	2016-04-06 14:33 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	80.48 %	Analyst:	SPK
Ash/dry weight:	96.73 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/07/2016 16:22	1000.0	AS100	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.00e-01	5.0e-02	3.3e-02	PCI/GDRY	06/07/2016 16:22 CDT
Th228	7.64e-01	1.2e-01	2.6e-02	PCI/GDRY	06/07/2016 16:22 CDT
Th230	6.07e-01	1.1e-01	5.7e-02	PCI/GDRY	06/07/2016 16:22 CDT
Th232	7.36e-01	1.2e-01	2.1e-02	PCI/GDRY	06/07/2016 16:22 CDT

ED_006395_00001795-00130

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04116C	Amount analyzed:	1.003e+00 GASH
Client sample ID:	C2-SB3-0012-01	Preparation batch #:	0013438M
Matrix:	SOIL	Assay batch #:	0020914X
Collected:	2016-04-06 13:17 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	78.00 %	Analyst:	SPK
Ash/dry weight:	92.46 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/07/2016 16:22	1000.0	AS102	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.20e-01	5.4e-02	3.3e-02	PCI/GDRY	06/07/2016 16:22 CDT
Th228	3.73e+00	4.2e-01	2.9e-02	PCI/GDRY	06/07/2016 16:22 CDT
Th230	1.08e+00	1.6e-01	5.7e-02	PCI/GDRY	06/07/2016 16:22 CDT
Th232	3.83e+00	4.3e-01	1.8e-02	PCI/GDRY	06/07/2016 16:22 CDT

ED_006395_00001795-00131

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04117D	Amount analyzed:	1.005e+00 GASH
Client sample ID:	C2-SB3-1224-01	Preparation batch #:	0013438M
Matrix:	SOIL	Assay batch #:	0020914X
Collected:	2016-04-06 13:17 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	86.91 %	Analyst:	SPK
Ash/dry weight:	96.78 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/07/2016 16:23	1000.0	AS103	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.06e-01	5.2e-02	2.8e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th228	7.49e-01	1.2e-01	2.7e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th230	1.00e+00	1.5e-01	5.9e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th232	8.81e-01	1.4e-01	2.2e-02	PCI/GDRY	06/07/2016 16:23 CDT

ED_006395_00001795-00132

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04118E	Amount analyzed:	9.998e-01 GASH
Client sample ID:	C2-SB3-4860-01	Preparation batch #:	0013438M
Matrix:	SOIL	Assay batch #:	0020914X
Collected:	2016-04-06 13:18 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	79.16 %	Analyst:	SPK
Ash/dry weight:	86.50 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/07/2016 16:23	1000.0	AS104	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.50e-01	6.0e-02	3.1e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th228	8.47e-01	1.3e-01	3.0e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th230	1.32e+00	1.8e-01	5.2e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th232	7.67e-01	1.2e-01	1.4e-02	PCI/GDRY	06/07/2016 16:23 CDT

ED_006395_00001795-00133

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04119F	Amount analyzed:	1.003e+00 GASH
Client sample ID:	C2-SB3-6072-01	Preparation batch #:	0013438M
Matrix:	SOIL	Assay batch #:	0020914X
Collected:	2016-04-06 13:18 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	60.06 %	Analyst:	SPK
Ash/dry weight:	87.01 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/07/2016 16:23	1000.0	AS121	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	8.66e-02	4.2e-02	2.3e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th228	8.65e-01	1.3e-01	1.8e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th230	7.20e-01	1.1e-01	5.0e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th232	9.44e-01	1.3e-01	1.3e-02	PCI/GDRY	06/07/2016 16:23 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04120Y	Amount analyzed:	1.009e+00 GASH
Client sample ID:	C2-SB3-7284-01	Preparation batch #:	0013438M
Matrix:	SOIL	Assay batch #:	0020914X
Collected:	2016-04-06 13:18 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	83.07 %	Analyst:	SPK
Ash/dry weight:	98.05 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/07/2016 16:23	1000.0	AS122	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.56e-01	6.1e-02	2.6e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th228	8.15e-01	1.3e-01	2.8e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th230	7.35e-01	1.2e-01	5.6e-02	PCI/GDRY	06/07/2016 16:23 CDT
Th232	7.30e-01	1.2e-01	1.8e-02	PCI/GDRY	06/07/2016 16:23 CDT

ED_006395_00001795-00135

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	LCS-00735295Q	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013438M
Matrix:	N/A	Assay batch #:	0020914X
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/07/2016 16:23	1000.0	AS123	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	6.40e-02	4.6e-02	4.8e-02	PCI	06/07/2016 16:23 CDT
Th228	1.20e-02	1.9e-02	3.1e-02	PCI	06/07/2016 16:23 CDT
Th230	1.90e+00	2.4e-01	6.2e-02	PCI	06/07/2016 16:23 CDT
Th232	6.02e-03	1.5e-02	2.9e-02	PCI	06/07/2016 16:23 CDT

ED_006395_00001795-00136

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	RBK-00735294P	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013438M
Matrix:	N/A	Assay batch #:	0020914X
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/07/2016 16:23	1000.0	AS124	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.06e-02	2.3e-02	3.9e-02	PCI	06/07/2016 16:23 CDT
Th228	1.80e-02	2.0e-02	2.7e-02	PCI	06/07/2016 16:23 CDT
Th230	2.67e-02	3.7e-02	6.2e-02	PCI	06/07/2016 16:23 CDT
Th232	6.01e-03	1.3e-02	2.2e-02	PCI	06/07/2016 16:23 CDT

ED_006395_00001795-00137

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	LCS-00735406D	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013447N
Matrix:	N/A	Assay batch #:	0020924Z
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:38	1000.0	AS108	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	7.62e-03	2.1e-02	4.0e-02	PCI	06/10/2016 15:38 CDT
Th228	3.23e-03	1.4e-02	2.9e-02	PCI	06/10/2016 15:38 CDT
Th230	2.32e+00	2.7e-01	6.0e-02	PCI	06/10/2016 15:38 CDT
Th232	9.68e-03	1.3e-02	1.6e-02	PCI	06/10/2016 15:38 CDT

ED_006395_00001795-00138

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600015

SAMPLE ANALYSIS REPORT

Lab sample #:	RBK-00735405C	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013447N
Matrix:	N/A	Assay batch #:	0020924Z
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:38	1000.0	AS109	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	-1.94e-03	1.3e-02	3.6e-02	PCI	06/10/2016 15:38 CDT
Th228	5.48e-03	1.4e-02	2.7e-02	PCI	06/10/2016 15:38 CDT
Th230	9.87e-03	3.2e-02	6.0e-02	PCI	06/10/2016 15:38 CDT
Th232	6.58e-03	1.2e-02	1.6e-02	PCI	06/10/2016 15:38 CDT

ED_006395_00001795-00139

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1600015

PREPARATION BATCH SUMMARY

Preparation batch #: 0013438M
Analysis method: NAREL ACT-02F-TH
Preparation procedure: N/A

NAREL Sample #	Client Sample ID	Analysis #	QC Type	Yield	± 2 σ Uncertainty	Analyst
B6.04113Z	C2-SB2-7284-01	00733660H		77.80 %	7.35 %	SPK
B6.04113Z	C2-SB2-7284-01	00735330A	DUP	84.96 %	7.77 %	SPK
B6.04114A	C2-SB2-7284-02	00733663L		82.92 %	7.69 %	SPK
B6.04115B	C2-SB2-8496-01	00733666P		90.62 %	8.22 %	SPK
B6.04116C	C2-SB3-0012-01	00733669T		85.11 %	7.78 %	SPK
B6.04117D	C2-SB3-1224-01	00733672M		86.68 %	7.94 %	SPK
B6.04118E	C2-SB3-4860-01	00733675Q		83.33 %	7.68 %	SPK
B6.04119F	C2-SB3-6072-01	00733678U		96.53 %	8.49 %	SPK
B6.04120Y	C2-SB3-7284-01	00733681N		92.11 %	8.16 %	SPK
LCS-00735295Q *		00735295Q	LCS	77.40 %	7.41 %	SPK
RBK-00735294P *		00735294P	RBK	76.89 %	7.36 %	SPK

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

QC RESULTS FOR BATCH 0013438M

NAREL Sample #	Analysis #	QC Type	Analyte	%R	RPD	Z	Evaluation
B6.04113Z	00735330A	DUP	TH227		25.8	0.68	PASS
B6.04113Z	00735330A	DUP	TH228		15.3	-1.43	PASS
B6.04113Z	00735330A	DUP	TH230		8.2	0.67	PASS
B6.04113Z	00735330A	DUP	TH232		14.7	-1.34	PASS
LCS-00735295Q	00735295Q	LCS	TH230	95.0		-0.81	PASS
RBK-00735294P	00735294P	RBK	TH227				PASS
RBK-00735294P	00735294P	RBK	TH228				PASS
RBK-00735294P	00735294P	RBK	TH230				PASS
RBK-00735294P	00735294P	RBK	TH232				PASS

ED_006395_00001795-00140

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1600015

PREPARATION BATCH SUMMARY

Preparation batch #: 0013447N
Analysis method: NAREL ACT-02F-TH
Preparation procedure: N/A

NAREL Sample #	Client Sample ID	Analysis #	QC Type	Yield	± 2 σ Uncertainty	Analyst
B6.04104Y	C2-SB1-0012-01	00735395U		32.30 %	4.57 %	SPK
B6.04104Y	C2-SB1-0012-01	00735404B	DUP	91.23 %	8.09 %	SPK
B6.04105Z	C2-SB1-4860-01	00735396V		87.55 %	7.94 %	SPK
B6.04106A	C2-SB1-6072-01	00735397W		83.13 %	7.83 %	SPK
B6.04107B	C2-SB1-7284-01	00735398X		85.07 %	7.78 %	SPK
B6.04108C	C2-SB1-8496-01	00735399Y		93.56 %	8.30 %	SPK
B6.04109D	C2-SB2-0012-01	00735400X		61.81 %	6.51 %	SPK
B6.04110W	C2-SB2-1224-01	00735401Y		88.83 %	7.94 %	SPK
B6.04111X	C2-SB2-2436-01	00735402Z		87.38 %	8.00 %	SPK
B6.04112Y	C2-SB2-3648-01	00735403A		84.07 %	7.62 %	SPK
LCS-00735406D *		00735406D	LCS	84.44 %	7.70 %	SPK
RBK-00735405C *		00735405C	RBK	84.83 %	7.80 %	SPK

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

QC RESULTS FOR BATCH 0013447N

NAREL Sample #	Analysis #	QC Type	Analyte	%R	RPD	Z	Evaluation
B6.04104Y	00735404B	DUP	TH227		25.3	0.54	PASS
B6.04104Y	00735404B	DUP	TH228		24.2	-1.45	PASS
B6.04104Y	00735404B	DUP	TH230		5.7	0.33	PASS
B6.04104Y	00735404B	DUP	TH232		12.8	0.77	PASS
LCS-00735406D	00735406D	LCS	TH230	115.8		2.32	WARN
RBK-00735405C	00735405C	RBK	TH227				PASS
RBK-00735405C	00735405C	RBK	TH228				PASS
RBK-00735405C	00735405C	RBK	TH230				PASS
RBK-00735405C	00735405C	RBK	TH232				PASS

U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY
540 S. MORRIS AVE., MONTGOMERY, AL 36115
GAMMA ANALYSES

REPORT OF SAMPLE DELIVERY GROUP #1600016

Project:	Canadian Radium & Uranium, Mt. Kisco, NY
Analysis method:	Gamma-ray Spectrometry - Sealed Radium Cans
Report ID:	1600016-GAMMA
Report type:	Original
Date reported:	06/13/2016
Total pages in report:	31

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B6.04121Z	C2-SB3-8496-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04122A	C3-SB1-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04123B	C3-SB1-3648-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04124C	C3-SB1-3648-02	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04125D	C3-SB2-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04126E	C3-SB2-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04127F	C3-SB3-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04128G	C3-SB3-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04129H	C3-SB4-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04130A	C3-SB4-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04131B	C3-SB5-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04132C	C3-SB6-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04133D	C3-SB6-3648-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04134E	C3-SB7-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04135F	C3-SB7-3648-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04136G	C3-SB8-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04137H	C3-SB8-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016

EXCEPTIONS

1. **Packaging and shipping** – No problems were observed.
2. **Documentation** – No problems were observed.
3. **Sample preparation** – No problems were encountered.
4. **Analysis** – Samples were held for 21 days to allow for ingrowth. Client requested that NAREL report the following: Cs-137, Th-234, Tl-208, Ra-228, Ac-228, Bi-210, Ra-226, Pb-214, Bi-214, Bi-212, Pb-212, Pb-210, and K-40. Client was informed that NAREL does not provide Ac-228 or Bi-210 results by gamma analysis. Also, client requested specific methods to be used, but NAREL uses in-house methods. Client agreed NAREL methods were acceptable. Please see page 4 of this report with regards to exceptions for reporting of some of the nuclides in this list. For Pb-210 in soil samples, NAREL flags the results because of the larger uncertainty associated with gamma-ray attenuation in uncharacterized materials at low energies (46.5 keV).
5. **Holding times** – No holding times were specified.

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QUALITY CONTROL

1. **QC samples** – All QC analysis results met NAREL acceptance criteria.
2. **Instruments** – Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

ACCREDITATION

All analyses included in this data package are accredited by the Oregon Environmental Laboratory Accreditation Program (ORELAP) to the TNI standard.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Project Acceptance Form and/or the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Director of the Center for Environmental Radioanalytical Laboratory Science and the NAREL Quality Assurance Manager, or their designees, as verified by the following signatures.

Velinda Herbert 6/15/16

Velinda Herbert — Date
Quality Assurance Manager, NAREL

Cynthia White 6-16-16

Cynthia White — Date
Director, Center for Environmental Radioanalytical Laboratory Science

ED_006395_00001795-00143

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample, or blank spike
MS	Matrix spike
MSD	Matrix spike duplicate (not currently analyzed)
RBK	Method blank
STD	External standard (used for ^{228}Ra yield determination)

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

RADIOCHEMICAL DATA

Radiochemical analyses usually require the subtraction of an instrument background measurement result from a gross sample measurement result. Both values are positive, but when the sample activity is low, random variations in the two measurements can cause the gross value to be less than the background, resulting in a measured activity less than zero. Although negative activities have no physical significance, they do have statistical importance, as for example in the evaluation of trends or the comparison of two groups of samples.

To the extent practical, it is the policy of NAREL to report results as generated, whether positive, negative, or zero, together with the "2-sigma" measurement uncertainty and a sample-specific estimate of the minimum detectable concentration (MDC). The measurement result, uncertainty, and MDC are always expressed in the same unit of measurement.

EVALUATION OF QC ANALYSES

A method blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "*Z* scores." A *Z* score is the number of standard deviations by which the QC result differs from its ideal value. Generally the score is considered acceptable if its absolute value is not greater than 3.

The *Z* score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference. The *Z* score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation of most analyses. An exception is the use of %R in the evaluation of gross alpha matrix spike results. A gross alpha matrix spike result is considered acceptable if either $|Z| \leq 3$ or $60 \leq \%R \leq 110$.

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GENERAL INFORMATION (CONTINUED)

GAMMA ANALYSIS

The reporting format lists the gamma emitters in alphabetical order. The activity, 2-sigma uncertainty, and a sample-specific estimate of the MDC for radionuclides measured by gamma spectroscopy are reported only if the nuclide is detected above background with the exception of client requested nuclides of interest. The activity for each of the requested nuclides is reported whether negative, positive, or zero along with the associated 2-sigma uncertainty and the sample-specific estimate of the MDC.

Due to potential spectral interferences and other possible problems associated with the determination of the activity of certain radionuclides, the activities for ^{214}Bi, ^{214}Pb, ^{234}Th, ^{234m}Pa, ^{226}Ra, ^{231}Th, and ^{235}U are subject to greater uncertainty than other commonly reported radionuclides. It should be noted that this potential uncertainty is not included in the two-sigma expanded uncertainty that is reported with each result. Although in this report we do provide the calculated activities for these radionuclides, we recommend that the results be used only as a qualitative means of indicating the presence of these radionuclides and not as a quantitative measure of their concentration. The results for these nuclides are not used in the evaluation of quality control samples. Furthermore, because of mutual interference between ^{226}Ra and ^{235}U, NAREL's gamma analysis software tends to overestimate the amounts of these nuclides whenever both are present in a sample. Lower estimates for ^{226}Ra activities can be obtained from the reported activities of its decay products, ^{214}Pb and ^{214}Bi, which are likely to be somewhat less than the ^{226}Ra activity because of the potential escape of radon gas.

NAREL's gamma-ray spectrometry software corrects activities and MDCs for decay between collection and analysis, but only up to a limit of twelve half-lives. If the decay time for a sample exceeds twelve half-lives of a radionuclide, that radionuclide is not reported. This software feature may affect results for short-lived radionuclides, such as ^{131}I and ^{140}Ba, when there is a long delay between collection and analysis.

ED_006395_00001795-00145

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
	C002-SB003-0012-01	4/6/2016	13:17	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB003-1224-01	4/6/2016	13:17	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-1224-01	4/6/2016	13:17	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-1224-01	4/6/2016	13:17	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB003-4860-01	4/6/2016	13:18	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-4860-01	4/6/2016	13:18	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-4860-01	4/6/2016	13:18	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB003-6072-01	4/6/2016	13:18	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-6072-01	4/6/2016	13:18	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-6072-01	4/6/2016	13:18	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
4	C002-SB003-7284-01 ✓	4/6/2016	13:18	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-7284-01 ✓	4/6/2016	13:18	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-7284-01 ✓	4/6/2016	13:18	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
4	C002-SB003-8496-01 ✓	4/6/2016	13:19	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-8496-01 ✓	4/6/2016	13:19	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-8496-01 ✓	4/6/2016	13:19	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
	C003-SB001-0012-01	4/5/2016	12:19	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB001-0012-01	4/5/2016	12:19	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
4	C003-SB001-0012-01 ✓	4/5/2016 ✓	12:19	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar

crushed from this row

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		NAREL	04/19/16 @ 11:15	Good Crushed Sample

Chain of Custody Forms

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
3	C003-SB001-3648-01 ✓	4/5/2016	12:21 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
	C003-SB001-3648-01	4/5/2016	12:21	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB001-3648-01	4/5/2016	12:21	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB001-3648-02 ✓	4/5/2016	12:21	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB001-3648-02 ✓	4/5/2016	12:21 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB001-3648-02 ✓	4/5/2016	12:21 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
	C003-SB002-0012-01	4/5/2016	11:10	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB002-0012-01	4/5/2016	11:10	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB002-0012-01	4/5/2016	11:10	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB002-1224-01	4/5/2016	11:05	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB002-1224-01	4/5/2016	11:05	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB002-1224-01	4/5/2016	11:05	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB003-0012-01	4/5/2016	13:20	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB003-0012-01	4/5/2016	13:20	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB003-0012-01	4/5/2016	13:20	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB003-1224-01	4/5/2016	13:20	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar
3	C003-SB003-1224-01 ✓	4/5/2016	13:20 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB003-1224-01 ✓	4/5/2016	13:20 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓ ?
	C003-SB004-0012-01	4/5/2016	13:48	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	RST3		NAREL	04/19/16 @1115	

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
	C003-SB004-0012-01	4/5/2016	13:48	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB004-0012-01	4/5/2016	13:48	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB004-1224-01	4/5/2016	13:49	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB004-1224-01	4/5/2016	13:49	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB004-1224-01	4/5/2016	13:49	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB005-0012-01	4/5/2016	14:22	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB005-0012-01	4/5/2016	14:22	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB005-0012-01	4/5/2016	14:22	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB006-0012-01	4/5/2016	14:49	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB006-0012-01	4/5/2016	14:49	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB006-0012-01	4/5/2016	14:49	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB006-3648-01	4/5/2016	14:50	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB006-3648-01	4/5/2016	14:50	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB006-3648-01	4/5/2016	14:50	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB007-0012-01 ✓	4/5/2016	16:23 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB007-0012-01 ✓	4/5/2016	16:23 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB007-0012-01 ✓	4/5/2016	16:23 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
	~~C003-SB007-2436-02~~	~~4/5/2016~~	~~16:23~~	~~Isotopic Thorium~~	~~Soil~~	~~4 C~~	~~N~~	~~1~~	~~8 oz glass jar~~
	~~C003-SB007-2436-02~~	~~4/5/2016~~	~~16:23~~	~~Isotopic Uranium~~	~~Soil~~	~~4 C~~	~~N~~	~~1~~	~~8 oz glass jar~~

6

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		CH NAREL	4/19/16 @1115	Good

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
Digital Rec	~~C003-SB007-2436-02~~	~~4/5/2016~~	~~16:23~~	~~Gamma Spec. (Modified)~~	~~Soil~~	~~4 C~~	~~N~~	~~1~~	~~16 oz glass jar~~
	C003-SB007-3648-01	4/5/2016	16:23	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB007-3648-01	4/5/2016	16:23	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB007-3648-01	4/5/2016	16:23	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB008-0012-01	4/5/2016	16:58	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB008-0012-01	4/5/2016	16:58	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB008-0012-01	4/5/2016	16:58	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB008-1224-01	4/5/2016	16:59	Isotopic Thorium	Soil	4 C	Y	2	8 oz glass jar
3	C003-SB008-1224-01	4/5/2016	16:59	Isotopic Uranium	Soil	4 C	Y	2	8 oz glass jar
3	C003-SB008-1224-01	4/5/2016	16:59	Gamma Spec (Modified)	Soil	4 C	N	LABLE ISSUE	16 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB010-0012-01	4/5/2016	15:52	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB010-0012-01	4/5/2016	15:52	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB010-0012-01	4/5/2016	15:52	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar

7

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		NAREL	8/19/16	Good

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

ANALYSIS SUMMARY

Analysis method: NAREL GAM-01-RA
Title: Gamma-ray Spectrometry - Sealed Radium Cans

NAREL Sample #	Client Sample ID	QC Type	Date Completed	Preparation Batch #	Assay Batch #
B6.04121Z	C2-SB3-8496-01		06/03/2016	0013426H	0020905W
B6.04122A	C3-SB1-0012-01		06/03/2016	0013426H	0020905W
B6.04123B	C3-SB1-3648-01		06/03/2016	0013426H	0020905W
B6.04124C	C3-SB1-3648-02		06/03/2016	0013426H	0020905W
B6.04124C	C3-SB1-3648-02	DUP	06/04/2016	0013426H	0020905W
B6.04125D	C3-SB2-0012-01		06/03/2016	0013426H	0020905W
B6.04126E	C3-SB2-1224-01		06/03/2016	0013426H	0020905W
B6.04127F	C3-SB3-0012-01		06/04/2016	0013426H	0020905W
B6.04128G	C3-SB3-1224-01		06/04/2016	0013426H	0020905W
B6.04129H	C3-SB4-0012-01		06/04/2016	0013426H	0020905W
B6.04130A	C3-SB4-1224-01		06/04/2016	0013426H	0020905W
B6.04131B	C3-SB5-0012-01		06/04/2016	0013426H	0020905W
B6.04132C	C3-SB6-0012-01		06/07/2016	0013426H	0020905W
B6.04133D	C3-SB6-3648-01		06/04/2016	0013426H	0020905W
B6.04134E	C3-SB7-0012-01		06/07/2016	0013426H	0020905W
B6.04135F	C3-SB7-3648-01		06/07/2016	0013426H	0020905W
B6.04136G	C3-SB8-0012-01		06/08/2016	0013426H	0020905W
B6.04137H	C3-SB8-1224-01		06/08/2016	0013426H	0020905W
LCS-00735157F *		LCS	06/08/2016	0013426H	0020905W
RBK-00735158G *		RBK	06/08/2016	0013426H	0020905W

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

ED_006395_00001795-00150

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04121Z	Amount analyzed:	5.260e+02 GDRY
Client sample ID:	C2-SB3-8496-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-06 13:19 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	84.48 %	Analyst:	MO
Ash/dry weight:	98.41 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/02/2016 15:00	1000.0	GE17	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	1.13e+00	1.9e-01	1.6e-01	PCI/GDRY	04/06/2016 13:19 EDT
Bi214	J	7.13e-01	8.2e-02	2.2e-02	PCI/GDRY	04/06/2016 13:19 EDT
Cs137		-5.51e-04	8.7e-03	1.1e-02	PCI/GDRY	04/06/2016 13:19 EDT
K40		1.50e+01	1.7e+00	1.0e-01	PCI/GDRY	04/06/2016 13:19 EDT
Pb210	J	4.78e-01	1.1e-01	1.4e-01	PCI/GDRY	04/06/2016 13:19 EDT
Pb212	J	1.01e+00	1.1e-01	1.9e-02	PCI/GDRY	04/06/2016 13:19 EDT
Pb214	J	8.15e-01	9.3e-02	2.4e-02	PCI/GDRY	04/06/2016 13:19 EDT
Ra226	J	1.50e+00	2.3e-01	2.1e-01	PCI/GDRY	04/06/2016 13:19 EDT
Ra228		1.02e+00	1.2e-01	5.3e-02	PCI/GDRY	04/06/2016 13:19 EDT
Th234	J	5.95e-01	1.4e-01	1.9e-01	PCI/GDRY	04/06/2016 13:19 EDT
Tl208	J	3.24e-01	3.9e-02	1.5e-02	PCI/GDRY	04/06/2016 13:19 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00151

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04122A	Amount analyzed:	1.600e+02 GDRY
Client sample ID:	C3-SB1-0012-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 12:19 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	98.90 %	Analyst:	MO
Ash/dry weight:	90.07 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/02/2016 15:01	1000.0	GE04	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	1.20e+00	2.4e-01	2.0e-01	PCI/GDRY	04/05/2016 12:19 EDT
Bi214	J	5.33e-01	6.7e-02	2.8e-02	PCI/GDRY	04/05/2016 12:19 EDT
Cs137		-4.94e-03	1.1e-02	1.4e-02	PCI/GDRY	04/05/2016 12:19 EDT
K40		1.36e+01	1.5e+00	1.6e-01	PCI/GDRY	04/05/2016 12:19 EDT
Pb210	J	5.94e-01	2.2e-01	2.7e-01	PCI/GDRY	04/05/2016 12:19 EDT
Pb212	J	1.18e+00	1.3e-01	2.0e-02	PCI/GDRY	04/05/2016 12:19 EDT
Pb214	J	6.54e-01	7.7e-02	2.7e-02	PCI/GDRY	04/05/2016 12:19 EDT
Ra226	J	1.10e+00	2.7e-01	2.8e-01	PCI/GDRY	04/05/2016 12:19 EDT
Ra228		1.16e+00	1.4e-01	5.2e-02	PCI/GDRY	04/05/2016 12:19 EDT
Th234	J	5.43e-01	2.2e-01	3.0e-01	PCI/GDRY	04/05/2016 12:19 EDT
Tl208	J	3.43e-01	4.1e-02	1.4e-02	PCI/GDRY	04/05/2016 12:19 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00152

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04123B	Amount analyzed:	6.490e+02 GDRY
Client sample ID:	C3-SB1-3648-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 12:21 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	85.94 %	Analyst:	MO
Ash/dry weight:	99.22 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/02/2016 15:02	1000.0	GE18	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	7.70e-01	1.3e-01	1.2e-01	PCI/GDRY	04/05/2016 12:21 EDT
Bi214	J	7.85e-01	8.9e-02	1.8e-02	PCI/GDRY	04/05/2016 12:21 EDT
Cs137		-4.61e-03	7.1e-03	1.2e-02	PCI/GDRY	04/05/2016 12:21 EDT
K40		1.36e+01	1.5e+00	7.8e-02	PCI/GDRY	04/05/2016 12:21 EDT
Pb210	J	7.29e-01	1.6e-01	2.0e-01	PCI/GDRY	04/05/2016 12:21 EDT
Pb212	J	7.41e-01	8.3e-02	1.6e-02	PCI/GDRY	04/05/2016 12:21 EDT
Pb214	J	9.00e-01	1.0e-01	1.9e-02	PCI/GDRY	04/05/2016 12:21 EDT
Ra226	J	1.31e+00	2.0e-01	1.8e-01	PCI/GDRY	04/05/2016 12:21 EDT
Ra228		7.46e-01	8.8e-02	4.5e-02	PCI/GDRY	04/05/2016 12:21 EDT
Th234	J	5.08e-01	1.5e-01	2.2e-01	PCI/GDRY	04/05/2016 12:21 EDT
Tl208	J	2.35e-01	2.8e-02	1.2e-02	PCI/GDRY	04/05/2016 12:21 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00153

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04124C	Amount analyzed:	6.340e+02 GDRY
Client sample ID:	C3-SB1-3648-02	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 12:21 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	86.13 %	Analyst:	MO
Ash/dry weight:	99.19 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/02/2016 15:03	1000.0	GE23	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	7.79e-01	1.2e-01	1.0e-01	PCI/GDRY	04/05/2016 12:21 EDT
Bi214	J	9.04e-01	1.0e-01	1.7e-02	PCI/GDRY	04/05/2016 12:21 EDT
Cs137		3.98e-03	6.8e-03	1.1e-02	PCI/GDRY	04/05/2016 12:21 EDT
K40		1.36e+01	1.5e+00	8.2e-02	PCI/GDRY	04/05/2016 12:21 EDT
Pb210	J	7.42e-01	2.0e-01	2.6e-01	PCI/GDRY	04/05/2016 12:21 EDT
Pb212	J	7.22e-01	8.1e-02	1.4e-02	PCI/GDRY	04/05/2016 12:21 EDT
Pb214	J	1.01e+00	1.1e-01	1.8e-02	PCI/GDRY	04/05/2016 12:21 EDT
Ra226	J	1.53e+00	2.3e-01	2.0e-01	PCI/GDRY	04/05/2016 12:21 EDT
Ra228		7.35e-01	8.5e-02	2.8e-02	PCI/GDRY	04/05/2016 12:21 EDT
Th234	J	5.47e-01	1.8e-01	2.5e-01	PCI/GDRY	04/05/2016 12:21 EDT
Tl208	J	2.28e-01	2.7e-02	9.3e-03	PCI/GDRY	04/05/2016 12:21 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00154

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04124C	Amount analyzed:	6.340e+02 GDRY
Client sample ID:	C3-SB1-3648-02	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 12:21 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	86.13 %	Analyst:	MO
Ash/dry weight:	99.19 %	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/03/2016 16:02	1000.0	GE04	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	7.87e-01	1.3e-01	1.1e-01	PCI/GDRY	04/05/2016 12:21 EDT
Bi214	J	9.09e-01	1.0e-01	1.8e-02	PCI/GDRY	04/05/2016 12:21 EDT
Cs137		-1.89e-03	7.3e-03	1.2e-02	PCI/GDRY	04/05/2016 12:21 EDT
K40		1.39e+01	1.5e+00	8.7e-02	PCI/GDRY	04/05/2016 12:21 EDT
Pb210	J	7.30e-01	2.1e-01	2.7e-01	PCI/GDRY	04/05/2016 12:21 EDT
Pb212	J	7.52e-01	8.4e-02	1.5e-02	PCI/GDRY	04/05/2016 12:21 EDT
Pb214	J	1.03e+00	1.1e-01	2.0e-02	PCI/GDRY	04/05/2016 12:21 EDT
Ra226	J	1.59e+00	2.5e-01	2.1e-01	PCI/GDRY	04/05/2016 12:21 EDT
Ra228		7.43e-01	8.7e-02	3.6e-02	PCI/GDRY	04/05/2016 12:21 EDT
Th234	J	5.09e-01	1.8e-01	2.5e-01	PCI/GDRY	04/05/2016 12:21 EDT
Tl208	J	2.28e-01	2.7e-02	9.7e-03	PCI/GDRY	04/05/2016 12:21 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00155

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04125D	Amount analyzed:	1.700e+02 GDRY
Client sample ID:	C3-SB2-0012-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 11:10 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	97.78 %	Analyst:	MO
Ash/dry weight:	87.91 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/02/2016 15:04	1000.0	GE15	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	6.22e-01	1.6e-01	1.6e-01	PCI/GDRY	04/05/2016 11:10 EDT
Bi214	J	4.27e-01	5.6e-02	2.8e-02	PCI/GDRY	04/05/2016 11:10 EDT
Cs137		-7.59e-03	1.1e-02	1.3e-02	PCI/GDRY	04/05/2016 11:10 EDT
K40		1.27e+01	1.4e+00	1.3e-01	PCI/GDRY	04/05/2016 11:10 EDT
Pb210	J	7.97e-01	2.0e-01	2.2e-01	PCI/GDRY	04/05/2016 11:10 EDT
Pb212	J	5.56e-01	6.4e-02	2.2e-02	PCI/GDRY	04/05/2016 11:10 EDT
Pb214	J	4.89e-01	6.3e-02	3.1e-02	PCI/GDRY	04/05/2016 11:10 EDT
Ra226	J	8.94e-01	2.2e-01	2.2e-01	PCI/GDRY	04/05/2016 11:10 EDT
Ra228		5.25e-01	6.9e-02	4.9e-02	PCI/GDRY	04/05/2016 11:10 EDT
Th234	J	5.24e-01	2.5e-01	2.8e-01	PCI/GDRY	04/05/2016 11:10 EDT
Tl208	J	1.63e-01	2.2e-02	1.4e-02	PCI/GDRY	04/05/2016 11:10 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00156

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04126E	Amount analyzed:	5.760e+02 GDRY
Client sample ID:	C3-SB2-1224-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 11:05 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	91.36 %	Analyst:	MO
Ash/dry weight:	97.64 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/02/2016 15:06	1000.0	GE16	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	1.02e+00	1.4e-01	9.7e-02	PCI/GDRY	04/05/2016 11:05 EDT
Bi214	J	8.84e-01	1.0e-01	1.8e-02	PCI/GDRY	04/05/2016 11:05 EDT
Cs137		7.94e-03	7.1e-03	8.4e-03	PCI/GDRY	04/05/2016 11:05 EDT
K40		1.30e+01	1.4e+00	6.8e-02	PCI/GDRY	04/05/2016 11:05 EDT
Pb210	J	8.53e-01	2.1e-01	2.4e-01	PCI/GDRY	04/05/2016 11:05 EDT
Pb212	J	9.09e-01	1.0e-01	1.5e-02	PCI/GDRY	04/05/2016 11:05 EDT
Pb214	J	1.01e+00	1.1e-01	2.1e-02	PCI/GDRY	04/05/2016 11:05 EDT
Ra226	J	1.64e+00	2.4e-01	1.9e-01	PCI/GDRY	04/05/2016 11:05 EDT
Ra228		9.09e-01	1.0e-01	2.9e-02	PCI/GDRY	04/05/2016 11:05 EDT
Th234	J	5.50e-01	1.7e-01	2.4e-01	PCI/GDRY	04/05/2016 11:05 EDT
Tl208	J	2.89e-01	3.4e-02	9.7e-03	PCI/GDRY	04/05/2016 11:05 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00157

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04127F	Amount analyzed:	2.730e+02 GDRY
Client sample ID:	C3-SB3-0012-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 13:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	99.30 %	Analyst:	MO
Ash/dry weight:	86.10 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/03/2016 16:04	1000.0	GE12	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	8.29e-01	1.7e-01	1.5e-01	PCI/GDRY	04/05/2016 13:20 EDT
Bi214	J	5.09e-01	6.2e-02	2.4e-02	PCI/GDRY	04/05/2016 13:20 EDT
Cs137		3.77e-04	7.7e-03	9.7e-03	PCI/GDRY	04/05/2016 13:20 EDT
K40		1.65e+01	1.8e+00	1.0e-01	PCI/GDRY	04/05/2016 13:20 EDT
Pb210	J	3.20e-01	1.2e-01	1.5e-01	PCI/GDRY	04/05/2016 13:20 EDT
Pb212	J	7.64e-01	8.6e-02	1.6e-02	PCI/GDRY	04/05/2016 13:20 EDT
Pb214	J	5.84e-01	6.8e-02	2.1e-02	PCI/GDRY	04/05/2016 13:20 EDT
Ra226	J	1.01e+00	2.0e-01	2.0e-01	PCI/GDRY	04/05/2016 13:20 EDT
Ra228		7.80e-01	9.3e-02	4.7e-02	PCI/GDRY	04/05/2016 13:20 EDT
Th234	J	4.14e-01	1.4e-01	1.9e-01	PCI/GDRY	04/05/2016 13:20 EDT
Tl208	J	2.38e-01	2.9e-02	1.2e-02	PCI/GDRY	04/05/2016 13:20 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00158

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04128G	Amount analyzed:	3.320e+02 GDRY
Client sample ID:	C3-SB3-1224-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 13:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	93.08 %	Analyst:	MO
Ash/dry weight:	96.01 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/03/2016 16:06	1000.0	GE17	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	8.81e-01	1.8e-01	1.7e-01	PCI/GDRY	04/05/2016 13:20 EDT
Bi214	J	6.32e-01	7.4e-02	2.4e-02	PCI/GDRY	04/05/2016 13:20 EDT
Cs137		1.41e-02	6.3e-03	9.7e-03	PCI/GDRY	04/05/2016 13:20 EDT
K40		1.32e+01	1.5e+00	1.2e-01	PCI/GDRY	04/05/2016 13:20 EDT
Pb210	J	6.50e-01	1.6e-01	2.1e-01	PCI/GDRY	04/05/2016 13:20 EDT
Pb212	J	7.86e-01	9.0e-02	1.9e-02	PCI/GDRY	04/05/2016 13:20 EDT
Pb214	J	7.12e-01	8.4e-02	2.7e-02	PCI/GDRY	04/05/2016 13:20 EDT
Ra226	J	1.24e+00	2.0e-01	1.9e-01	PCI/GDRY	04/05/2016 13:20 EDT
Ra228		8.44e-01	1.0e-01	6.3e-02	PCI/GDRY	04/05/2016 13:20 EDT
Th234	J	5.61e-01	1.6e-01	2.2e-01	PCI/GDRY	04/05/2016 13:20 EDT
Tl208	J	2.69e-01	3.3e-02	1.6e-02	PCI/GDRY	04/05/2016 13:20 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00159

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04129H	Amount analyzed:	1.770e+02 GDRY
Client sample ID:	C3-SB4-0012-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 13:48 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	96.57 %	Analyst:	MO
Ash/dry weight:	93.52 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/03/2016 16:08	1000.0	GE23	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	8.17e-01	1.6e-01	1.5e-01	PCI/GDRY	04/05/2016 13:48 EDT
Bi214	J	7.85e-01	9.1e-02	2.3e-02	PCI/GDRY	04/05/2016 13:48 EDT
Cs137		1.05e-02	7.0e-03	9.6e-03	PCI/GDRY	04/05/2016 13:48 EDT
K40		1.31e+01	1.5e+00	1.3e-01	PCI/GDRY	04/05/2016 13:48 EDT
Pb210	J	7.70e-01	2.0e-01	2.5e-01	PCI/GDRY	04/05/2016 13:48 EDT
Pb212	J	6.34e-01	7.2e-02	1.6e-02	PCI/GDRY	04/05/2016 13:48 EDT
Pb214	J	9.20e-01	1.0e-01	2.5e-02	PCI/GDRY	04/05/2016 13:48 EDT
Ra226	J	1.39e+00	2.4e-01	2.3e-01	PCI/GDRY	04/05/2016 13:48 EDT
Ra228		6.79e-01	8.3e-02	4.2e-02	PCI/GDRY	04/05/2016 13:48 EDT
Th234	J	3.34e-01	1.7e-01	2.5e-01	PCI/GDRY	04/05/2016 13:48 EDT
Tl208	J	1.92e-01	2.5e-02	1.2e-02	PCI/GDRY	04/05/2016 13:48 EDT
U235	J	6.14e-02	4.5e-02	6.2e-02	PCI/GDRY	04/05/2016 13:48 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04130A	Amount analyzed:	6.160e+02 GDRY
Client sample ID:	C3-SB4-1224-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 13:49 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	91.41 %	Analyst:	MO
Ash/dry weight:	98.01 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/03/2016 16:10	1000.0	GE18	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	1.11e+00	1.9e-01	1.5e-01	PCI/GDRY	04/05/2016 13:49 EDT
Bi214	J	6.30e-01	7.2e-02	1.9e-02	PCI/GDRY	04/05/2016 13:49 EDT
Cs137		-1.77e-03	7.2e-03	9.1e-03	PCI/GDRY	04/05/2016 13:49 EDT
K40		1.33e+01	1.5e+00	8.3e-02	PCI/GDRY	04/05/2016 13:49 EDT
Pb210	J	6.44e-01	1.6e-01	2.1e-01	PCI/GDRY	04/05/2016 13:49 EDT
Pb212	J	9.95e-01	1.1e-01	1.6e-02	PCI/GDRY	04/05/2016 13:49 EDT
Pb214	J	7.43e-01	8.4e-02	2.1e-02	PCI/GDRY	04/05/2016 13:49 EDT
Ra226	J	1.31e+00	2.0e-01	1.9e-01	PCI/GDRY	04/05/2016 13:49 EDT
Ra228		9.86e-01	1.1e-01	4.9e-02	PCI/GDRY	04/05/2016 13:49 EDT
Th234	J	5.85e-01	1.6e-01	2.3e-01	PCI/GDRY	04/05/2016 13:49 EDT
Tl208	J	3.00e-01	3.5e-02	1.3e-02	PCI/GDRY	04/05/2016 13:49 EDT
U235	J	5.87e-02	3.8e-02	5.8e-02	PCI/GDRY	04/05/2016 13:49 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04131B	Amount analyzed:	1.450e+02 GDRY
Client sample ID:	C3-SB5-0012-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 14:22 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	95.68 %	Analyst:	MO
Ash/dry weight:	86.51 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/03/2016 16:12	1000.0	GE15	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	4.15e-01	1.8e-01	1.8e-01	PCI/GDRY	04/05/2016 14:22 EDT
Bi214	J	3.63e-01	5.4e-02	3.4e-02	PCI/GDRY	04/05/2016 14:22 EDT
Cs137		-1.38e-03	1.0e-02	1.2e-02	PCI/GDRY	04/05/2016 14:22 EDT
K40		4.78e+00	5.7e-01	1.5e-01	PCI/GDRY	04/05/2016 14:22 EDT
Pb210	J	6.50e-01	1.7e-01	2.1e-01	PCI/GDRY	04/05/2016 14:22 EDT
Pb212	J	3.07e-01	3.9e-02	2.5e-02	PCI/GDRY	04/05/2016 14:22 EDT
Pb214	J	4.37e-01	5.9e-02	3.3e-02	PCI/GDRY	04/05/2016 14:22 EDT
Ra226	J	8.68e-01	2.4e-01	2.4e-01	PCI/GDRY	04/05/2016 14:22 EDT
Ra228		2.95e-01	6.0e-02	5.7e-02	PCI/GDRY	04/05/2016 14:22 EDT
Th234	J	4.68e-01	2.5e-01	2.7e-01	PCI/GDRY	04/05/2016 14:22 EDT
Tl208	J	9.64e-02	1.9e-02	1.7e-02	PCI/GDRY	04/05/2016 14:22 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04132C	Amount analyzed:	1.820e+02 GDRY
Client sample ID:	C3-SB6-0012-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 14:49 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	94.80 %	Analyst:	MO
Ash/dry weight:	95.66 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/06/2016 12:21	1000.0	GE04	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	5.55e-01	1.8e-01	1.7e-01	PCI/GDRY	04/05/2016 14:49 EDT
Bi214	J	2.24e+00	2.5e-01	2.8e-02	PCI/GDRY	04/05/2016 14:49 EDT
Cs137		1.92e-02	7.6e-03	1.1e-02	PCI/GDRY	04/05/2016 14:49 EDT
K40		1.01e+01	1.1e+00	1.7e-01	PCI/GDRY	04/05/2016 14:49 EDT
Pb210	J	2.79e+00	4.0e-01	2.9e-01	PCI/GDRY	04/05/2016 14:49 EDT
Pb212	J	5.70e-01	6.5e-02	2.1e-02	PCI/GDRY	04/05/2016 14:49 EDT
Pb214	J	2.65e+00	2.9e-01	2.9e-02	PCI/GDRY	04/05/2016 14:49 EDT
Ra226	J	3.72e+00	4.9e-01	3.0e-01	PCI/GDRY	04/05/2016 14:49 EDT
Ra228		5.73e-01	7.9e-02	5.3e-02	PCI/GDRY	04/05/2016 14:49 EDT
Th234	J	7.40e-02	2.4e-01	3.4e-01	PCI/GDRY	04/05/2016 14:49 EDT
Tl208	J	1.69e-01	2.2e-02	1.2e-02	PCI/GDRY	04/05/2016 14:49 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00163

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04133D	Amount analyzed:	4.820e+02 GDRY
Client sample ID:	C3-SB6-3648-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 14:50 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	95.09 %	Analyst:	MO
Ash/dry weight:	75.18 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/03/2016 16:14	1000.0	GE16	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	1.02e+00	1.5e-01	1.1e-01	PCI/GDRY	04/05/2016 14:50 EDT
Bi214	J	4.84e-01	5.6e-02	1.7e-02	PCI/GDRY	04/05/2016 14:50 EDT
Cs137		3.04e-03	6.8e-03	8.1e-03	PCI/GDRY	04/05/2016 14:50 EDT
K40		1.38e+01	1.5e+00	6.5e-02	PCI/GDRY	04/05/2016 14:50 EDT
Pb210	J	3.59e-01	1.0e-01	1.2e-01	PCI/GDRY	04/05/2016 14:50 EDT
Pb212	J	8.71e-01	9.7e-02	1.4e-02	PCI/GDRY	04/05/2016 14:50 EDT
Pb214	J	5.75e-01	6.6e-02	1.8e-02	PCI/GDRY	04/05/2016 14:50 EDT
Ra226	J	1.12e+00	1.8e-01	1.6e-01	PCI/GDRY	04/05/2016 14:50 EDT
Ra228		9.22e-01	1.0e-01	3.2e-02	PCI/GDRY	04/05/2016 14:50 EDT
Th234	J	5.77e-01	1.3e-01	1.6e-01	PCI/GDRY	04/05/2016 14:50 EDT
Tl208	J	2.79e-01	3.2e-02	8.5e-03	PCI/GDRY	04/05/2016 14:50 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00164

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04134E	Amount analyzed:	3.100e+02 GDRY
Client sample ID:	C3-SB7-0012-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 16:23 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	95.07 %	Analyst:	MO
Ash/dry weight:	93.71 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/06/2016 12:22	1000.0	GE16	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	4.50e-01	1.1e-01	1.2e-01	PCI/GDRY	04/05/2016 16:23 EDT
Bi214	J	2.78e+00	3.1e-01	2.3e-02	PCI/GDRY	04/05/2016 16:23 EDT
Cs137		-5.70e-03	9.4e-03	1.6e-02	PCI/GDRY	04/05/2016 16:23 EDT
K40		1.06e+01	1.2e+00	1.1e-01	PCI/GDRY	04/05/2016 16:23 EDT
Pb210	J	2.65e+00	3.7e-01	2.6e-01	PCI/GDRY	04/05/2016 16:23 EDT
Pb212	J	4.24e-01	5.0e-02	1.9e-02	PCI/GDRY	04/05/2016 16:23 EDT
Pb214	J	3.19e+00	3.5e-01	2.6e-02	PCI/GDRY	04/05/2016 16:23 EDT
Ra226	J	3.84e+00	4.7e-01	2.4e-01	PCI/GDRY	04/05/2016 16:23 EDT
Ra228		4.49e-01	5.7e-02	3.8e-02	PCI/GDRY	04/05/2016 16:23 EDT
Th234	J	5.59e-01	1.6e-01	2.4e-01	PCI/GDRY	04/05/2016 16:23 EDT
Tl208	J	1.38e-01	1.9e-02	1.1e-02	PCI/GDRY	04/05/2016 16:23 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00165

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04135F	Amount analyzed:	2.770e+02 GDRY
Client sample ID:	C3-SB7-3648-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 16:23 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	76.42 %	Analyst:	MO
Ash/dry weight:	74.56 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/06/2016 12:24	1000.0	GE15	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	7.74e-01	1.8e-01	1.6e-01	PCI/GDRY	04/05/2016 16:23 EDT
Bi214	J	7.34e-01	8.5e-02	2.4e-02	PCI/GDRY	04/05/2016 16:23 EDT
Cs137		-6.22e-03	8.6e-03	9.8e-03	PCI/GDRY	04/05/2016 16:23 EDT
K40		9.00e+00	1.0e+00	1.1e-01	PCI/GDRY	04/05/2016 16:23 EDT
Pb210	J	4.52e-01	1.5e-01	1.6e-01	PCI/GDRY	04/05/2016 16:23 EDT
Pb212	J	6.88e-01	7.7e-02	1.9e-02	PCI/GDRY	04/05/2016 16:23 EDT
Pb214	J	8.77e-01	1.0e-01	2.5e-02	PCI/GDRY	04/05/2016 16:23 EDT
Ra226	J	1.30e+00	2.3e-01	2.0e-01	PCI/GDRY	04/05/2016 16:23 EDT
Ra228		6.81e-01	8.1e-02	3.8e-02	PCI/GDRY	04/05/2016 16:23 EDT
Th234	J	6.06e-01	1.9e-01	2.1e-01	PCI/GDRY	04/05/2016 16:23 EDT
Tl208	J	2.09e-01	2.6e-02	1.2e-02	PCI/GDRY	04/05/2016 16:23 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04136G	Amount analyzed:	1.810e+02 GDRY
Client sample ID:	C3-SB8-0012-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 16:58 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	97.15 %	Analyst:	MO
Ash/dry weight:	93.40 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/07/2016 16:44	1000.0	GE04	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	3.09e-01	1.4e-01	1.4e-01	PCI/GDRY	04/05/2016 16:58 EDT
Bi214	J	4.67e-01	5.8e-02	2.2e-02	PCI/GDRY	04/05/2016 16:58 EDT
Cs137		3.71e-03	8.0e-03	1.0e-02	PCI/GDRY	04/05/2016 16:58 EDT
K40		9.27e+00	1.1e+00	1.5e-01	PCI/GDRY	04/05/2016 16:58 EDT
Pb210	J	4.53e-01	1.7e-01	2.1e-01	PCI/GDRY	04/05/2016 16:58 EDT
Pb212	J	4.41e-01	5.1e-02	1.7e-02	PCI/GDRY	04/05/2016 16:58 EDT
Pb214	J	4.94e-01	5.9e-02	2.3e-02	PCI/GDRY	04/05/2016 16:58 EDT
Ra226	J	7.07e-01	2.1e-01	2.2e-01	PCI/GDRY	04/05/2016 16:58 EDT
Ra228		4.41e-01	6.3e-02	4.8e-02	PCI/GDRY	04/05/2016 16:58 EDT
Th234	J	2.97e-01	1.6e-01	2.3e-01	PCI/GDRY	04/05/2016 16:58 EDT
Tl208	J	1.24e-01	1.9e-02	1.2e-02	PCI/GDRY	04/05/2016 16:58 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00167

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04137H	Amount analyzed:	6.070e+02 GDRY
Client sample ID:	C3-SB8-1224-01	Preparation batch #:	0013426H
Matrix:	SOIL	Assay batch #:	0020905W
Collected:	2016-04-05 16:59 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	95.02 %	Analyst:	MO
Ash/dry weight:	92.62 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/07/2016 16:46	1000.0	GE15	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	7.47e-01	1.4e-01	1.6e-01	PCI/GDRY	04/05/2016 16:59 EDT
Bi214	J	9.46e+00	1.0e+00	3.4e-02	PCI/GDRY	04/05/2016 16:59 EDT
Cs137		-8.32e-04	1.3e-02	2.1e-02	PCI/GDRY	04/05/2016 16:59 EDT
K40		1.24e+01	1.4e+00	1.5e-01	PCI/GDRY	04/05/2016 16:59 EDT
Pb210	J	1.20e+01	1.4e+00	4.7e-01	PCI/GDRY	04/05/2016 16:59 EDT
Pb212	J	6.77e-01	7.9e-02	3.7e-02	PCI/GDRY	04/05/2016 16:59 EDT
Pb214	J	1.08e+01	1.2e+00	4.4e-02	PCI/GDRY	04/05/2016 16:59 EDT
Ra226	J	1.22e+01	1.4e+00	4.6e-01	PCI/GDRY	04/05/2016 16:59 EDT
Ra228		6.61e-01	8.3e-02	5.8e-02	PCI/GDRY	04/05/2016 16:59 EDT
Th234	J	2.63e-01	4.8e-01	5.7e-01	PCI/GDRY	04/05/2016 16:59 EDT
Tl208	J	2.11e-01	2.5e-02	1.5e-02	PCI/GDRY	04/05/2016 16:59 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00168

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	LCS-00735157F	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013426H
Matrix:	N/A	Assay batch #:	0020905W
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	N/A	Analyst:	MO
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/07/2016 16:47	1000.0	GE16	MO

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi207	5.01e+03	5.4e+02	4.4e+01	PCI	12/15/2010 11:00 CDT
Eu155	1.13e+03	1.3e+02	4.2e+01	PCI	12/15/2010 11:00 CDT

ED_006395_00001795-00169

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	RBK-00735158G	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013426H
Matrix:	N/A	Assay batch #:	0020905W
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	N/A	Analyst:	MO
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/07/2016 16:48	1000.0	GE17	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	-1.20e+01	5.0e+01	6.1e+01	PCI	06/02/2016 07:00 CDT
Cs137		-2.26e+00	3.6e+00	4.3e+00	PCI	06/02/2016 07:00 CDT
K40		-1.75e+00	3.1e+01	3.4e+01	PCI	06/02/2016 07:00 CDT
Pb210	J	-1.72e+01	4.9e+01	7.2e+01	PCI	06/02/2016 07:00 CDT
Pb212	J	1.12e+00	6.0e+00	7.4e+00	PCI	06/02/2016 07:00 CDT
Pb214	J	-6.37e-01	7.3e+00	8.3e+00	PCI	06/02/2016 07:00 CDT
Ra226	J	2.68e+01	4.4e+01	6.2e+01	PCI	06/02/2016 07:00 CDT
Ra228		9.56e+00	1.9e+01	2.5e+01	PCI	06/02/2016 07:00 CDT
Th234	J	-1.58e+01	4.3e+01	6.4e+01	PCI	06/02/2016 07:00 CDT
Tl208	J	3.19e+00	4.6e+00	6.4e+00	PCI	06/02/2016 07:00 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00170

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1600016

PREPARATION BATCH SUMMARY

Preparation batch #: 0013426H
Analysis method: NAREL GAM-01-RA
Preparation procedure: N/A

NAREL Sample #	Client Sample ID	Analysis #	QC Type	Yield	± 2 σ Uncertainty	Analyst
B6.04121Z	C2-SB3-8496-01	00733685T		N/A		MO
B6.04122A	C3-SB1-0012-01	00733688W		N/A		MO
B6.04123B	C3-SB1-3648-01	00733691Q		N/A		MO
B6.04124C	C3-SB1-3648-02	00733694U		N/A		MO
B6.04124C	C3-SB1-3648-02	00735156E	DUP	N/A		MO
B6.04125D	C3-SB2-0012-01	00733697X		N/A		MO
B6.04126E	C3-SB2-1224-01	00733700Y		N/A		MO
B6.04127F	C3-SB3-0012-01	00733703B		N/A		MO
B6.04128G	C3-SB3-1224-01	00733706E		N/A		MO
B6.04129H	C3-SB4-0012-01	00733709H		N/A		MO
B6.04130A	C3-SB4-1224-01	00733712C		N/A		MO
B6.04131B	C3-SB5-0012-01	00733715F		N/A		MO
B6.04132C	C3-SB6-0012-01	00733718J		N/A		MO
B6.04133D	C3-SB6-3648-01	00733721D		N/A		MO
B6.04134E	C3-SB7-0012-01	00733724G		N/A		MO
B6.04135F	C3-SB7-3648-01	00733727K		N/A		MO
B6.04136G	C3-SB8-0012-01	00733730E		N/A		MO
B6.04137H	C3-SB8-1224-01	00733733H		N/A		MO
LCS-00735157F *		00735157F	LCS	N/A		MO
RBK-00735158G *		00735158G	RBK	N/A		MO

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

ED_006395_00001795-00171

QC RESULTS FOR BATCH 0013426H

NAREL Sample #	Analysis #	QC Type	Analyte	%R	RPD	Z	Evaluation
B6.04124C	00735156E	DUP	BI212		1.0	0.09	PASS-J
B6.04124C	00735156E	DUP	BI214		0.5	0.06	PASS-J
B6.04124C	00735156E	DUP	CS137		563.4	-1.18	PASS
B6.04124C	00735156E	DUP	K40		2.1	0.27	PASS
B6.04124C	00735156E	DUP	PB210		1.7	-0.09	PASS-J
B6.04124C	00735156E	DUP	PB212		4.1	0.52	PASS-J
B6.04124C	00735156E	DUP	PB214		1.5	0.18	PASS-J
B6.04124C	00735156E	DUP	RA226		3.7	0.34	PASS-J
B6.04124C	00735156E	DUP	RA228		1.0	0.12	PASS
B6.04124C	00735156E	DUP	TH234		7.2	-0.30	PASS-J
B6.04124C	00735156E	DUP	TL208		0.0	-0.00	PASS-J
LCS-00735157F	00735157F	LCS	BI207	97.7		-0.42	PASS
LCS-00735157F	00735157F	LCS	EU155	101.4		0.22	PASS
RBK-00735158G	00735158G	RBK	BI212				PASS-J
RBK-00735158G	00735158G	RBK	CS137				PASS
RBK-00735158G	00735158G	RBK	K40				PASS
RBK-00735158G	00735158G	RBK	PB210				PASS-J
RBK-00735158G	00735158G	RBK	PB212				PASS-J
RBK-00735158G	00735158G	RBK	PB214				PASS-J
RBK-00735158G	00735158G	RBK	RA226				PASS-J
RBK-00735158G	00735158G	RBK	RA228				PASS
RBK-00735158G	00735158G	RBK	TH234				PASS-J
RBK-00735158G	00735158G	RBK	TL208				PASS-J

Note: Results qualified with -J may be significantly under or over-estimated and are not evaluated for QC purposes.

U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY
540 S. MORRIS AVE., MONTGOMERY, AL 36115
TH ANALYSES

REPORT OF SAMPLE DELIVERY GROUP #1600016

Project:	Canadian Radium & Uranium, Mt. Kisco, NY
Analysis method:	Isotopic Thorium Using NaOH Fusion
Report ID:	1600016-TH
Report type:	Original
Date reported:	06/29/2016
Total pages in report:	33

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B6.04121Z	C2-SB3-8496-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04122A	C3-SB1-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04123B	C3-SB1-3648-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04124C	C3-SB1-3648-02	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04125D	C3-SB2-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04126E	C3-SB2-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04127F	C3-SB3-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04128G	C3-SB3-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04129H	C3-SB4-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04130A	C3-SB4-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04131B	C3-SB5-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04132C	C3-SB6-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04133D	C3-SB6-3648-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04134E	C3-SB7-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04135F	C3-SB7-3648-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04136G	C3-SB8-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04137H	C3-SB8-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016

EXCEPTIONS

1. **Packaging and shipping** – No problems were observed.
2. **Documentation** – No problems were observed.
3. **Sample preparation** – No problems were encountered.
4. **Analysis** – Samples B6.04131, B6.04132, B6.04134, and B6.04136 had yields below NAREL's lower acceptance criterion during the original analysis of this SDG. These four samples were reanalyzed and are reported in this data package.
5. **Holding times** – No holding times were specified.

QUALITY CONTROL

1. **QC samples** – All QC analysis results met NAREL acceptance criteria.
2. **Yields** – All chemical yields were within acceptance limits.
3. **Instruments** – Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

ED_006395_00001795-00173

ACCREDITATION

All analyses included in this data package are accredited by the Oregon Environmental Laboratory Accreditation Program (ORELAP) to the TNI standard.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Project Acceptance Form and/or the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Director of the Center for Environmental Radioanalytical Laboratory Science and the NAREL Quality Assurance Manager, or their designees, as verified by the following signatures.

Velinda Herbert — 6/30/16
Velinda Herbert — Date
Quality Assurance Manager, NAREL

Cynthia White — 6-30-16
Cynthia White — Date
Director, Center for Environmental Radioanalytical Laboratory Science

ED_006395_00001795-00174

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample, or blank spike
MS	Matrix spike
MSD	Matrix spike duplicate (not currently analyzed)
RBK	Method blank
STD	External standard (used for ^{228}Ra yield determination)

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

RADIOCHEMICAL DATA

Radiochemical analyses usually require the subtraction of an instrument background measurement result from a gross sample measurement result. Both values are positive, but when the sample activity is low, random variations in the two measurements can cause the gross value to be less than the background, resulting in a measured activity less than zero. Although negative activities have no physical significance, they do have statistical importance, as for example in the evaluation of trends or the comparison of two groups of samples.

To the extent practical, it is the policy of NAREL to report results as generated, whether positive, negative, or zero, together with the "2-sigma" measurement uncertainty and a sample-specific estimate of the minimum detectable concentration (MDC). The measurement result, uncertainty, and MDC are always expressed in the same unit of measurement.

EVALUATION OF QC ANALYSES

A method blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "*Z* scores." A *Z* score is the number of standard deviations by which the QC result differs from its ideal value. Generally the score is considered acceptable if its absolute value is not greater than 3.

The *Z* score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference. The *Z* score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation of most analyses. An exception is the use of %R in the evaluation of gross alpha matrix spike results. A gross alpha matrix spike result is considered acceptable if either $|Z| \leq 3$ or $60 \leq \%R \leq 110$.

ED_006395_00001795-00175

Chain of Custody Forms

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
	C002-SB003-0012-01	4/6/2016	13:17	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB003-1224-01	4/6/2016	13:17	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-1224-01	4/6/2016	13:17	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-1224-01	4/6/2016	13:17	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB003-4860-01	4/6/2016	13:18	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-4860-01	4/6/2016	13:18	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-4860-01	4/6/2016	13:18	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB003-6072-01	4/6/2016	13:18	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-6072-01	4/6/2016	13:18	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-6072-01	4/6/2016	13:18	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
4	C002-SB003-7284-01 ✓	4/6/2016	13:18	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-7284-01 ✓	4/6/2016	13:18	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-7284-01 ✓	4/6/2016	13:18	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
4	C002-SB003-8496-01 ✓	4/6/2016	13:19	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-8496-01 ✓	4/6/2016	13:19	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-8496-01 ✓	4/6/2016	13:19	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
	C003-SB001-0012-01	4/5/2016	12:19	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB001-0012-01	4/5/2016	12:19	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
4	C003-SB001-0012-01 ✓	4/5/2016 ✓	12:19	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		NAREL	04/18/16 @ 11:15	Good Crushed Sample

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
3	C003-SB001-3648-01 ✓	4/5/2016	12:21 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
	C003-SB001-3648-01	4/5/2016	12:21	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB001-3648-01	4/5/2016	12:21	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB001-3648-02 ✓	4/5/2016	12:21	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB001-3648-02 ✓	4/5/2016	12:21 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB001-3648-02 ✓	4/5/2016	12:21 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
	C003-SB002-0012-01	4/5/2016	11:10	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB002-0012-01	4/5/2016	11:10	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB002-0012-01	4/5/2016	11:10	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB002-1224-01	4/5/2016	11:05	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB002-1224-01	4/5/2016	11:05	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB002-1224-01	4/5/2016	11:05	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB003-0012-01	4/5/2016	13:20	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB003-0012-01	4/5/2016	13:20	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB003-0012-01	4/5/2016	13:20	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB003-1224-01	4/5/2016	13:20	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar
3	C003-SB003-1224-01 ✓	4/5/2016	13:20 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB003-1224-01 ✓	4/5/2016	13:20 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓ ?
	C003-SB004-0012-01	4/5/2016	13:48	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	RST3		NAREL	04/19/16 @1115	

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
	C003-SB004-0012-01	4/5/2016	13:48	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB004-0012-01	4/5/2016	13:48	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB004-1224-01	4/5/2016	13:49	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB004-1224-01	4/5/2016	13:49	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB004-1224-01	4/5/2016	13:49	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB005-0012-01	4/5/2016	14:22	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB005-0012-01	4/5/2016	14:22	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB005-0012-01	4/5/2016	14:22	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB006-0012-01	4/5/2016	14:49	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB006-0012-01	4/5/2016	14:49	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB006-0012-01	4/5/2016	14:49	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB006-3648-01	4/5/2016	14:50	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB006-3648-01	4/5/2016	14:50	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB006-3648-01	4/5/2016	14:50	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB007-0012-01 ✓	4/5/2016	16:23 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB007-0012-01 ✓	4/5/2016	16:23 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB007-0012-01 ✓	4/5/2016	16:23 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
	~~C003-SB007-2436-02~~	~~4/5/2016~~	~~16:23~~	~~Isotopic Thorium~~	~~Soil~~	~~4 C~~	~~N~~	~~1~~	~~8 oz glass jar~~
	~~C003-SB007-2436-02~~	~~4/5/2016~~	~~16:23~~	~~Isotopic Uranium~~	~~Soil~~	~~4 C~~	~~N~~	~~1~~	~~8 oz glass jar~~

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Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		CH NAREL	4/19/16 @1115	Good

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
Digital Pen	~~C003-SB007-2436-02~~	~~4/5/2016~~	~~16:23~~	~~Gamma Spec. (Modified)~~	~~Soil~~	~~4 C~~	~~N~~	~~1~~	~~16 oz glass jar~~
	C003-SB007-3648-01	4/5/2016	16:23	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB007-3648-01	4/5/2016	16:23	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB007-3648-01	4/5/2016	16:23	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB008-0012-01	4/5/2016	16:58	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB008-0012-01	4/5/2016	16:58	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB008-0012-01	4/5/2016	16:58	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB008-1224-01	4/5/2016	16:59	Isotopic Thorium	Soil	4 C	Y	2	8 oz glass jar
3	C003-SB008-1224-01	4/5/2016	16:59	Isotopic Uranium	Soil	4 C	Y	2	8 oz glass jar
3	C003-SB008-1224-01	4/5/2016	16:59	Gamma Spec (Modified)	Soil	4 C	N	LABLE ISSUE	16 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB010-0012-01	4/5/2016	15:52	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB010-0012-01	4/5/2016	15:52	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB010-0012-01	4/5/2016	15:52	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar

7

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		NAREL	8/19/16	Good

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

ANALYSIS SUMMARY

Analysis method: NAREL ACT-02F-TH
Title: Isotopic Thorium Using NaOH Fusion

NAREL Sample #	Client Sample ID	QC Type	Date Completed	Preparation Batch #	Assay Batch #
B6.04121Z	C2-SB3-8496-01		06/14/2016	0013451J	0020930X
B6.04121Z	C2-SB3-8496-01	DUP	06/14/2016	0013451J	0020930X
B6.04122A	C3-SB1-0012-01		06/14/2016	0013451J	0020930X
B6.04123B	C3-SB1-3648-01		06/14/2016	0013451J	0020930X
B6.04124C	C3-SB1-3648-02		06/14/2016	0013451J	0020930X
B6.04125D	C3-SB2-0012-01		06/14/2016	0013451J	0020930X
B6.04126E	C3-SB2-1224-01		06/14/2016	0013451J	0020930X
B6.04127F	C3-SB3-0012-01		06/14/2016	0013451J	0020930X
B6.04128G	C3-SB3-1224-01		06/16/2016	0013451J	0020944D
B6.04129H	C3-SB4-0012-01		06/16/2016	0013451J	0020944D
B6.04130A	C3-SB4-1224-01		06/16/2016	0013451J	0020944D
B6.04131B	C3-SB5-0012-01		06/21/2016	0013471N	0020953E
B6.04132C	C3-SB6-0012-01		06/21/2016	0013471N	0020953E
B6.04132C	C3-SB6-0012-01	DUP	06/21/2016	0013471N	0020953E
B6.04133D	C3-SB6-3648-01		06/17/2016	0013451J	0020944D
B6.04134E	C3-SB7-0012-01		06/21/2016	0013471N	0020953E
B6.04135F	C3-SB7-3648-01		06/17/2016	0013451J	0020944D
B6.04136G	C3-SB8-0012-01		06/21/2016	0013471N	0020953E
B6.04137H	C3-SB8-1224-01		06/16/2016	0013451J	0020944D
LCS-00735458R *		LCS	06/14/2016	0013451J	0020930X
RBK-00735457Q *		RBK	06/14/2016	0013451J	0020930X
LCS-00735846A *		LCS	06/21/2016	0013471N	0020953E
RBK-00735845Z *		RBK	06/21/2016	0013471N	0020953E

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

ED_006395_00001795-00180

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04121Z	Amount analyzed:	1.079e+00 GASH
Client sample ID:	C2-SB3-8496-01	Preparation batch #:	0013451J
Matrix:	SOIL	Assay batch #:	0020930X
Collected:	2016-04-06 13:19 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	84.48 %	Analyst:	SPK
Ash/dry weight:	98.41 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/13/2016 16:01	1000.0	AS97	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	6.13e-02	3.9e-02	3.2e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th228	1.03e+00	1.5e-01	2.2e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th230	7.73e-01	1.3e-01	5.4e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th232	9.07e-01	1.4e-01	1.8e-02	PCI/GDRY	06/13/2016 16:01 CDT

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04121Z	Amount analyzed:	1.019e+00 GASH
Client sample ID:	C2-SB3-8496-01	Preparation batch #:	0013451J
Matrix:	SOIL	Assay batch #:	0020930X
Collected:	2016-04-06 13:19 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	84.48 %	Analyst:	SPK
Ash/dry weight:	98.41 %	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/13/2016 16:01	1000.0	AS98	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	5.34e-02	3.6e-02	2.7e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th228	1.08e+00	1.6e-01	2.4e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th230	9.50e-01	1.4e-01	5.7e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th232	1.03e+00	1.5e-01	2.1e-02	PCI/GDRY	06/13/2016 16:01 CDT

ED_006395_00001795-00182

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04122A	Amount analyzed:	1.008e+00 GASH
Client sample ID:	C3-SB1-0012-01	Preparation batch #:	0013451J
Matrix:	SOIL	Assay batch #:	0020930X
Collected:	2016-04-05 12:19 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	98.90 %	Analyst:	SPK
Ash/dry weight:	90.07 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/13/2016 16:01	1000.0	AS99	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	4.52e-02	3.7e-02	3.2e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th228	9.79e-01	1.6e-01	2.2e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th230	5.04e-01	1.1e-01	5.7e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th232	9.91e-01	1.6e-01	1.8e-02	PCI/GDRY	06/13/2016 16:01 CDT

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04123B	Amount analyzed:	1.016e+00 GASH
Client sample ID:	C3-SB1-3648-01	Preparation batch #:	0013451J
Matrix:	SOIL	Assay batch #:	0020930X
Collected:	2016-04-05 12:21 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	85.94 %	Analyst:	SPK
Ash/dry weight:	99.22 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/13/2016 16:01	1000.0	AS100	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	6.49e-02	4.3e-02	3.8e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th228	6.47e-01	1.2e-01	3.0e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th230	6.16e-01	1.2e-01	6.0e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th232	5.75e-01	1.1e-01	2.4e-02	PCI/GDRY	06/13/2016 16:01 CDT

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04124C	Amount analyzed:	1.007e+00 GASH
Client sample ID:	C3-SB1-3648-02	Preparation batch #:	0013451J
Matrix:	SOIL	Assay batch #:	0020930X
Collected:	2016-04-05 12:21 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	86.13 %	Analyst:	SPK
Ash/dry weight:	99.19 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/13/2016 16:01	1000.0	AS101	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	4.06e-02	3.9e-02	4.4e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th228	8.02e-01	1.4e-01	2.8e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th230	6.27e-01	1.3e-01	6.4e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th232	8.29e-01	1.5e-01	2.0e-02	PCI/GDRY	06/13/2016 16:01 CDT

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04125D	Amount analyzed:	9.869e-01 GASH
Client sample ID:	C3-SB2-0012-01	Preparation batch #:	0013451J
Matrix:	SOIL	Assay batch #:	0020930X
Collected:	2016-04-05 11:10 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	97.78 %	Analyst:	SPK
Ash/dry weight:	87.91 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/13/2016 16:01	1000.0	AS103	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	7.74e-02	6.4e-02	5.6e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th228	6.21e-01	1.5e-01	5.4e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th230	6.12e-01	1.5e-01	7.6e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th232	5.02e-01	1.3e-01	4.3e-02	PCI/GDRY	06/13/2016 16:01 CDT

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SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04126E	Amount analyzed:	1.052e+00 GASH
Client sample ID:	C3-SB2-1224-01	Preparation batch #:	0013451J
Matrix:	SOIL	Assay batch #:	0020930X
Collected:	2016-04-05 11:05 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	91.36 %	Analyst:	SPK
Ash/dry weight:	97.64 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/13/2016 16:01	1000.0	AS104	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	4.62e-02	5.0e-02	6.1e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th228	8.08e-01	1.7e-01	5.9e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th230	7.21e-01	1.6e-01	7.2e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th232	6.59e-01	1.5e-01	2.8e-02	PCI/GDRY	06/13/2016 16:01 CDT

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SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04127F	Amount analyzed:	1.012e+00 GASH
Client sample ID:	C3-SB3-0012-01	Preparation batch #:	0013451J
Matrix:	SOIL	Assay batch #:	0020930X
Collected:	2016-04-05 13:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	99.30 %	Analyst:	SPK
Ash/dry weight:	86.10 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/13/2016 16:01	1000.0	AS105	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	5.97e-02	3.9e-02	2.7e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th228	6.67e-01	1.1e-01	1.9e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th230	4.68e-01	9.4e-02	5.2e-02	PCI/GDRY	06/13/2016 16:01 CDT
Th232	6.94e-01	1.2e-01	1.9e-02	PCI/GDRY	06/13/2016 16:01 CDT

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04128G	Amount analyzed:	1.029e+00 GASH
Client sample ID:	C3-SB3-1224-01	Preparation batch #:	0013451J
Matrix:	SOIL	Assay batch #:	0020944D
Collected:	2016-04-05 13:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	93.08 %	Analyst:	SPK
Ash/dry weight:	96.01 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 16:13	1000.0	AS108	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	7.10e-02	4.5e-02	4.0e-02	PCI/GDRY	06/15/2016 16:13 CDT
Th228	8.61e-01	1.4e-01	2.9e-02	PCI/GDRY	06/15/2016 16:13 CDT
Th230	7.97e-01	1.3e-01	5.7e-02	PCI/GDRY	06/15/2016 16:13 CDT
Th232	8.77e-01	1.4e-01	1.6e-02	PCI/GDRY	06/15/2016 16:13 CDT

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SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04129H	Amount analyzed:	1.004e+00 GASH
Client sample ID:	C3-SB4-0012-01	Preparation batch #:	0013451J
Matrix:	SOIL	Assay batch #:	0020944D
Collected:	2016-04-05 13:48 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	96.57 %	Analyst:	SPK
Ash/dry weight:	93.52 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 16:13	1000.0	AS109	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	6.86e-02	4.0e-02	3.1e-02	PCI/GDRY	06/15/2016 16:13 CDT
Th228	5.12e-01	9.1e-02	2.3e-02	PCI/GDRY	06/15/2016 16:13 CDT
Th230	5.55e-01	1.0e-01	5.5e-02	PCI/GDRY	06/15/2016 16:13 CDT
Th232	5.21e-01	9.2e-02	1.4e-02	PCI/GDRY	06/15/2016 16:13 CDT

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04130A	Amount analyzed:	1.005e+00 GASH
Client sample ID:	C3-SB4-1224-01	Preparation batch #:	0013451J
Matrix:	SOIL	Assay batch #:	0020944D
Collected:	2016-04-05 13:49 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	91.41 %	Analyst:	SPK
Ash/dry weight:	98.01 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 16:13	1000.0	AS110	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	6.84e-02	4.3e-02	3.9e-02	PCI/GDRY	06/15/2016 16:13 CDT
Th228	7.80e-01	1.3e-01	2.8e-02	PCI/GDRY	06/15/2016 16:13 CDT
Th230	5.83e-01	1.1e-01	5.8e-02	PCI/GDRY	06/15/2016 16:13 CDT
Th232	7.25e-01	1.2e-01	1.9e-02	PCI/GDRY	06/15/2016 16:13 CDT

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04131B	Amount analyzed:	5.495e-01 GASH
Client sample ID:	C3-SB5-0012-01	Preparation batch #:	0013471N
Matrix:	SOIL	Assay batch #:	0020953E
Collected:	2016-04-05 14:22 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	95.68 %	Analyst:	SPK
Ash/dry weight:	86.51 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/20/2016 15:37	1000.0	AS33	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.34e-01	7.4e-02	4.5e-02	PCI/GDRY	06/20/2016 15:37 CDT
Th228	3.02e-01	8.8e-02	5.6e-02	PCI/GDRY	06/20/2016 15:37 CDT
Th230	3.14e-01	9.9e-02	9.3e-02	PCI/GDRY	06/20/2016 15:37 CDT
Th232	2.70e-01	8.1e-02	4.1e-02	PCI/GDRY	06/20/2016 15:37 CDT

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04132C	Amount analyzed:	5.670e-01 GASH
Client sample ID:	C3-SB6-0012-01	Preparation batch #:	0013471N
Matrix:	SOIL	Assay batch #:	0020953E
Collected:	2016-04-05 14:49 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	94.80 %	Analyst:	SPK
Ash/dry weight:	95.66 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/20/2016 15:36	1000.0	AS36	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	3.59e-02	4.1e-02	4.5e-02	PCI/GDRY	06/20/2016 15:36 CDT
Th228	5.92e-01	1.3e-01	5.8e-02	PCI/GDRY	06/20/2016 15:36 CDT
Th230	7.32e-01	1.5e-01	9.9e-02	PCI/GDRY	06/20/2016 15:36 CDT
Th232	5.10e-01	1.2e-01	3.1e-02	PCI/GDRY	06/20/2016 15:36 CDT

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04132C	Amount analyzed:	5.627e-01 GASH
Client sample ID:	C3-SB6-0012-01	Preparation batch #:	0013471N
Matrix:	SOIL	Assay batch #:	0020953E
Collected:	2016-04-05 14:49 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	94.80 %	Analyst:	SPK
Ash/dry weight:	95.66 %	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/20/2016 15:36	1000.0	AS37	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.34e-01	7.8e-02	6.0e-02	PCI/GDRY	06/20/2016 15:36 CDT
Th228	5.08e-01	1.2e-01	5.0e-02	PCI/GDRY	06/20/2016 15:36 CDT
Th230	7.18e-01	1.6e-01	1.0e-01	PCI/GDRY	06/20/2016 15:36 CDT
Th232	4.54e-01	1.1e-01	3.8e-02	PCI/GDRY	06/20/2016 15:36 CDT

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SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04133D	Amount analyzed:	1.004e+00 GASH
Client sample ID:	C3-SB6-3648-01	Preparation batch #:	0013451J
Matrix:	SOIL	Assay batch #:	0020944D
Collected:	2016-04-05 14:50 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	95.09 %	Analyst:	SPK
Ash/dry weight:	75.18 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/16/2016 13:38	1000.0	AS121	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	0.00e+00	9.2e-03	2.2e-02	PCI/GDRY	06/16/2016 13:38 CDT
Th228	6.33e-01	1.0e-01	2.0e-02	PCI/GDRY	06/16/2016 13:38 CDT
Th230	4.30e-01	8.2e-02	4.5e-02	PCI/GDRY	06/16/2016 13:38 CDT
Th232	5.72e-01	9.4e-02	1.2e-02	PCI/GDRY	06/16/2016 13:38 CDT

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U.S. ENVIRONMENTAL PROTECTION AGENCY
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SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04134E	Amount analyzed:	5.348e-01 GASH
Client sample ID:	C3-SB7-0012-01	Preparation batch #:	0013471N
Matrix:	SOIL	Assay batch #:	0020953E
Collected:	2016-04-05 16:23 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	95.07 %	Analyst:	SPK
Ash/dry weight:	93.71 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/20/2016 15:36	1000.0	AS38	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.11e-01	7.8e-02	8.4e-02	PCI/GDRY	06/20/2016 15:36 CDT
Th228	5.02e-01	1.2e-01	6.7e-02	PCI/GDRY	06/20/2016 15:36 CDT
Th230	1.67e+00	2.7e-01	1.1e-01	PCI/GDRY	06/20/2016 15:36 CDT
Th232	4.12e-01	1.1e-01	4.1e-02	PCI/GDRY	06/20/2016 15:36 CDT

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SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04135F	Amount analyzed:	1.001e+00 GASH
Client sample ID:	C3-SB7-3648-01	Preparation batch #:	0013451J
Matrix:	SOIL	Assay batch #:	0020944D
Collected:	2016-04-05 16:23 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	76.42 %	Analyst:	SPK
Ash/dry weight:	74.56 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/16/2016 13:38	1000.0	AS125	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.54e-03	1.4e-02	3.2e-02	PCI/GDRY	06/16/2016 13:38 CDT
Th228	7.65e-01	1.2e-01	2.6e-02	PCI/GDRY	06/16/2016 13:38 CDT
Th230	6.01e-01	1.0e-01	4.6e-02	PCI/GDRY	06/16/2016 13:38 CDT
Th232	6.96e-01	1.1e-01	2.0e-02	PCI/GDRY	06/16/2016 13:38 CDT

ED_006395_00001795-00197

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04136G	Amount analyzed:	5.848e-01 GASH
Client sample ID:	C3-SB8-0012-01	Preparation batch #:	0013471N
Matrix:	SOIL	Assay batch #:	0020953E
Collected:	2016-04-05 16:58 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	97.15 %	Analyst:	SPK
Ash/dry weight:	93.40 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/20/2016 15:36	1000.0	AS39	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.78e-01	8.5e-02	4.5e-02	PCI/GDRY	06/20/2016 15:36 CDT
Th228	3.62e-01	9.5e-02	4.6e-02	PCI/GDRY	06/20/2016 15:36 CDT
Th230	5.63e-01	1.3e-01	9.4e-02	PCI/GDRY	06/20/2016 15:36 CDT
Th232	3.35e-01	9.0e-02	3.1e-02	PCI/GDRY	06/20/2016 15:36 CDT

ED_006395_00001795-00198

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04137H	Amount analyzed:	1.014e+00 GASH
Client sample ID:	C3-SB8-1224-01	Preparation batch #:	0013451J
Matrix:	SOIL	Assay batch #:	0020944D
Collected:	2016-04-05 16:59 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	95.02 %	Analyst:	SPK
Ash/dry weight:	92.62 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 16:13	1000.0	AS132	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	2.34e-01	8.3e-02	4.4e-02	PCI/GDRY	06/15/2016 16:13 CDT
Th228	6.78e-01	1.2e-01	3.0e-02	PCI/GDRY	06/15/2016 16:13 CDT
Th230	3.64e+00	4.3e-01	5.6e-02	PCI/GDRY	06/15/2016 16:13 CDT
Th232	5.84e-01	1.1e-01	2.0e-02	PCI/GDRY	06/15/2016 16:13 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	LCS-00735458R	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013451J
Matrix:	N/A	Assay batch #:	0020930X
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/13/2016 16:01	1000.0	AS106	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	7.04e-03	2.0e-02	3.5e-02	PCI	06/13/2016 16:01 CDT
Th228	4.37e-02	3.1e-02	3.6e-02	PCI	06/13/2016 16:01 CDT
Th230	2.45e+00	3.1e-01	6.4e-02	PCI	06/13/2016 16:01 CDT
Th232	2.12e-02	2.2e-02	2.8e-02	PCI	06/13/2016 16:01 CDT

ED_006395_00001795-00200

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	RBK-00735457Q	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013451J
Matrix:	N/A	Assay batch #:	0020930X
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/13/2016 16:01	1000.0	AS107	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.63e-02	2.5e-02	3.8e-02	PCI	06/13/2016 16:01 CDT
Th228	2.88e-02	2.2e-02	2.4e-02	PCI	06/13/2016 16:01 CDT
Th230	2.97e-02	3.7e-02	6.0e-02	PCI	06/13/2016 16:01 CDT
Th232	1.15e-03	1.1e-02	2.4e-02	PCI	06/13/2016 16:01 CDT

ED_006395_00001795-00201

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	LCS-00735846A	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013471N
Matrix:	N/A	Assay batch #:	0020953E
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/20/2016 15:36	1000.0	AS40	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	5.66e-02	4.5e-02	5.3e-02	PCI	06/20/2016 15:36 CDT
Th228	-1.72e-02	1.9e-02	5.2e-02	PCI	06/20/2016 15:36 CDT
Th230	1.97e+00	2.5e-01	6.3e-02	PCI	06/20/2016 15:36 CDT
Th232	2.21e-02	2.2e-02	2.8e-02	PCI	06/20/2016 15:36 CDT

ED_006395_00001795-00202

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	RBK-00735845Z	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013471N
Matrix:	N/A	Assay batch #:	0020953E
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/20/2016 15:36	1000.0	AS65	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.18e-01	6.4e-02	4.6e-02	PCI	06/20/2016 15:36 CDT
Th228	2.17e-02	3.0e-02	5.1e-02	PCI	06/20/2016 15:36 CDT
Th230	3.55e-02	4.5e-02	7.4e-02	PCI	06/20/2016 15:36 CDT
Th232	2.20e-02	2.9e-02	4.6e-02	PCI	06/20/2016 15:36 CDT

ED_006395_00001795-00203

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1600016

PREPARATION BATCH SUMMARY

Preparation batch #: 0013451J
Analysis method: NAREL ACT-02F-TH
Preparation procedure: N/A

NAREL Sample #	Client Sample ID	Analysis #	QC Type	Yield	± 2 σ Uncertainty	Analyst
B6.04121Z	C2-SB3-8496-01	00733684R		83.68 %	7.66 %	SPK
B6.04121Z	C2-SB3-8496-01	00735456P	DUP	88.48 %	7.95 %	SPK
B6.04122A	C3-SB1-0012-01	00733687V		68.41 %	6.91 %	SPK
B6.04123B	C3-SB1-3648-01	00733690P		81.85 %	7.76 %	SPK
B6.04124C	C3-SB1-3648-02	00733693T		67.32 %	6.82 %	SPK
B6.04125D	C3-SB2-0012-01	00733696W		40.34 %	5.22 %	SPK
B6.04126E	C3-SB2-1224-01	00733699Z		45.81 %	5.53 %	SPK
B6.04127F	C3-SB3-0012-01	00733702A		75.96 %	7.27 %	SPK
B6.04128G	C3-SB3-1224-01	00733705D		78.27 %	7.37 %	SPK
B6.04129H	C3-SB4-0012-01	00733708G		91.78 %	8.16 %	SPK
B6.04130A	C3-SB4-1224-01	00733711B		88.36 %	8.05 %	SPK
B6.04133D	C3-SB6-3648-01	00733720C		86.82 %	7.99 %	SPK
B6.04135F	C3-SB7-3648-01	00733726J		79.68 %	7.53 %	SPK
B6.04137H	C3-SB8-1224-01	00733732G		75.84 %	7.27 %	SPK
LCS-00735458R *		00735458R	LCS	71.48 %	7.15 %	SPK
RBK-00735457Q *		00735457Q	RBK	77.53 %	7.28 %	SPK

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

QC RESULTS FOR BATCH 0013451J

NAREL Sample #	Analysis #	QC Type	Analyte	%R	RPD	Z	Evaluation
B6.04121Z	00735456P	DUP	TH227		13.8	-0.30	PASS
B6.04121Z	00735456P	DUP	TH228		4.9	0.48	PASS
B6.04121Z	00735456P	DUP	TH230		20.5	1.84	PASS
B6.04121Z	00735456P	DUP	TH232		12.3	1.18	PASS
LCS-00735458R	00735458R	LCS	TH230	122.3		2.85	WARN
RBK-00735457Q	00735457Q	RBK	TH227				PASS
RBK-00735457Q	00735457Q	RBK	TH228				PASS
RBK-00735457Q	00735457Q	RBK	TH230				PASS
RBK-00735457Q	00735457Q	RBK	TH232				PASS

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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1600016

PREPARATION BATCH SUMMARY

Preparation batch #: 0013471N
Analysis method: NAREL ACT-02F-TH
Preparation procedure: N/A

NAREL Sample #	Client Sample ID	Analysis #	QC Type	Yield	± 2 σ Uncertainty	Analyst
B6.04131B	C3-SB5-0012-01	00735840U		86.93 %	7.90 %	SPK
B6.04132C	C3-SB6-0012-01	00735841V		87.19 %	7.71 %	SPK
B6.04132C	C3-SB6-0012-01	00735844Y	DUP	86.39 %	7.89 %	SPK
B6.04134E	C3-SB7-0012-01	00735842W		86.05 %	7.99 %	SPK
B6.04136G	C3-SB8-0012-01	00735843X		84.85 %	7.66 %	SPK
LCS-00735846A *		00735846A	LCS	71.78 %	6.94 %	SPK
RBK-00735845Z *		00735845Z	RBK	64.91 %	6.74 %	SPK

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

QC RESULTS FOR BATCH 0013471N

NAREL Sample #	Analysis #	QC Type	Analyte	%R	RPD	Z	Evaluation
B6.04132C	00735844Y	DUP	TH227		115.2	2.21	WARN
B6.04132C	00735844Y	DUP	TH228		15.3	-0.96	PASS
B6.04132C	00735844Y	DUP	TH230		2.0	-0.13	PASS
B6.04132C	00735844Y	DUP	TH232		11.7	-0.70	PASS
LCS-00735846A	00735846A	LCS	TH230	98.6		-0.21	PASS
RBK-00735845Z	00735845Z	RBK	TH227				WARN
RBK-00735845Z	00735845Z	RBK	TH228				PASS
RBK-00735845Z	00735845Z	RBK	TH230				PASS
RBK-00735845Z	00735845Z	RBK	TH232				PASS

ED_006395_00001795-00205

U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY
540 S. MORRIS AVE., MONTGOMERY, AL 36115
GAMMA ANALYSES

REPORT OF SAMPLE DELIVERY GROUP #1600017

Project:	Canadian Radium & Uranium, Mt. Kisco, NY
Analysis method:	Gamma-ray Spectrometry - Sealed Radium Cans
Report ID:	1600017-GAMMA-RA
Report type:	Original
Date reported:	06/16/2016
Total pages in report:	31

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B6.04138J	C3-SB9-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04139K	C3-SB9-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04140C	C3-SB10-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04141D	C3-SB10-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04142E	C3-SB10-6072-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04143F	C3-SB10-7284-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04144G	C3-SB10-8496-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04145H	C3-SB11-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04146J	C3-SB11-3648-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04147K	C3-SB12-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04148L	C3-SB13-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04149M	C3-SB13-1224-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04150E	C3-SB14-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04151F	C3-SB15-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04152G	C3-SB15-2436-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04153H	C3-SB16-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04154J	C3-SB16-3648-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016

EXCEPTIONS

1. **Packaging and shipping** – No problems were observed.
2. **Documentation** – No problems were observed.
3. **Sample preparation** – No problems were encountered.
4. **Analysis** – Samples were held for 21 days to allow for ingrowth. Client requested that NAREL report the following: Cs-137, Th-234, Tl-208, Ra-228, Ac-228, Bi-210, Ra-226, Pb-214, Bi-214, Bi-212, Pb-212, Pb-210, and K-40. Client was informed that NAREL does not provide Ac-228 or Bi-210 results by gamma analysis. Also, client requested specific methods to be used, but NAREL uses in-house methods. Client agreed NAREL methods were acceptable. Please see page 4 of this report with regards to exceptions for reporting of some of the nuclides in this list. For Pb-210 in soil samples, NAREL flags the results because of the larger uncertainty associated with gamma-ray attenuation in uncharacterized materials at low energies (46.5 keV).
5. **Holding times** – No holding times were specified.

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QUALITY CONTROL

1. **QC samples** – All QC analysis results met NAREL acceptance criteria.
2. **Instruments** – Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

ACCREDITATION

All analyses included in this data package are accredited by the Oregon Environmental Laboratory Accreditation Program (ORELAP) to the TNI standard.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Project Acceptance Form and/or the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Director of the Center for Environmental Radioanalytical Laboratory Science and the NAREL Quality Assurance Manager, or their designees, as verified by the following signatures.

Velinda Herbert — 6/22/16
Velinda Herbert — Date
Quality Assurance Manager, NAREL

Cynthia White — 6-22-16
Cynthia White — Date
Director, Center for Environmental Radioanalytical Laboratory Science

ED_006395_00001795-00207

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample, or blank spike
MS	Matrix spike
MSD	Matrix spike duplicate (not currently analyzed)
RBK	Method blank
STD	External standard (used for ^{228}Ra yield determination)

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

RADIOCHEMICAL DATA

Radiochemical analyses usually require the subtraction of an instrument background measurement result from a gross sample measurement result. Both values are positive, but when the sample activity is low, random variations in the two measurements can cause the gross value to be less than the background, resulting in a measured activity less than zero. Although negative activities have no physical significance, they do have statistical importance, as for example in the evaluation of trends or the comparison of two groups of samples.

To the extent practical, it is the policy of NAREL to report results as generated, whether positive, negative, or zero, together with the "2-sigma" measurement uncertainty and a sample-specific estimate of the minimum detectable concentration (MDC). The measurement result, uncertainty, and MDC are always expressed in the same unit of measurement.

EVALUATION OF QC ANALYSES

A method blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "*Z* scores." A *Z* score is the number of standard deviations by which the QC result differs from its ideal value. Generally the score is considered acceptable if its absolute value is not greater than 3.

The *Z* score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference. The *Z* score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation of most analyses. An exception is the use of %R in the evaluation of gross alpha matrix spike results. A gross alpha matrix spike result is considered acceptable if either $|Z| \leq 3$ or $60 \leq \%R \leq 110$.

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GENERAL INFORMATION (CONTINUED)

GAMMA ANALYSIS

The reporting format lists the gamma emitters in alphabetical order. The activity, 2-sigma uncertainty, and a sample-specific estimate of the MDC for radionuclides measured by gamma spectroscopy are reported only if the nuclide is detected above background with the exception of client requested nuclides of interest. The activity for each of the requested nuclides is reported whether negative, positive, or zero along with the associated 2-sigma uncertainty and the sample-specific estimate of the MDC.

Due to potential spectral interferences and other possible problems associated with the determination of the activity of certain radionuclides, the activities for ^{214}Bi, ^{214}Pb, ^{234}Th, ^{234m}Pa, ^{226}Ra, ^{231}Th, and ^{235}U are subject to greater uncertainty than other commonly reported radionuclides. It should be noted that this potential uncertainty is not included in the two-sigma expanded uncertainty that is reported with each result. Although in this report we do provide the calculated activities for these radionuclides, we recommend that the results be used only as a qualitative means of indicating the presence of these radionuclides and not as a quantitative measure of their concentration. The results for these nuclides are not used in the evaluation of quality control samples. Furthermore, because of mutual interference between ^{226}Ra and ^{235}U, NAREL's gamma analysis software tends to overestimate the amounts of these nuclides whenever both are present in a sample. Lower estimates for ^{226}Ra activities can be obtained from the reported activities of its decay products, ^{214}Pb and ^{214}Bi, which are likely to be somewhat less than the ^{226}Ra activity because of the potential escape of radon gas.

NAREL's gamma-ray spectrometry software corrects activities and MDCs for decay between collection and analysis, but only up to a limit of twelve half-lives. If the decay time for a sample exceeds twelve half-lives of a radionuclide, that radionuclide is not reported. This software feature may affect results for short-lived radionuclides, such as ^{131}I and ^{140}Ba, when there is a long delay between collection and analysis.

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Chain of Custody Forms

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
Did not receive	~~C003-SB007-2436-02~~	~~4/5/2016~~	~~16:23~~	~~Gamma Spec (Modified)~~	~~Soil~~	~~4 C~~	~~N~~	~~1~~	~~16 oz glass jar~~
	C003-SB007-3648-01	4/5/2016	16:23	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB007-3648-01	4/5/2016	16:23	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB007-3648-01 ✓	4/5/2016	16:23	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
3	C003-SB008-0012-01 ✓	4/5/2016	16:58 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB008-0012-01 ✓	4/5/2016	16:58 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB008-0012-01 ✓	4/5/2016	16:58 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
3	C003-SB008-1224-01 ✓	4/5/2016	16:59 ✓	Isotopic Thorium ✓	Soil	4 C	Y	2	8 oz glass jar ✓
3	C003-SB008-1224-01 ✓	4/5/2016	16:59 ✓	Isotopic Uranium ✓	Soil	4 C	Y	2	8 oz glass jar ✓
3	C003-SB008-1224-01 ✓	4/5/2016	16:59 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	LABLE ISSUE	16 oz glass jar ✓
	C003-SB009-0012-01	4/5/2016	18:02	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB010-0012-01 ✓	4/5/2016	15:52 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-0012-01 ✓	4/5/2016	15:52 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-0012-01 ✓	4/5/2016	15:52 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓

7

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RSTS		Cathy Nadar	4/19/16	Good

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

Cont #4

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
3	C003-SB010-1224-01 ✓	4/5/2016	15:52 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-1224-01 ✓	4/5/2016	15:52 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-1224-01 ✓	4/5/2016	15:52 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
3	C003-SB010-6072-01 ✓	4/5/2016	15:52 ✓	Isotopic Thorium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-6072-01 ✓	4/5/2016	15:52 ✓	Isotopic Uranium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-6072-01 ✓	4/5/2016	15:52 ✓	Gamma Spec (Modified) ✓✓	Soil	4 C	N	1	16 oz glass jar ✓
3	C003-SB010-7284-01 ✓	4/5/2016	15:52 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-7284-01 ✓	4/5/2016	15:52 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-7284-01 ✓	4/5/2016	15:52 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
3	C003-SB010-8496-01 ✓	4/5/2016	15:52 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-8496-01 ✓	4/5/2016	15:52 ✓	Isotopic Uranium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-8496-01 ✓	4/5/2016	15:52 ✓	Gamma Spec (Modified) ✓✓	Soil	4 C	N	1	16 oz glass jar ✓
4	C003-SB011-0012-01 ✓	4/6/2016	11:13	Isotopic Thorium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C003-SB011-0012-01 ✓	4/6/2016	11:13	Isotopic Uranium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C003-SB011-0012-01 ✓	4/6/2016	11:13	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
4	C003-SB011-3648-01 ✓	4/6/2016	11:13	Isotopic Thorium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C003-SB011-3648-01 ✓	4/6/2016	11:13	Isotopic Uranium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C003-SB011-3648-01 ✓	4/6/2016	11:13	Gamma Spec (Modified) ✓	Soil	4 C	N	Broken 1	16 oz glass jar ✓ Broke
3	C003-SB012-0012-01 ✓	4/6/2016	11:35 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓

6

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		NAREL	04/19/16 @ 1115	Good (1) Broken Jar

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (349) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
	C003-SB012-0012-01	4/6/2016	11:35	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB012-0012-01	4/6/2016	11:35	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB013-0012-01	4/6/2016	12:00	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB013-0012-01	4/6/2016	12:00	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB013-0012-01	4/6/2016	12:00	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB013-1224-01	4/6/2016	12:01	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB013-1224-01	4/6/2016	12:01	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB013-1224-01	4/6/2016	12:01	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB014-0012-01	4/6/2016	12:28	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB014-0012-01	4/6/2016	12:28	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB014-0012-01	4/6/2016	12:28	Gamma Spec (Modified)	Soil	4 C	N	Broken 1	16 oz glass jar
	C003-SB015-0012-01	4/6/2016	10:43	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB015-0012-01	4/6/2016	10:43	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB015-0012-01	4/6/2016	10:43	Gamma Spec (Modified)	Soil	4 C	N	Broken 1	16 oz glass jar
	C003-SB015-2436-01	4/6/2016	10:43	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB015-2436-01	4/6/2016	10:43	Isotopic Uranium	Soil	4 C	N	Broken 1	8 oz glass jar
	C003-SB015-2436-01	4/6/2016	10:43	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB016-0012-01	4/6/2016	08:35	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB016-0012-01	4/6/2016	08:35	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		NAREL	04/19/16 @1115	Good 2 Broken Containers

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
✓	C003-SB016-0012-01	4/6/2016	08:35	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar
	C003-SB016-3648-01	4/6/2016	08:36	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar
✓	C003-SB016-3648-01	4/6/2016	08:36	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar
	C003-SB016-3648-01	4/6/2016	08:36	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	RST3		NAREL	04/18/16 1115	Good

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

ANALYSIS SUMMARY

Analysis method: NAREL GAM-01-RA
Title: Gamma-ray Spectrometry - Sealed Radium Cans

NAREL Sample #	Client Sample ID	QC Type	Date Completed	Preparation Batch #	Assay Batch #
B6.04138J	C3-SB9-0012-01		06/10/2016	0013448P	0020923Y
B6.04139K	C3-SB9-1224-01		06/10/2016	0013448P	0020923Y
B6.04140C	C3-SB10-0012-01		06/10/2016	0013448P	0020923Y
B6.04141D	C3-SB10-1224-01		06/10/2016	0013448P	0020923Y
B6.04142E	C3-SB10-6072-01		06/10/2016	0013448P	0020923Y
B6.04143F	C3-SB10-7284-01		06/10/2016	0013448P	0020923Y
B6.04144G	C3-SB10-8496-01		06/11/2016	0013448P	0020923Y
B6.04145H	C3-SB11-0012-01		06/11/2016	0013448P	0020923Y
B6.04146J	C3-SB11-3648-01		06/11/2016	0013448P	0020923Y
B6.04146J	C3-SB11-3648-01	DUP	06/14/2016	0013448P	0020923Y
B6.04147K	C3-SB12-0012-01		06/11/2016	0013448P	0020923Y
B6.04148L	C3-SB13-0012-01		06/11/2016	0013448P	0020923Y
B6.04149M	C3-SB13-1224-01		06/11/2016	0013448P	0020923Y
B6.04150E	C3-SB14-0012-01		06/14/2016	0013448P	0020923Y
B6.04151F	C3-SB15-0012-01		06/14/2016	0013448P	0020923Y
B6.04152G	C3-SB15-2436-01		06/14/2016	0013448P	0020923Y
B6.04153H	C3-SB16-0012-01		06/15/2016	0013448P	0020923Y
B6.04154J	C3-SB16-3648-01		06/15/2016	0013448P	0020923Y
LCS-00735408F *		LCS	06/16/2016	0013448P	0020923Y
RBK-00735409G *		RBK	06/16/2016	0013448P	0020923Y

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

ED_006395_00001795-00214

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04138J	Amount analyzed:	1.610e+02 GDRY
Client sample ID:	C3-SB9-0012-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-05 18:02 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	96.88 %	Analyst:	MO
Ash/dry weight:	93.31 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/09/2016 14:36	1000.0	GE04	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	3.13e-01	1.7e-01	1.7e-01	PCI/GDRY	04/05/2016 18:02 EDT
Bi214	J	6.56e-01	7.9e-02	2.5e-02	PCI/GDRY	04/05/2016 18:02 EDT
Cs137		9.47e-04	9.3e-03	1.2e-02	PCI/GDRY	04/05/2016 18:02 EDT
K40		9.17e+00	1.0e+00	1.5e-01	PCI/GDRY	04/05/2016 18:02 EDT
Pb210	J	5.53e-01	2.0e-01	2.3e-01	PCI/GDRY	04/05/2016 18:02 EDT
Pb212	J	3.78e-01	4.5e-02	1.8e-02	PCI/GDRY	04/05/2016 18:02 EDT
Pb214	J	7.87e-01	9.1e-02	2.6e-02	PCI/GDRY	04/05/2016 18:02 EDT
Ra226	J	1.04e+00	2.6e-01	2.6e-01	PCI/GDRY	04/05/2016 18:02 EDT
Ra228		3.99e-01	6.4e-02	4.5e-02	PCI/GDRY	04/05/2016 18:02 EDT
Th234	J	1.81e-01	2.0e-01	2.8e-01	PCI/GDRY	04/05/2016 18:02 EDT
Tl208	J	1.02e-01	1.7e-02	1.2e-02	PCI/GDRY	04/05/2016 18:02 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00215

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04139K	Amount analyzed:	3.580e+02 GDRY
Client sample ID:	C3-SB9-1224-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-05 18:02 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	94.08 %	Analyst:	MO
Ash/dry weight:	96.64 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/09/2016 14:37	1000.0	GE17	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	6.63e-01	1.7e-01	1.7e-01	PCI/GDRY	04/05/2016 18:02 EDT
Bi214	J	1.46e+00	1.6e-01	2.6e-02	PCI/GDRY	04/05/2016 18:02 EDT
Cs137		-6.22e-03	9.2e-03	1.5e-02	PCI/GDRY	04/05/2016 18:02 EDT
K40		1.20e+01	1.3e+00	1.2e-01	PCI/GDRY	04/05/2016 18:02 EDT
Pb210	J	1.45e+00	2.2e-01	2.0e-01	PCI/GDRY	04/05/2016 18:02 EDT
Pb212	J	5.30e-01	6.2e-02	1.8e-02	PCI/GDRY	04/05/2016 18:02 EDT
Pb214	J	1.66e+00	1.9e-01	2.6e-02	PCI/GDRY	04/05/2016 18:02 EDT
Ra226	J	2.15e+00	2.9e-01	2.1e-01	PCI/GDRY	04/05/2016 18:02 EDT
Ra228		5.69e-01	8.2e-02	5.8e-02	PCI/GDRY	04/05/2016 18:02 EDT
Th234	J	4.07e-01	1.7e-01	2.4e-01	PCI/GDRY	04/05/2016 18:02 EDT
Tl208	J	1.67e-01	2.3e-02	1.6e-02	PCI/GDRY	04/05/2016 18:02 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00216

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04140C	Amount analyzed:	3.230e+02 GDRY
Client sample ID:	C3-SB10-0012-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	97.86 %	Analyst:	MO
Ash/dry weight:	92.49 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/09/2016 14:39	1000.0	GE16	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	5.73e-01	1.1e-01	9.8e-02	PCI/GDRY	04/05/2016 15:52 EDT
Bi214	J	3.62e-01	4.4e-02	1.8e-02	PCI/GDRY	04/05/2016 15:52 EDT
Cs137		6.03e-03	6.3e-03	7.5e-03	PCI/GDRY	04/05/2016 15:52 EDT
K40		9.23e+00	1.0e+00	6.1e-02	PCI/GDRY	04/05/2016 15:52 EDT
Pb210	J	1.48e+00	2.3e-01	1.9e-01	PCI/GDRY	04/05/2016 15:52 EDT
Pb212	J	5.19e-01	6.0e-02	1.2e-02	PCI/GDRY	04/05/2016 15:52 EDT
Pb214	J	4.31e-01	5.0e-02	1.5e-02	PCI/GDRY	04/05/2016 15:52 EDT
Ra226	J	7.00e-01	1.3e-01	1.4e-01	PCI/GDRY	04/05/2016 15:52 EDT
Ra228		5.49e-01	6.5e-02	2.6e-02	PCI/GDRY	04/05/2016 15:52 EDT
Th234	J	4.63e-01	1.3e-01	1.7e-01	PCI/GDRY	04/05/2016 15:52 EDT
Tl208	J	1.73e-01	2.1e-02	7.7e-03	PCI/GDRY	04/05/2016 15:52 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00217

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04141D	Amount analyzed:	3.040e+02 GDRY
Client sample ID:	C3-SB10-1224-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	91.93 %	Analyst:	MO
Ash/dry weight:	92.48 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/09/2016 14:41	1000.0	GE18	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	1.09e+00	2.6e-01	3.0e-01	PCI/GDRY	04/05/2016 15:52 EDT
Bi214	J	2.65e+01	2.9e+00	4.1e-02	PCI/GDRY	04/05/2016 15:52 EDT
Cs137		7.10e-02	1.5e-02	2.1e-02	PCI/GDRY	04/05/2016 15:52 EDT
K40		1.31e+01	1.5e+00	2.9e-01	PCI/GDRY	04/05/2016 15:52 EDT
Pb210	J	3.27e+01	3.8e+00	5.8e-01	PCI/GDRY	04/05/2016 15:52 EDT
Pb212	J	8.48e-01	9.9e-02	4.7e-02	PCI/GDRY	04/05/2016 15:52 EDT
Pb214	J	3.00e+01	3.3e+00	5.4e-02	PCI/GDRY	04/05/2016 15:52 EDT
Ra226	J	3.52e+01	3.9e+00	6.9e-01	PCI/GDRY	04/05/2016 15:52 EDT
Ra228		8.66e-01	1.2e-01	1.2e-01	PCI/GDRY	04/05/2016 15:52 EDT
Th234	J	7.80e-01	4.3e-01	6.7e-01	PCI/GDRY	04/05/2016 15:52 EDT
Tl208	J	2.62e-01	3.4e-02	2.5e-02	PCI/GDRY	04/05/2016 15:52 EDT
U235	J	3.03e-01	1.2e-01	1.8e-01	PCI/GDRY	04/05/2016 15:52 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04142E	Amount analyzed:	2.620e+02 GDRY
Client sample ID:	C3-SB10-6072-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	80.93 %	Analyst:	MO
Ash/dry weight:	88.93 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/09/2016 14:43	1000.0	GE12	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	1.89e+00	3.0e-01	2.3e-01	PCI/GDRY	04/05/2016 15:52 EDT
Bi214	J	5.03e+00	5.5e-01	3.3e-02	PCI/GDRY	04/05/2016 15:52 EDT
Cs137		5.70e-03	1.4e-02	2.3e-02	PCI/GDRY	04/05/2016 15:52 EDT
K40		1.13e+01	1.3e+00	1.8e-01	PCI/GDRY	04/05/2016 15:52 EDT
Pb210	J	4.27e+00	5.1e-01	2.0e-01	PCI/GDRY	04/05/2016 15:52 EDT
Pb212	J	1.60e+00	1.8e-01	2.4e-02	PCI/GDRY	04/05/2016 15:52 EDT
Pb214	J	5.85e+00	6.4e-01	3.8e-02	PCI/GDRY	04/05/2016 15:52 EDT
Ra226	J	7.41e+00	8.8e-01	3.6e-01	PCI/GDRY	04/05/2016 15:52 EDT
Ra228		1.61e+00	1.8e-01	5.9e-02	PCI/GDRY	04/05/2016 15:52 EDT
Th234	J	8.96e-01	2.2e-01	2.9e-01	PCI/GDRY	04/05/2016 15:52 EDT
Tl208	J	4.91e-01	5.7e-02	1.8e-02	PCI/GDRY	04/05/2016 15:52 EDT
U235	J	1.41e-01	5.8e-02	8.4e-02	PCI/GDRY	04/05/2016 15:52 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00219

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04143F	Amount analyzed:	2.020e+02 GDRY
Client sample ID:	C3-SB10-7284-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	64.74 %	Analyst:	MO
Ash/dry weight:	77.25 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/09/2016 14:49	1000.0	GE15	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	3.48e+00	4.9e-01	2.8e-01	PCI/GDRY	04/05/2016 15:52 EDT
Bi214	J	3.21e+00	3.6e-01	4.2e-02	PCI/GDRY	04/05/2016 15:52 EDT
Cs137		-1.29e-02	1.7e-02	1.9e-02	PCI/GDRY	04/05/2016 15:52 EDT
K40		9.59e+00	1.1e+00	1.9e-01	PCI/GDRY	04/05/2016 15:52 EDT
Pb210	J	2.84e+00	3.7e-01	2.7e-01	PCI/GDRY	04/05/2016 15:52 EDT
Pb212	J	3.42e+00	3.8e-01	3.6e-02	PCI/GDRY	04/05/2016 15:52 EDT
Pb214	J	3.81e+00	4.2e-01	4.5e-02	PCI/GDRY	04/05/2016 15:52 EDT
Ra226	J	5.16e+00	6.8e-01	4.1e-01	PCI/GDRY	04/05/2016 15:52 EDT
Ra228		3.28e+00	3.6e-01	5.7e-02	PCI/GDRY	04/05/2016 15:52 EDT
Th234	J	1.79e+00	3.9e-01	4.1e-01	PCI/GDRY	04/05/2016 15:52 EDT
Tl208	J	9.92e-01	1.1e-01	2.1e-02	PCI/GDRY	04/05/2016 15:52 EDT
U235	J	1.77e-01	7.2e-02	9.8e-02	PCI/GDRY	04/05/2016 15:52 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00220

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04144G	Amount analyzed:	5.000e+02 GDRY
Client sample ID:	C3-SB10-8496-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	71.62 %	Analyst:	MO
Ash/dry weight:	92.51 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 14:59	1000.0	GE16	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	1.17e+00	1.6e-01	1.0e-01	PCI/GDRY	04/05/2016 15:52 EDT
Bi214	J	9.83e-01	1.1e-01	1.7e-02	PCI/GDRY	04/05/2016 15:52 EDT
Cs137		-1.20e-03	7.3e-03	1.2e-02	PCI/GDRY	04/05/2016 15:52 EDT
K40		1.34e+01	1.5e+00	6.7e-02	PCI/GDRY	04/05/2016 15:52 EDT
Pb210	J	6.28e-01	1.3e-01	1.4e-01	PCI/GDRY	04/05/2016 15:52 EDT
Pb212	J	1.16e+00	1.3e-01	1.6e-02	PCI/GDRY	04/05/2016 15:52 EDT
Pb214	J	1.13e+00	1.3e-01	2.2e-02	PCI/GDRY	04/05/2016 15:52 EDT
Ra226	J	2.28e+00	3.1e-01	2.1e-01	PCI/GDRY	04/05/2016 15:52 EDT
Ra228		1.16e+00	1.3e-01	2.9e-02	PCI/GDRY	04/05/2016 15:52 EDT
Th234	J	1.28e+00	1.8e-01	1.8e-01	PCI/GDRY	04/05/2016 15:52 EDT
Tl208	J	3.63e-01	4.1e-02	9.1e-03	PCI/GDRY	04/05/2016 15:52 EDT
U235	J	1.00e-01	4.1e-02	5.7e-02	PCI/GDRY	04/05/2016 15:52 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00221

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04145H	Amount analyzed:	1.840e+02 GDRY
Client sample ID:	C3-SB11-0012-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-06 11:13 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	96.90 %	Analyst:	MO
Ash/dry weight:	94.29 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:01	1000.0	GE04	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	9.92e-01	2.1e-01	1.8e-01	PCI/GDRY	04/06/2016 11:13 EDT
Bi214	J	5.84e-01	7.1e-02	2.7e-02	PCI/GDRY	04/06/2016 11:13 EDT
Cs137		-5.16e-03	1.0e-02	1.3e-02	PCI/GDRY	04/06/2016 11:13 EDT
K40		2.08e+01	2.3e+00	1.4e-01	PCI/GDRY	04/06/2016 11:13 EDT
Pb210	J	5.77e-01	1.9e-01	2.4e-01	PCI/GDRY	04/06/2016 11:13 EDT
Pb212	J	1.03e+00	1.1e-01	1.9e-02	PCI/GDRY	04/06/2016 11:13 EDT
Pb214	J	6.85e-01	8.0e-02	2.6e-02	PCI/GDRY	04/06/2016 11:13 EDT
Ra226	J	1.13e+00	2.5e-01	2.5e-01	PCI/GDRY	04/06/2016 11:13 EDT
Ra228		9.83e-01	1.2e-01	5.1e-02	PCI/GDRY	04/06/2016 11:13 EDT
Th234	J	7.34e-01	2.1e-01	2.8e-01	PCI/GDRY	04/06/2016 11:13 EDT
Tl208	J	3.04e-01	3.7e-02	1.5e-02	PCI/GDRY	04/06/2016 11:13 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04146J	Amount analyzed:	5.780e+02 GDRY
Client sample ID:	C3-SB11-3648-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-06 11:13 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	87.49 %	Analyst:	MO
Ash/dry weight:	97.41 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:05	1000.0	GE17	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	9.45e-01	1.7e-01	1.5e-01	PCI/GDRY	04/06/2016 11:13 EDT
Bi214	J	4.40e-01	5.4e-02	2.2e-02	PCI/GDRY	04/06/2016 11:13 EDT
Cs137		-5.29e-03	8.7e-03	1.0e-02	PCI/GDRY	04/06/2016 11:13 EDT
K40		1.46e+01	1.6e+00	1.1e-01	PCI/GDRY	04/06/2016 11:13 EDT
Pb210	J	6.94e-01	1.8e-01	2.4e-01	PCI/GDRY	04/06/2016 11:13 EDT
Pb212	J	8.45e-01	9.6e-02	1.8e-02	PCI/GDRY	04/06/2016 11:13 EDT
Pb214	J	5.10e-01	6.1e-02	2.3e-02	PCI/GDRY	04/06/2016 11:13 EDT
Ra226	J	1.00e+00	1.9e-01	2.0e-01	PCI/GDRY	04/06/2016 11:13 EDT
Ra228		8.85e-01	1.0e-01	5.2e-02	PCI/GDRY	04/06/2016 11:13 EDT
Th234	J	5.44e-01	1.7e-01	2.4e-01	PCI/GDRY	04/06/2016 11:13 EDT
Tl208	J	2.64e-01	3.1e-02	1.3e-02	PCI/GDRY	04/06/2016 11:13 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00223

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04146J	Amount analyzed:	5.780e+02 GDRY
Client sample ID:	C3-SB11-3648-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-06 11:13 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	87.49 %	Analyst:	MO
Ash/dry weight:	97.41 %	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/13/2016 11:36	1000.0	GE18	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	1.01e+00	1.7e-01	1.5e-01	PCI/GDRY	04/06/2016 11:13 EDT
Bi214	J	4.33e-01	5.2e-02	2.0e-02	PCI/GDRY	04/06/2016 11:13 EDT
Cs137		-8.83e-04	7.0e-03	8.8e-03	PCI/GDRY	04/06/2016 11:13 EDT
K40		1.47e+01	1.6e+00	9.0e-02	PCI/GDRY	04/06/2016 11:13 EDT
Pb210	J	6.89e-01	1.6e-01	2.1e-01	PCI/GDRY	04/06/2016 11:13 EDT
Pb212	J	8.26e-01	9.3e-02	1.7e-02	PCI/GDRY	04/06/2016 11:13 EDT
Pb214	J	4.99e-01	5.9e-02	2.2e-02	PCI/GDRY	04/06/2016 11:13 EDT
Ra226	J	8.35e-01	1.6e-01	1.8e-01	PCI/GDRY	04/06/2016 11:13 EDT
Ra228		8.40e-01	9.9e-02	4.9e-02	PCI/GDRY	04/06/2016 11:13 EDT
Th234	J	5.71e-01	1.4e-01	2.1e-01	PCI/GDRY	04/06/2016 11:13 EDT
Tl208	J	2.66e-01	3.2e-02	1.4e-02	PCI/GDRY	04/06/2016 11:13 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00224

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04147K	Amount analyzed:	1.360e+02 GDRY
Client sample ID:	C3-SB12-0012-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-06 11:35 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	98.86 %	Analyst:	MO
Ash/dry weight:	80.06 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:10	1000.0	GE15	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	4.73e-01	1.9e-01	2.0e-01	PCI/GDRY	04/06/2016 11:35 EDT
Bi214	J	3.46e-01	5.1e-02	3.3e-02	PCI/GDRY	04/06/2016 11:35 EDT
Cs137		-3.25e-03	1.1e-02	1.3e-02	PCI/GDRY	04/06/2016 11:35 EDT
K40		1.11e+01	1.3e+00	1.6e-01	PCI/GDRY	04/06/2016 11:35 EDT
Pb210	J	4.27e-01	1.3e-01	1.7e-01	PCI/GDRY	04/06/2016 11:35 EDT
Pb212	J	4.66e-01	5.6e-02	2.6e-02	PCI/GDRY	04/06/2016 11:35 EDT
Pb214	J	3.95e-01	5.5e-02	3.4e-02	PCI/GDRY	04/06/2016 11:35 EDT
Ra226	J	6.67e-01	2.3e-01	2.4e-01	PCI/GDRY	04/06/2016 11:35 EDT
Ra228		4.48e-01	6.7e-02	6.1e-02	PCI/GDRY	04/06/2016 11:35 EDT
Th234	J	5.13e-01	2.2e-01	2.4e-01	PCI/GDRY	04/06/2016 11:35 EDT
Tl208	J	1.40e-01	2.2e-02	1.7e-02	PCI/GDRY	04/06/2016 11:35 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00225

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04148L	Amount analyzed:	1.540e+02 GDRY
Client sample ID:	C3-SB13-0012-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-06 12:00 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	99.04 %	Analyst:	MO
Ash/dry weight:	83.55 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:11	1000.0	GE12	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	6.14e-01	1.9e-01	1.9e-01	PCI/GDRY	04/06/2016 12:00 EDT
Bi214	J	4.26e-01	5.7e-02	3.1e-02	PCI/GDRY	04/06/2016 12:00 EDT
Cs137		4.22e-03	9.8e-03	1.2e-02	PCI/GDRY	04/06/2016 12:00 EDT
K40		1.26e+01	1.4e+00	1.5e-01	PCI/GDRY	04/06/2016 12:00 EDT
Pb210	J	4.36e-01	2.2e-01	2.7e-01	PCI/GDRY	04/06/2016 12:00 EDT
Pb212	J	5.05e-01	5.9e-02	2.0e-02	PCI/GDRY	04/06/2016 12:00 EDT
Pb214	J	4.72e-01	5.8e-02	2.7e-02	PCI/GDRY	04/06/2016 12:00 EDT
Ra226	J	8.52e-01	2.2e-01	2.5e-01	PCI/GDRY	04/06/2016 12:00 EDT
Ra228		5.43e-01	7.8e-02	5.6e-02	PCI/GDRY	04/06/2016 12:00 EDT
Th234	J	4.59e-01	2.1e-01	2.8e-01	PCI/GDRY	04/06/2016 12:00 EDT
Tl208	J	1.58e-01	2.2e-02	1.3e-02	PCI/GDRY	04/06/2016 12:00 EDT
U235	J	6.65e-02	3.6e-02	5.3e-02	PCI/GDRY	04/06/2016 12:00 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00226

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04149M	Amount analyzed:	3.600e+02 GDRY
Client sample ID:	C3-SB13-1224-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-06 12:01 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	93.44 %	Analyst:	MO
Ash/dry weight:	98.23 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/10/2016 15:13	1000.0	GE18	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	9.52e-01	1.7e-01	1.6e-01	PCI/GDRY	04/06/2016 12:01 EDT
Bi214	J	1.80e+00	2.0e-01	2.4e-02	PCI/GDRY	04/06/2016 12:01 EDT
Cs137		2.23e-03	9.0e-03	1.5e-02	PCI/GDRY	04/06/2016 12:01 EDT
K40		1.23e+01	1.4e+00	1.1e-01	PCI/GDRY	04/06/2016 12:01 EDT
Pb210	J	2.01e+00	2.9e-01	2.4e-01	PCI/GDRY	04/06/2016 12:01 EDT
Pb212	J	7.38e-01	8.3e-02	1.8e-02	PCI/GDRY	04/06/2016 12:01 EDT
Pb214	J	2.05e+00	2.3e-01	2.4e-02	PCI/GDRY	04/06/2016 12:01 EDT
Ra226	J	2.79e+00	3.6e-01	2.3e-01	PCI/GDRY	04/06/2016 12:01 EDT
Ra228		8.21e-01	9.8e-02	5.6e-02	PCI/GDRY	04/06/2016 12:01 EDT
Th234	J	5.46e-01	1.6e-01	2.3e-01	PCI/GDRY	04/06/2016 12:01 EDT
Tl208	J	2.17e-01	2.7e-02	1.5e-02	PCI/GDRY	04/06/2016 12:01 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04150E	Amount analyzed:	3.130e+02 GDRY
Client sample ID:	C3-SB14-0012-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-06 12:28 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	97.41 %	Analyst:	MO
Ash/dry weight:	91.39 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/13/2016 11:38	1000.0	GE12	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	5.88e-01	1.4e-01	1.3e-01	PCI/GDRY	04/06/2016 12:28 EDT
Bi214	J	5.75e-01	6.7e-02	2.0e-02	PCI/GDRY	04/06/2016 12:28 EDT
Cs137		8.12e-03	6.9e-03	8.5e-03	PCI/GDRY	04/06/2016 12:28 EDT
K40		1.15e+01	1.3e+00	9.4e-02	PCI/GDRY	04/06/2016 12:28 EDT
Pb210	J	5.92e-01	1.9e-01	2.3e-01	PCI/GDRY	04/06/2016 12:28 EDT
Pb212	J	5.46e-01	6.2e-02	1.5e-02	PCI/GDRY	04/06/2016 12:28 EDT
Pb214	J	6.62e-01	7.6e-02	2.1e-02	PCI/GDRY	04/06/2016 12:28 EDT
Ra226	J	1.02e+00	2.0e-01	2.0e-01	PCI/GDRY	04/06/2016 12:28 EDT
Ra228		5.56e-01	6.8e-02	3.8e-02	PCI/GDRY	04/06/2016 12:28 EDT
Th234	J	3.68e-01	1.5e-01	2.2e-01	PCI/GDRY	04/06/2016 12:28 EDT
Tl208	J	1.67e-01	2.1e-02	1.0e-02	PCI/GDRY	04/06/2016 12:28 EDT
U235	J	4.46e-02	3.7e-02	5.2e-02	PCI/GDRY	04/06/2016 12:28 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00228

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04151F	Amount analyzed:	2.820e+02 GDRY
Client sample ID:	C3-SB15-0012-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-06 10:43 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	85.96 %	Analyst:	MO
Ash/dry weight:	95.51 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/13/2016 11:39	1000.0	GE15	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	1.04e+00	1.8e-01	1.4e-01	PCI/GDRY	04/06/2016 10:43 EDT
Bi214	J	8.69e-01	1.0e-01	2.6e-02	PCI/GDRY	04/06/2016 10:43 EDT
Cs137		7.26e-02	1.3e-02	1.1e-02	PCI/GDRY	04/06/2016 10:43 EDT
K40		1.35e+01	1.5e+00	1.2e-01	PCI/GDRY	04/06/2016 10:43 EDT
Pb210	J	1.38e+00	2.8e-01	2.9e-01	PCI/GDRY	04/06/2016 10:43 EDT
Pb212	J	8.58e-01	9.7e-02	2.3e-02	PCI/GDRY	04/06/2016 10:43 EDT
Pb214	J	1.05e+00	1.2e-01	2.9e-02	PCI/GDRY	04/06/2016 10:43 EDT
Ra226	J	1.79e+00	2.9e-01	2.4e-01	PCI/GDRY	04/06/2016 10:43 EDT
Ra228		8.62e-01	1.1e-01	4.8e-02	PCI/GDRY	04/06/2016 10:43 EDT
Th234	J	7.92e-01	2.7e-01	3.0e-01	PCI/GDRY	04/06/2016 10:43 EDT
Tl208	J	2.64e-01	3.3e-02	1.4e-02	PCI/GDRY	04/06/2016 10:43 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00229

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04152G	Amount analyzed:	6.550e+02 GDRY
Client sample ID:	C3-SB15-2436-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-06 10:43 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	91.97 %	Analyst:	MO
Ash/dry weight:	98.05 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/13/2016 11:40	1000.0	GE16	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	1.03e+00	1.4e-01	9.1e-02	PCI/GDRY	04/06/2016 10:43 EDT
Bi214	J	5.52e-01	6.3e-02	1.6e-02	PCI/GDRY	04/06/2016 10:43 EDT
Cs137		9.09e-03	4.7e-03	6.2e-03	PCI/GDRY	04/06/2016 10:43 EDT
K40		1.29e+01	1.4e+00	5.7e-02	PCI/GDRY	04/06/2016 10:43 EDT
Pb210	J	5.59e-01	1.6e-01	2.0e-01	PCI/GDRY	04/06/2016 10:43 EDT
Pb212	J	8.83e-01	1.0e-01	1.3e-02	PCI/GDRY	04/06/2016 10:43 EDT
Pb214	J	6.46e-01	7.4e-02	1.7e-02	PCI/GDRY	04/06/2016 10:43 EDT
Ra226	J	1.16e+00	1.8e-01	1.6e-01	PCI/GDRY	04/06/2016 10:43 EDT
Ra228		8.98e-01	1.0e-01	2.7e-02	PCI/GDRY	04/06/2016 10:43 EDT
Th234	J	5.99e-01	1.6e-01	2.1e-01	PCI/GDRY	04/06/2016 10:43 EDT
Tl208	J	2.80e-01	3.2e-02	8.2e-03	PCI/GDRY	04/06/2016 10:43 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00230

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04153H	Amount analyzed:	1.750e+02 GDRY
Client sample ID:	C3-SB16-0012-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-06 08:35 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	96.85 %	Analyst:	MO
Ash/dry weight:	93.53 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/14/2016 16:02	1000.0	GE15	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	9.72e-01	1.9e-01	1.6e-01	PCI/GDRY	04/06/2016 08:35 EDT
Bi214	J	3.89e-01	5.2e-02	2.9e-02	PCI/GDRY	04/06/2016 08:35 EDT
Cs137		1.36e-03	1.1e-02	1.2e-02	PCI/GDRY	04/06/2016 08:35 EDT
K40		1.69e+01	1.9e+00	1.4e-01	PCI/GDRY	04/06/2016 08:35 EDT
Pb210	J	6.19e-01	1.8e-01	2.2e-01	PCI/GDRY	04/06/2016 08:35 EDT
Pb212	J	7.71e-01	8.7e-02	2.4e-02	PCI/GDRY	04/06/2016 08:35 EDT
Pb214	J	4.84e-01	6.2e-02	3.1e-02	PCI/GDRY	04/06/2016 08:35 EDT
Ra226	J	8.72e-01	2.2e-01	2.2e-01	PCI/GDRY	04/06/2016 08:35 EDT
Ra228		7.96e-01	1.0e-01	5.0e-02	PCI/GDRY	04/06/2016 08:35 EDT
Th234	J	6.86e-01	2.7e-01	2.8e-01	PCI/GDRY	04/06/2016 08:35 EDT
Tl208	J	2.25e-01	2.8e-02	1.4e-02	PCI/GDRY	04/06/2016 08:35 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00231

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04154J	Amount analyzed:	5.820e+02 GDRY
Client sample ID:	C3-SB16-3648-01	Preparation batch #:	0013448P
Matrix:	SOIL	Assay batch #:	0020923Y
Collected:	2016-04-06 08:36 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	88.04 %	Analyst:	MO
Ash/dry weight:	97.34 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/14/2016 16:03	1000.0	GE16	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	9.88e-01	1.4e-01	9.5e-02	PCI/GDRY	04/06/2016 08:36 EDT
Bi214	J	5.37e-01	6.2e-02	1.6e-02	PCI/GDRY	04/06/2016 08:36 EDT
Cs137		1.34e-03	6.4e-03	7.7e-03	PCI/GDRY	04/06/2016 08:36 EDT
K40		1.30e+01	1.4e+00	6.3e-02	PCI/GDRY	04/06/2016 08:36 EDT
Pb210	J	5.53e-01	1.7e-01	2.1e-01	PCI/GDRY	04/06/2016 08:36 EDT
Pb212	J	9.01e-01	1.0e-01	1.5e-02	PCI/GDRY	04/06/2016 08:36 EDT
Pb214	J	6.19e-01	7.1e-02	1.9e-02	PCI/GDRY	04/06/2016 08:36 EDT
Ra226	J	1.11e+00	1.8e-01	1.7e-01	PCI/GDRY	04/06/2016 08:36 EDT
Ra228		9.38e-01	1.1e-01	2.4e-02	PCI/GDRY	04/06/2016 08:36 EDT
Th234	J	6.07e-01	1.7e-01	2.3e-01	PCI/GDRY	04/06/2016 08:36 EDT
Tl208	J	2.88e-01	3.3e-02	7.8e-03	PCI/GDRY	04/06/2016 08:36 EDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00232

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	LCS-00735408F	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013448P
Matrix:	N/A	Assay batch #:	0020923Y
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	N/A	Analyst:	MO
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 15:25	1000.0	GE16	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi207		4.61e+03	4.9e+02	5.3e+01	PCI	12/15/2010 12:00 CST
Bi212	J	3.80e+02	1.3e+02	1.5e+02	PCI	12/15/2010 12:00 CST
Bi214	J	1.22e+02	1.5e+01	8.4e+00	PCI	12/15/2010 12:00 CST
Eu155		1.13e+03	1.3e+02	3.6e+01	PCI	12/15/2010 12:00 CST
Pb212	J	3.32e+02	3.9e+01	1.8e+01	PCI	12/15/2010 12:00 CST
Pb214	J	1.46e+02	2.0e+01	1.5e+01	PCI	12/15/2010 12:00 CST
Ra226	J	3.19e+02	8.8e+01	1.1e+02	PCI	12/15/2010 12:00 CST
Ra228		3.62e+02	4.7e+01	4.1e+01	PCI	12/15/2010 12:00 CST
Tl208	J	1.10e+02	1.5e+01	1.0e+01	PCI	12/15/2010 12:00 CST

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00233

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	RBK-00735409G	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013448P
Matrix:	N/A	Assay batch #:	0020923Y
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL GAM-01-RA
Dry/wet weight:	N/A	Analyst:	MO
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 15:37	1000.0	GE15	MO

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Bi212	J	1.44e+01	2.3e+01	2.4e+01	PCI	06/09/2016 07:00 CDT
Bi214	J	-4.27e+00	5.3e+00	5.6e+00	PCI	06/09/2016 07:00 CDT
Cs137		2.17e-01	1.6e+00	1.8e+00	PCI	06/09/2016 07:00 CDT
Pb210	J	3.95e+01	3.7e+01	4.4e+01	PCI	06/09/2016 07:00 CDT
Pb212	J	-4.85e+00	3.5e+00	4.5e+00	PCI	06/09/2016 07:00 CDT
Pb214	J	-2.07e+00	4.9e+00	5.3e+00	PCI	06/09/2016 07:00 CDT
Ra226	J	-1.14e+01	3.4e+01	3.6e+01	PCI	06/09/2016 07:00 CDT
Ra228		-6.91e+00	7.5e+00	8.9e+00	PCI	06/09/2016 07:00 CDT
Th234	J	1.13e+00	4.0e+01	4.1e+01	PCI	06/09/2016 07:00 CDT
Tl208	J	-5.55e-01	2.0e+00	2.5e+00	PCI	06/09/2016 07:00 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1600017

PREPARATION BATCH SUMMARY

Preparation batch #: 0013448P
Analysis method: NAREL GAM-01-RA
Preparation procedure: N/A

NAREL Sample #	Client Sample ID	Analysis #	QC Type	Yield	± 2 σ Uncertainty	Analyst
B6.04138J	C3-SB9-0012-01	00733736L		N/A		MO
B6.04139K	C3-SB9-1224-01	00733739P		N/A		MO
B6.04140C	C3-SB10-0012-01	00733742J		N/A		MO
B6.04141D	C3-SB10-1224-01	00733745M		N/A		MO
B6.04142E	C3-SB10-6072-01	00733748Q		N/A		MO
B6.04143F	C3-SB10-7284-01	00733751K		N/A		MO
B6.04144G	C3-SB10-8496-01	00733754N		N/A		MO
B6.04145H	C3-SB11-0012-01	00733757R		N/A		MO
B6.04146J	C3-SB11-3648-01	00733760L		N/A		MO
B6.04146J	C3-SB11-3648-01	00735407E	DUP	N/A		MO
B6.04147K	C3-SB12-0012-01	00733763P		N/A		MO
B6.04148L	C3-SB13-0012-01	00733766T		N/A		MO
B6.04149M	C3-SB13-1224-01	00733769W		N/A		MO
B6.04150E	C3-SB14-0012-01	00733772Q		N/A		MO
B6.04151F	C3-SB15-0012-01	00733775U		N/A		MO
B6.04152G	C3-SB15-2436-01	00733778X		N/A		MO
B6.04153H	C3-SB16-0012-01	00733781R		N/A		MO
B6.04154J	C3-SB16-3648-01	00733784V		N/A		MO
LCS-00735408F *		00735408F	LCS	N/A		MO
RBK-00735409G *		00735409G	RBK	N/A		MO

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

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QC RESULTS FOR BATCH 0013448P

NAREL Sample #	Analysis #	QC Type	Analyte	%R	RPD	Z	Evaluation
B6.04146J	00735407E	DUP	BI212		6.2	0.49	PASS-J
B6.04146J	00735407E	DUP	BI214		1.5	-0.18	PASS-J
B6.04146J	00735407E	DUP	CS137		-142.8	0.79	PASS
B6.04146J	00735407E	DUP	K40		0.7	0.09	PASS
B6.04146J	00735407E	DUP	PB210		0.8	-0.04	PASS-J
B6.04146J	00735407E	DUP	PB212		2.4	-0.29	PASS-J
B6.04146J	00735407E	DUP	PB214		2.3	-0.28	PASS-J
B6.04146J	00735407E	DUP	RA226		18.3	-1.36	PASS-J
B6.04146J	00735407E	DUP	RA228		5.2	-0.62	PASS
B6.04146J	00735407E	DUP	TH234		4.9	0.25	PASS-J
B6.04146J	00735407E	DUP	TL208		0.6	0.07	PASS-J
LCS-00735408F	00735408F	LCS	BI207	97.9		-0.37	PASS
LCS-00735408F	00735408F	LCS	EU155	110.3		1.48	PASS
RBK-00735409G	00735409G	RBK	BI212				PASS-J
RBK-00735409G	00735409G	RBK	BI214				PASS-J
RBK-00735409G	00735409G	RBK	CS137				PASS
RBK-00735409G	00735409G	RBK	PB210				WARN-J
RBK-00735409G	00735409G	RBK	PB212				WARN-J
RBK-00735409G	00735409G	RBK	PB214				PASS-J
RBK-00735409G	00735409G	RBK	RA226				PASS-J
RBK-00735409G	00735409G	RBK	RA228				PASS
RBK-00735409G	00735409G	RBK	TH234				PASS-J
RBK-00735409G	00735409G	RBK	TL208				PASS-J

Note: Results qualified with -J may be significantly under or over-estimated and are not evaluated for QC purposes.

ED_006395_00001795-00236

U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY
540 S. MORRIS AVE., MONTGOMERY, AL 36115
U ANALYSES

REPORT OF SAMPLE DELIVERY GROUP #1600016

Project:	Canadian Radium & Uranium, Mt. Kisco, NY
Analysis method:	Isotopic Uranium Using NaOH Fusion
Report ID:	1600016-U
Report type:	Original
Date reported:	06/29/2016
Total pages in report:	51

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B6.04121Z	C2-SB3-8496-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04122A	C3-SB1-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04123B	C3-SB1-3648-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04124C	C3-SB1-3648-02	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04125D	C3-SB2-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04126E	C3-SB2-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04127F	C3-SB3-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04128G	C3-SB3-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04129H	C3-SB4-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04130A	C3-SB4-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04131B	C3-SB5-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04132C	C3-SB6-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04133D	C3-SB6-3648-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04134E	C3-SB7-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04135F	C3-SB7-3648-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04136G	C3-SB8-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04137H	C3-SB8-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016

EXCEPTIONS

1. **Packaging and shipping** – No problems were observed.
2. **Documentation** – No problems were observed.
3. **Sample preparation** – No problems were encountered.
4. **Analysis** – The original analysis of the samples in this SDG had a U-238 duplicate failure. The client was contacted and instructed NAREL to reanalyze the samples and to report the original and the reanalysis results, both of which are reported in this data package. The original results are in preparation batch 0013452K. The reanalysis results are in preparation batch 0013488Y. Please refer to the preparation batch number found on each results page to determine whether the results are the original analysis or the reanalysis for the sample. The reanalysis of sample B6.04133 was counted using a detector that failed its efficiency check after the sample had been counted. The sample was recounted on a different detector. The results of the recount of the reanalysis are reported in this data package.
5. **Holding times** – No holding times were specified.

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QUALITY CONTROL

1. **QC samples** – All QC analysis results met NAREL acceptance criteria.
2. **Yields** – All chemical yields were within acceptance limits.
3. **Instruments** – Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

ACCREDITATION

All analyses included in this data package are accredited by the Oregon Environmental Laboratory Accreditation Program (ORELAP) to the TNI standard.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Project Acceptance Form and/or the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Director of the Center for Environmental Radioanalytical Laboratory Science and the NAREL Quality Assurance Manager, or their designees, as verified by the following signatures.

Velinda Herbert — 7/7/16
Velinda Herbert — Date
Quality Assurance Manager, NAREL

Cynthia White — 7-7-16
Cynthia White — Date
Director, Center for Environmental Radioanalytical Laboratory Science

ED_006395_00001795-00238

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample, or blank spike
MS	Matrix spike
MSD	Matrix spike duplicate (not currently analyzed)
RBK	Method blank
STD	External standard (used for ^{228}Ra yield determination)

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

RADIOCHEMICAL DATA

Radiochemical analyses usually require the subtraction of an instrument background measurement result from a gross sample measurement result. Both values are positive, but when the sample activity is low, random variations in the two measurements can cause the gross value to be less than the background, resulting in a measured activity less than zero. Although negative activities have no physical significance, they do have statistical importance, as for example in the evaluation of trends or the comparison of two groups of samples.

To the extent practical, it is the policy of NAREL to report results as generated, whether positive, negative, or zero, together with the "2-sigma" measurement uncertainty and a sample-specific estimate of the minimum detectable concentration (MDC). The measurement result, uncertainty, and MDC are always expressed in the same unit of measurement.

EVALUATION OF QC ANALYSES

A method blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "*Z* scores." A *Z* score is the number of standard deviations by which the QC result differs from its ideal value. Generally the score is considered acceptable if its absolute value is not greater than 3.

The *Z* score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference. The *Z* score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation of most analyses. An exception is the use of %R in the evaluation of gross alpha matrix spike results. A gross alpha matrix spike result is considered acceptable if either $|Z| \leq 3$ or $60 \leq \%R \leq 110$.

ED_006395_00001795-00239

Chain of Custody Forms

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
	C002-SB003-0012-01	4/6/2016	13:17	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB003-1224-01	4/6/2016	13:17	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-1224-01	4/6/2016	13:17	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-1224-01	4/6/2016	13:17	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB003-4860-01	4/6/2016	13:18	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-4860-01	4/6/2016	13:18	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-4860-01	4/6/2016	13:18	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C002-SB003-6072-01	4/6/2016	13:18	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-6072-01	4/6/2016	13:18	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C002-SB003-6072-01	4/6/2016	13:18	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
4	C002-SB003-7284-01 ✓	4/6/2016	13:18	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-7284-01 ✓	4/6/2016	13:18	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-7284-01 ✓	4/6/2016	13:18	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
4	C002-SB003-8496-01 ✓	4/6/2016	13:19	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-8496-01 ✓	4/6/2016	13:19	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C002-SB003-8496-01 ✓	4/6/2016	13:19	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
	C003-SB001-0012-01	4/5/2016	12:19	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB001-0012-01	4/5/2016	12:19	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
4	C003-SB001-0012-01 ✓	4/5/2016 ✓	12:19	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		NAREL	04/18/16 @ 11:15	Good Crushed Sample

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
3	C003-SB001-3648-01 ✓	4/5/2016	12:21 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
	C003-SB001-3648-01	4/5/2016	12:21	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB001-3648-01	4/5/2016	12:21	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB001-3648-02 ✓	4/5/2016	12:21	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB001-3648-02 ✓	4/5/2016	12:21 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB001-3648-02 ✓	4/5/2016	12:21 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
	C003-SB002-0012-01	4/5/2016	11:10	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB002-0012-01	4/5/2016	11:10	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB002-0012-01	4/5/2016	11:10	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB002-1224-01	4/5/2016	11:05	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB002-1224-01	4/5/2016	11:05	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB002-1224-01	4/5/2016	11:05	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB003-0012-01	4/5/2016	13:20	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB003-0012-01	4/5/2016	13:20	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB003-0012-01	4/5/2016	13:20	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB003-1224-01	4/5/2016	13:20	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar
3	C003-SB003-1224-01 ✓	4/5/2016	13:20 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB003-1224-01 ✓	4/5/2016	13:20 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓ ?
	C003-SB004-0012-01	4/5/2016	13:48	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	RST3		NAREL	04/19/16 @1115	

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
	C003-SB004-0012-01	4/5/2016	13:48	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB004-0012-01	4/5/2016	13:48	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB004-1224-01	4/5/2016	13:49	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB004-1224-01	4/5/2016	13:49	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB004-1224-01	4/5/2016	13:49	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB005-0012-01	4/5/2016	14:22	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB005-0012-01	4/5/2016	14:22	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB005-0012-01	4/5/2016	14:22	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB006-0012-01	4/5/2016	14:49	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB006-0012-01	4/5/2016	14:49	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB006-0012-01	4/5/2016	14:49	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB006-3648-01	4/5/2016	14:50	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB006-3648-01	4/5/2016	14:50	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB006-3648-01	4/5/2016	14:50	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB007-0012-01 ✓	4/5/2016	16:23 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB007-0012-01 ✓	4/5/2016	16:23 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB007-0012-01 ✓	4/5/2016	16:23 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
	~~C003-SB007-2436-02~~	~~4/5/2016~~	~~16:23~~	~~Isotopic Thorium~~	~~Soil~~	~~4 C~~	~~N~~	~~1~~	~~8 oz glass jar~~
	~~C003-SB007-2436-02~~	~~4/5/2016~~	~~16:23~~	~~Isotopic Uranium~~	~~Soil~~	~~4 C~~	~~N~~	~~1~~	~~8 oz glass jar~~

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Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		CH NAREL	4/19/16 @1115	Good

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
	~~C003-SB007-2436-02~~	~~4/5/2016~~	~~16:23~~	~~Gamma Spec. (Modified)~~	~~Soil~~	~~4 C~~	~~N~~	~~1~~	~~16 oz glass jar~~
	C003-SB007-3648-01	4/5/2016	16:23	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB007-3648-01	4/5/2016	16:23	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB007-3648-01	4/5/2016	16:23	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB008-0012-01	4/5/2016	16:58	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB008-0012-01	4/5/2016	16:58	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB008-0012-01	4/5/2016	16:58	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB008-1224-01	4/5/2016	16:59	Isotopic Thorium	Soil	4 C	Y	2	8 oz glass jar
3	C003-SB008-1224-01	4/5/2016	16:59	Isotopic Uranium	Soil	4 C	Y	2	8 oz glass jar
3	C003-SB008-1224-01	4/5/2016	16:59	Gamma Spec (Modified)	Soil	4 C	N	LABLE ISSUE	16 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB010-0012-01	4/5/2016	15:52	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB010-0012-01	4/5/2016	15:52	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB010-0012-01	4/5/2016	15:52	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar

Digital Pkg

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Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		NAREL	8/19/16	Good

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

ANALYSIS SUMMARY

Analysis method: NAREL ACT-02F-U
Title: Isotopic Uranium Using NaOH Fusion

NAREL Sample #	Client Sample ID	QC Type	Date Completed	Preparation Batch #	Assay Batch #
B6.04121Z	C2-SB3-8496-01		06/15/2016	0013452K	0020935C
B6.04121Z	C2-SB3-8496-01	DUP	06/15/2016	0013452K	0020935C
B6.04121Z	C2-SB3-8496-01		06/28/2016	0013488Y	0020974K
B6.04121Z	C2-SB3-8496-01	DUP	06/28/2016	0013488Y	0020974K
B6.04122A	C3-SB1-0012-01		06/15/2016	0013452K	0020935C
B6.04122A	C3-SB1-0012-01		06/28/2016	0013488Y	0020974K
B6.04123B	C3-SB1-3648-01		06/15/2016	0013452K	0020935C
B6.04123B	C3-SB1-3648-01		06/28/2016	0013488Y	0020974K
B6.04124C	C3-SB1-3648-02		06/15/2016	0013452K	0020935C
B6.04124C	C3-SB1-3648-02		06/28/2016	0013488Y	0020974K
B6.04125D	C3-SB2-0012-01		06/15/2016	0013452K	0020935C
B6.04125D	C3-SB2-0012-01		06/28/2016	0013488Y	0020974K
B6.04126E	C3-SB2-1224-01		06/15/2016	0013452K	0020935C
B6.04126E	C3-SB2-1224-01		06/28/2016	0013488Y	0020974K
B6.04127F	C3-SB3-0012-01		06/15/2016	0013452K	0020935C
B6.04127F	C3-SB3-0012-01		06/28/2016	0013488Y	0020974K
B6.04128G	C3-SB3-1224-01		06/16/2016	0013452K	0020943C
B6.04128G	C3-SB3-1224-01		06/28/2016	0013488Y	0020974K
B6.04129H	C3-SB4-0012-01		06/16/2016	0013452K	0020943C
B6.04129H	C3-SB4-0012-01		06/28/2016	0013488Y	0020974K
B6.04130A	C3-SB4-1224-01		06/16/2016	0013452K	0020943C
B6.04130A	C3-SB4-1224-01		06/28/2016	0013488Y	0020974K
B6.04131B	C3-SB5-0012-01		06/16/2016	0013452K	0020943C
B6.04131B	C3-SB5-0012-01		06/28/2016	0013488Y	0020974K
B6.04132C	C3-SB6-0012-01		06/16/2016	0013452K	0020943C
B6.04132C	C3-SB6-0012-01		06/28/2016	0013488Y	0020974K
B6.04133D	C3-SB6-3648-01		06/16/2016	0013452K	0020943C
B6.04133D	C3-SB6-3648-01		06/28/2016	0013488Y	0020974K
B6.04134E	C3-SB7-0012-01		06/16/2016	0013452K	0020943C
B6.04134E	C3-SB7-0012-01		06/28/2016	0013488Y	0020974K
B6.04135F	C3-SB7-3648-01		06/16/2016	0013452K	0020943C
B6.04135F	C3-SB7-3648-01		06/28/2016	0013488Y	0020974K
B6.04136G	C3-SB8-0012-01		06/16/2016	0013452K	0020943C
B6.04136G	C3-SB8-0012-01		06/28/2016	0013488Y	0020974K
B6.04137H	C3-SB8-1224-01		06/16/2016	0013452K	0020943C
B6.04137H	C3-SB8-1224-01		06/28/2016	0013488Y	0020974K
LCS-00735461L *		LCS	06/15/2016	0013452K	0020935C

ED_006395_00001795-00244

RBK-00735460K *		RBK	06/15/2016	0013452K	0020935C
LCS-00736160E *		LCS	06/28/2016	0013488Y	0020974K
RBK-00736159M *		RBK	06/28/2016	0013488Y	0020974K

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

ED_006395_00001795-00245

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04121Z	Amount analyzed:	1.079e+00 GASH
Client sample ID:	C2-SB3-8496-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020935C
Collected:	2016-04-06 13:19 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	84.48 %	Analyst:	SPK
Ash/dry weight:	98.41 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/14/2016 15:12	1000.0	AS72	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	7.52e-01	1.4e-01	2.1e-02	PCI/GDRY	06/14/2016 15:12 CDT
U235	J	1.35e-02	2.1e-02	3.1e-02	PCI/GDRY	06/14/2016 15:12 CDT
U238	J	6.48e-01	1.2e-01	2.9e-02	PCI/GDRY	06/14/2016 15:12 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00246

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04121Z	Amount analyzed:	1.019e+00 GASH
Client sample ID:	C2-SB3-8496-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020935C
Collected:	2016-04-06 13:19 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	84.48 %	Analyst:	SPK
Ash/dry weight:	98.41 %	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/14/2016 15:11	1000.0	AS73	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	7.55e-01	1.3e-01	3.9e-02	PCI/GDRY	06/14/2016 15:11 CDT
U235	J	5.17e-02	3.4e-02	3.6e-02	PCI/GDRY	06/14/2016 15:11 CDT
U238	J	9.65e-01	1.5e-01	2.6e-02	PCI/GDRY	06/14/2016 15:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00247

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04121Z	Amount analyzed:	8.116e-01 GASH
Client sample ID:	C2-SB3-8496-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-06 13:19 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	84.48 %	Analyst:	SPK
Ash/dry weight:	98.41 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:48	1000.0	AS33	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	8.21e-01	1.5e-01	3.3e-02	PCI/GDRY	06/27/2016 16:48 CDT
U235	3.93e-02	3.3e-02	2.8e-02	PCI/GDRY	06/27/2016 16:48 CDT
U238	8.42e-01	1.5e-01	2.9e-02	PCI/GDRY	06/27/2016 16:48 CDT

ED_006395_00001795-00248

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04121Z	Amount analyzed:	8.155e-01 GASH
Client sample ID:	C2-SB3-8496-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-06 13:19 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	84.48 %	Analyst:	SPK
Ash/dry weight:	98.41 %	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:48	1000.0	AS34	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	7.47e-01	1.4e-01	3.0e-02	PCI/GDRY	06/27/2016 16:48 CDT
U235	1.90e-02	2.4e-02	3.2e-02	PCI/GDRY	06/27/2016 16:48 CDT
U238	8.01e-01	1.4e-01	2.7e-02	PCI/GDRY	06/27/2016 16:48 CDT

ED_006395_00001795-00249

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04122A	Amount analyzed:	1.008e+00 GASH
Client sample ID:	C3-SB1-0012-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020935C
Collected:	2016-04-05 12:19 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	98.90 %	Analyst:	SPK
Ash/dry weight:	90.07 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/14/2016 15:11	1000.0	AS75	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	5.97e-01	1.2e-01	5.4e-02	PCI/GDRY	06/14/2016 15:11 CDT
U235	J	3.63e-02	3.2e-02	4.1e-02	PCI/GDRY	06/14/2016 15:11 CDT
U238	J	6.34e-01	1.2e-01	4.3e-02	PCI/GDRY	06/14/2016 15:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00250

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04122A	Amount analyzed:	1.009e+00 GASH
Client sample ID:	C3-SB1-0012-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-05 12:19 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	98.90 %	Analyst:	SPK
Ash/dry weight:	90.07 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:48	1000.0	AS36	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	6.37e-01	1.1e-01	1.6e-02	PCI/GDRY	06/27/2016 16:48 CDT
U235	4.49e-02	2.8e-02	1.9e-02	PCI/GDRY	06/27/2016 16:48 CDT
U238	6.15e-01	1.1e-01	2.4e-02	PCI/GDRY	06/27/2016 16:48 CDT

ED_006395_00001795-00251

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04123B	Amount analyzed:	1.016e+00 GASH
Client sample ID:	C3-SB1-3648-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020935C
Collected:	2016-04-05 12:21 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	85.94 %	Analyst:	SPK
Ash/dry weight:	99.22 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/14/2016 15:11	1000.0	AS78	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	5.45e-01	1.1e-01	3.3e-02	PCI/GDRY	06/14/2016 15:11 CDT
U235	J	2.20e-02	2.2e-02	2.2e-02	PCI/GDRY	06/14/2016 15:11 CDT
U238	J	5.31e-01	1.0e-01	2.6e-02	PCI/GDRY	06/14/2016 15:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00252

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04123B	Amount analyzed:	1.023e+00 GASH
Client sample ID:	C3-SB1-3648-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-05 12:21 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	85.94 %	Analyst:	SPK
Ash/dry weight:	99.22 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:47	1000.0	AS37	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	5.11e-01	1.0e-01	3.1e-02	PCI/GDRY	06/27/2016 16:47 CDT
U235	5.34e-02	3.4e-02	2.8e-02	PCI/GDRY	06/27/2016 16:47 CDT
U238	6.17e-01	1.2e-01	2.7e-02	PCI/GDRY	06/27/2016 16:47 CDT

ED_006395_00001795-00253

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04124C	Amount analyzed:	1.007e+00 GASH
Client sample ID:	C3-SB1-3648-02	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020935C
Collected:	2016-04-05 12:21 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	86.13 %	Analyst:	SPK
Ash/dry weight:	99.19 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/14/2016 15:11	1000.0	AS79	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	6.39e-01	1.1e-01	1.9e-02	PCI/GDRY	06/14/2016 15:11 CDT
U235	J	2.39e-02	2.2e-02	2.6e-02	PCI/GDRY	06/14/2016 15:11 CDT
U238	J	5.48e-01	9.8e-02	1.6e-02	PCI/GDRY	06/14/2016 15:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00254

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04124C	Amount analyzed:	1.006e+00 GASH
Client sample ID:	C3-SB1-3648-02	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-05 12:21 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	86.13 %	Analyst:	SPK
Ash/dry weight:	99.19 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:47	1000.0	AS38	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	5.29e-01	1.0e-01	2.5e-02	PCI/GDRY	06/27/2016 16:47 CDT
U235	3.03e-02	2.7e-02	3.3e-02	PCI/GDRY	06/27/2016 16:47 CDT
U238	5.60e-01	1.1e-01	2.7e-02	PCI/GDRY	06/27/2016 16:47 CDT

ED_006395_00001795-00255

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04125D	Amount analyzed:	9.869e-01 GASH
Client sample ID:	C3-SB2-0012-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020935C
Collected:	2016-04-05 11:10 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	97.78 %	Analyst:	SPK
Ash/dry weight:	87.91 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/14/2016 15:11	1000.0	AS80	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	4.04e-01	9.5e-02	2.2e-02	PCI/GDRY	06/14/2016 15:11 CDT
U235	J	3.81e-02	3.2e-02	3.6e-02	PCI/GDRY	06/14/2016 15:11 CDT
U238	J	4.21e-01	9.7e-02	2.2e-02	PCI/GDRY	06/14/2016 15:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00256

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04125D	Amount analyzed:	1.010e+00 GASH
Client sample ID:	C3-SB2-0012-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-05 11:10 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	97.78 %	Analyst:	SPK
Ash/dry weight:	87.91 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:47	1000.0	AS40	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	4.97e-01	9.3e-02	1.6e-02	PCI/GDRY	06/27/2016 16:47 CDT
U235	1.62e-02	1.9e-02	2.6e-02	PCI/GDRY	06/27/2016 16:47 CDT
U238	4.65e-01	8.9e-02	1.9e-02	PCI/GDRY	06/27/2016 16:47 CDT

ED_006395_00001795-00257

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04126E	Amount analyzed:	1.052e+00 GASH
Client sample ID:	C3-SB2-1224-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020935C
Collected:	2016-04-05 11:05 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	91.36 %	Analyst:	SPK
Ash/dry weight:	97.64 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/14/2016 15:11	1000.0	AS65	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	5.46e-01	1.2e-01	5.5e-02	PCI/GDRY	06/14/2016 15:11 CDT
U235	J	3.43e-02	3.8e-02	5.8e-02	PCI/GDRY	06/14/2016 15:11 CDT
U238	J	5.53e-01	1.2e-01	5.8e-02	PCI/GDRY	06/14/2016 15:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00258

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04126E	Amount analyzed:	1.040e+00 GASH
Client sample ID:	C3-SB2-1224-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-05 11:05 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	91.36 %	Analyst:	SPK
Ash/dry weight:	97.64 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:47	1000.0	AS65	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	4.30e-01	9.0e-02	3.7e-02	PCI/GDRY	06/27/2016 16:47 CDT
U235	3.75e-02	3.3e-02	4.7e-02	PCI/GDRY	06/27/2016 16:47 CDT
U238	4.68e-01	9.4e-02	3.7e-02	PCI/GDRY	06/27/2016 16:47 CDT

ED_006395_00001795-00259

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04127F	Amount analyzed:	1.002e+00 GASH
Client sample ID:	C3-SB3-0012-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020935C
Collected:	2016-04-05 13:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	99.30 %	Analyst:	SPK
Ash/dry weight:	86.10 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/14/2016 15:12	1000.0	AS68	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	5.04e-01	1.1e-01	3.7e-02	PCI/GDRY	06/14/2016 15:12 CDT
U235	J	1.35e-02	2.4e-02	4.0e-02	PCI/GDRY	06/14/2016 15:12 CDT
U238	J	4.78e-01	1.1e-01	3.0e-02	PCI/GDRY	06/14/2016 15:12 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00260

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04127F	Amount analyzed:	7.672e-01 GASH
Client sample ID:	C3-SB3-0012-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-05 13:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	99.30 %	Analyst:	SPK
Ash/dry weight:	86.10 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:47	1000.0	AS66	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	5.70e-01	1.2e-01	2.5e-02	PCI/GDRY	06/27/2016 16:47 CDT
U235	2.16e-02	2.7e-02	3.6e-02	PCI/GDRY	06/27/2016 16:47 CDT
U238	5.69e-01	1.2e-01	3.0e-02	PCI/GDRY	06/27/2016 16:47 CDT

ED_006395_00001795-00261

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04128G	Amount analyzed:	1.029e+00 GASH
Client sample ID:	C3-SB3-1224-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020943C
Collected:	2016-04-05 13:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	93.08 %	Analyst:	SPK
Ash/dry weight:	96.01 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 16:11	1000.0	AS97	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	5.81e-01	1.2e-01	2.4e-02	PCI/GDRY	06/15/2016 16:11 CDT
U235	J	2.85e-02	2.9e-02	2.9e-02	PCI/GDRY	06/15/2016 16:11 CDT
U238	J	6.62e-01	1.3e-01	2.4e-02	PCI/GDRY	06/15/2016 16:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00262

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04128G	Amount analyzed:	9.475e-01 GASH
Client sample ID:	C3-SB3-1224-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-05 13:20 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	93.08 %	Analyst:	SPK
Ash/dry weight:	96.01 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:47	1000.0	AS68	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	6.06e-01	1.1e-01	2.5e-02	PCI/GDRY	06/27/2016 16:47 CDT
U235	2.47e-02	2.4e-02	2.7e-02	PCI/GDRY	06/27/2016 16:47 CDT
U238	5.99e-01	1.1e-01	2.5e-02	PCI/GDRY	06/27/2016 16:47 CDT

ED_006395_00001795-00263

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04129H	Amount analyzed:	1.004e+00 GASH
Client sample ID:	C3-SB4-0012-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020943C
Collected:	2016-04-05 13:48 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	96.57 %	Analyst:	SPK
Ash/dry weight:	93.52 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 16:11	1000.0	AS98	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	4.70e-01	9.3e-02	2.1e-02	PCI/GDRY	06/15/2016 16:11 CDT
U235	J	3.68e-02	2.7e-02	2.1e-02	PCI/GDRY	06/15/2016 16:11 CDT
U238	J	5.21e-01	9.9e-02	2.1e-02	PCI/GDRY	06/15/2016 16:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00264

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04129H	Amount analyzed:	1.028e+00 GASH
Client sample ID:	C3-SB4-0012-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-05 13:48 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	96.57 %	Analyst:	SPK
Ash/dry weight:	93.52 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:47	1000.0	AS69	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	5.98e-01	1.1e-01	2.2e-02	PCI/GDRY	06/27/2016 16:47 CDT
U235	3.77e-02	2.8e-02	2.7e-02	PCI/GDRY	06/27/2016 16:47 CDT
U238	6.05e-01	1.1e-01	2.2e-02	PCI/GDRY	06/27/2016 16:47 CDT

ED_006395_00001795-00265

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04130A	Amount analyzed:	1.005e+00 GASH
Client sample ID:	C3-SB4-1224-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020943C
Collected:	2016-04-05 13:49 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	91.41 %	Analyst:	SPK
Ash/dry weight:	98.01 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 16:11	1000.0	AS99	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	6.66e-01	1.3e-01	2.1e-02	PCI/GDRY	06/15/2016 16:11 CDT
U235	J	1.87e-02	2.4e-02	3.2e-02	PCI/GDRY	06/15/2016 16:11 CDT
U238	J	6.36e-01	1.2e-01	2.1e-02	PCI/GDRY	06/15/2016 16:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00266

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04130A	Amount analyzed:	1.002e+00 GASH
Client sample ID:	C3-SB4-1224-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-05 13:49 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	91.41 %	Analyst:	SPK
Ash/dry weight:	98.01 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:47	1000.0	AS70	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	5.92e-01	1.2e-01	2.7e-02	PCI/GDRY	06/27/2016 16:47 CDT
U235	1.54e-02	2.4e-02	3.9e-02	PCI/GDRY	06/27/2016 16:47 CDT
U238	6.35e-01	1.2e-01	2.7e-02	PCI/GDRY	06/27/2016 16:47 CDT

ED_006395_00001795-00267

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04131B	Amount analyzed:	1.012e+00 GASH
Client sample ID:	C3-SB5-0012-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020943C
Collected:	2016-04-05 14:22 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	95.68 %	Analyst:	SPK
Ash/dry weight:	86.51 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 16:11	1000.0	AS100	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	3.42e-01	7.2e-02	2.2e-02	PCI/GDRY	06/15/2016 16:11 CDT
U235	J	1.77e-02	1.8e-02	1.8e-02	PCI/GDRY	06/15/2016 16:11 CDT
U238	J	3.18e-01	6.9e-02	1.5e-02	PCI/GDRY	06/15/2016 16:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00268

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04131B	Amount analyzed:	6.471e-01 GASH
Client sample ID:	C3-SB5-0012-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-05 14:22 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	95.68 %	Analyst:	SPK
Ash/dry weight:	86.51 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:48	1000.0	AS71	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	3.89e-01	9.7e-02	4.5e-02	PCI/GDRY	06/27/2016 16:48 CDT
U235	1.52e-02	2.4e-02	3.5e-02	PCI/GDRY	06/27/2016 16:48 CDT
U238	4.85e-01	1.1e-01	2.9e-02	PCI/GDRY	06/27/2016 16:48 CDT

ED_006395_00001795-00269

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04132C	Amount analyzed:	9.741e-01 GASH
Client sample ID:	C3-SB6-0012-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020943C
Collected:	2016-04-05 14:49 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	94.80 %	Analyst:	SPK
Ash/dry weight:	95.66 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 16:11	1000.0	AS101	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	4.36e-01	9.4e-02	2.4e-02	PCI/GDRY	06/15/2016 16:11 CDT
U235	J	9.34e-03	1.7e-02	2.3e-02	PCI/GDRY	06/15/2016 16:11 CDT
U238	J	4.25e-01	9.2e-02	2.0e-02	PCI/GDRY	06/15/2016 16:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00270

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04132C	Amount analyzed:	1.010e+00 GASH
Client sample ID:	C3-SB6-0012-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-05 14:49 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	94.80 %	Analyst:	SPK
Ash/dry weight:	95.66 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:48	1000.0	AS72	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	4.82e-01	9.6e-02	2.2e-02	PCI/GDRY	06/27/2016 16:48 CDT
U235	2.41e-02	2.3e-02	2.6e-02	PCI/GDRY	06/27/2016 16:48 CDT
U238	3.90e-01	8.4e-02	2.2e-02	PCI/GDRY	06/27/2016 16:48 CDT

ED_006395_00001795-00271

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04133D	Amount analyzed:	1.004e+00 GASH
Client sample ID:	C3-SB6-3648-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020943C
Collected:	2016-04-05 14:50 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	95.09 %	Analyst:	SPK
Ash/dry weight:	75.18 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 16:11	1000.0	AS105	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	6.00e-01	1.2e-01	2.5e-02	PCI/GDRY	06/15/2016 16:11 CDT
U235	J	1.12e-02	2.0e-02	3.3e-02	PCI/GDRY	06/15/2016 16:11 CDT
U238	J	5.66e-01	1.1e-01	2.0e-02	PCI/GDRY	06/15/2016 16:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00272

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04133D	Amount analyzed:	9.909e-01 GASH
Client sample ID:	C3-SB6-3648-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020999V
Collected:	2016-04-05 14:50 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	95.09 %	Analyst:	SPK
Ash/dry weight:	75.18 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
07/05/2016 09:34	1000.0	AS34	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	5.96e-01	1.2e-01	2.0e-02	PCI/GDRY	07/05/2016 09:34 CDT
U235	3.88e-02	3.0e-02	2.4e-02	PCI/GDRY	07/05/2016 09:34 CDT
U238	5.27e-01	1.1e-01	2.0e-02	PCI/GDRY	07/05/2016 09:34 CDT

ED_006395_00001795-00273

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04134E	Amount analyzed:	1.002e+00 GASH
Client sample ID:	C3-SB7-0012-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020943C
Collected:	2016-04-05 16:23 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	95.07 %	Analyst:	SPK
Ash/dry weight:	93.71 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 16:11	1000.0	AS103	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	5.02e-01	9.7e-02	2.4e-02	PCI/GDRY	06/15/2016 16:11 CDT
U235	J	2.74e-02	2.4e-02	2.5e-02	PCI/GDRY	06/15/2016 16:11 CDT
U238	J	4.19e-01	8.7e-02	1.7e-02	PCI/GDRY	06/15/2016 16:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00274

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04134E	Amount analyzed:	6.946e-01 GASH
Client sample ID:	C3-SB7-0012-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-05 16:23 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	95.07 %	Analyst:	SPK
Ash/dry weight:	93.71 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:48	1000.0	AS75	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	4.08e-01	9.2e-02	5.4e-02	PCI/GDRY	06/27/2016 16:48 CDT
U235	1.51e-03	2.0e-02	4.5e-02	PCI/GDRY	06/27/2016 16:48 CDT
U238	4.11e-01	8.9e-02	3.1e-02	PCI/GDRY	06/27/2016 16:48 CDT

ED_006395_00001795-00275

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04135F	Amount analyzed:	1.001e+00 GASH
Client sample ID:	C3-SB7-3648-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020943C
Collected:	2016-04-05 16:23 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	76.42 %	Analyst:	SPK
Ash/dry weight:	74.56 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 16:11	1000.0	AS104	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	6.13e-01	1.2e-01	2.9e-02	PCI/GDRY	06/15/2016 16:11 CDT
U235	J	3.48e-02	2.8e-02	2.8e-02	PCI/GDRY	06/15/2016 16:11 CDT
U238	J	6.16e-01	1.2e-01	3.1e-02	PCI/GDRY	06/15/2016 16:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00276

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04135F	Amount analyzed:	1.007e+00 GASH
Client sample ID:	C3-SB7-3648-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-05 16:23 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	76.42 %	Analyst:	SPK
Ash/dry weight:	74.56 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:48	1000.0	AS77	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	5.57e-01	1.1e-01	2.8e-02	PCI/GDRY	06/27/2016 16:48 CDT
U235	2.85e-02	2.6e-02	2.4e-02	PCI/GDRY	06/27/2016 16:48 CDT
U238	5.35e-01	1.1e-01	2.4e-02	PCI/GDRY	06/27/2016 16:48 CDT

ED_006395_00001795-00277

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04136G	Amount analyzed:	1.013e+00 GASH
Client sample ID:	C3-SB8-0012-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020943C
Collected:	2016-04-05 16:58 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	97.15 %	Analyst:	SPK
Ash/dry weight:	93.40 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 16:11	1000.0	AS106	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	3.68e-01	7.6e-02	2.1e-02	PCI/GDRY	06/15/2016 16:11 CDT
U235	J	2.06e-02	2.0e-02	2.2e-02	PCI/GDRY	06/15/2016 16:11 CDT
U238	J	3.81e-01	7.7e-02	1.9e-02	PCI/GDRY	06/15/2016 16:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00278

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04136G	Amount analyzed:	7.249e-01 GASH
Client sample ID:	C3-SB8-0012-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-05 16:58 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	97.15 %	Analyst:	SPK
Ash/dry weight:	93.40 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:48	1000.0	AS78	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	4.81e-01	1.1e-01	3.2e-02	PCI/GDRY	06/27/2016 16:48 CDT
U235	4.01e-02	3.4e-02	3.8e-02	PCI/GDRY	06/27/2016 16:48 CDT
U238	4.14e-01	9.8e-02	4.3e-02	PCI/GDRY	06/27/2016 16:48 CDT

ED_006395_00001795-00279

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04137H	Amount analyzed:	1.014e+00 GASH
Client sample ID:	C3-SB8-1224-01	Preparation batch #:	0013452K
Matrix:	SOIL	Assay batch #:	0020943C
Collected:	2016-04-05 16:59 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	95.02 %	Analyst:	SPK
Ash/dry weight:	92.62 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/15/2016 16:11	1000.0	AS107	RCL

ANALYTICAL RESULTS

Analyte		Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	J	4.78e-01	9.9e-02	1.9e-02	PCI/GDRY	06/15/2016 16:11 CDT
U235	J	3.23e-02	2.7e-02	2.3e-02	PCI/GDRY	06/15/2016 16:11 CDT
U238	J	5.67e-01	1.1e-01	1.9e-02	PCI/GDRY	06/15/2016 16:11 CDT

Note: A "J" qualifier indicates a result that may be significantly under or overestimated.

ED_006395_00001795-00280

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04137H	Amount analyzed:	1.020e+00 GASH
Client sample ID:	C3-SB8-1224-01	Preparation batch #:	0013488Y
Matrix:	SOIL	Assay batch #:	0020974K
Collected:	2016-04-05 16:59 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	95.02 %	Analyst:	SPK
Ash/dry weight:	92.62 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:48	1000.0	AS79	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	5.37e-01	9.6e-02	2.1e-02	PCI/GDRY	06/27/2016 16:48 CDT
U235	1.82e-02	2.0e-02	2.8e-02	PCI/GDRY	06/27/2016 16:48 CDT
U238	4.84e-01	9.0e-02	1.5e-02	PCI/GDRY	06/27/2016 16:48 CDT

ED_006395_00001795-00281

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	LCS-00735461L	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013452K
Matrix:	N/A	Assay batch #:	0020935C
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/14/2016 15:12	1000.0	AS69	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	1.89e+00	2.3e-01	2.4e-02	PCI	06/14/2016 15:12 CDT
U235	1.09e-01	4.6e-02	2.5e-02	PCI	06/14/2016 15:12 CDT
U238	1.96e+00	2.3e-01	2.1e-02	PCI	06/14/2016 15:12 CDT

ED_006395_00001795-00282

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	RBK-00735460K	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013452K
Matrix:	N/A	Assay batch #:	0020935C
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/14/2016 15:12	1000.0	AS70	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	2.44e-02	2.2e-02	2.7e-02	PCI	06/14/2016 15:12 CDT
U235	3.08e-03	1.4e-02	2.8e-02	PCI	06/14/2016 15:12 CDT
U238	1.93e-02	1.9e-02	1.9e-02	PCI	06/14/2016 15:12 CDT

ED_006395_00001795-00283

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	LCS-00736160E	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013488Y
Matrix:	N/A	Assay batch #:	0020974K
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:48	1000.0	AS80	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	1.98e+00	2.5e-01	2.3e-02	PCI	06/27/2016 16:48 CDT
U235	9.29e-02	4.5e-02	2.8e-02	PCI	06/27/2016 16:48 CDT
U238	1.98e+00	2.5e-01	2.3e-02	PCI	06/27/2016 16:48 CDT

ED_006395_00001795-00284

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600016

SAMPLE ANALYSIS REPORT

Lab sample #:	RBK-00736159M	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013488Y
Matrix:	N/A	Assay batch #:	0020974K
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/27/2016 16:48	1000.0	AS81	CEB

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	1.05e-02	1.6e-02	2.4e-02	PCI	06/27/2016 16:48 CDT
U235	-3.13e-03	1.1e-02	3.3e-02	PCI	06/27/2016 16:48 CDT
U238	1.05e-02	1.6e-02	2.4e-02	PCI	06/27/2016 16:48 CDT

ED_006395_00001795-00285

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1600016

PREPARATION BATCH SUMMARY

Preparation batch #: 0013452K
Analysis method: NAREL ACT-02F-U
Preparation procedure: N/A

NAREL Sample #	Client Sample ID	Analysis #	QC Type	Yield	± 2 σ Uncertainty	Analyst
B6.04121Z	C2-SB3-8496-01	00733683Q		60.49 %	5.91 %	SPK
B6.04121Z	C2-SB3-8496-01	00735459T	DUP	63.63 %	5.75 %	SPK
B6.04122A	C3-SB1-0012-01	00733686U		52.55 %	4.99 %	SPK
B6.04123B	C3-SB1-3648-01	00733689X		74.38 %	6.81 %	SPK
B6.04124C	C3-SB1-3648-02	00733692R		71.78 %	6.25 %	SPK
B6.04125D	C3-SB2-0012-01	00733695V		59.58 %	5.92 %	SPK
B6.04126E	C3-SB2-1224-01	00733698Y		53.57 %	5.44 %	SPK
B6.04127F	C3-SB3-0012-01	00733701Z		48.77 %	5.09 %	SPK
B6.04128G	C3-SB3-1224-01	00733704C		53.32 %	5.38 %	SPK
B6.04129H	C3-SB4-0012-01	00733707F		75.41 %	6.84 %	SPK
B6.04130A	C3-SB4-1224-01	00733710A		63.76 %	6.11 %	SPK
B6.04131B	C3-SB5-0012-01	00733713D		83.45 %	7.44 %	SPK
B6.04132C	C3-SB6-0012-01	00733716G		69.59 %	6.47 %	SPK
B6.04133D	C3-SB6-3648-01	00733719K		51.06 %	5.23 %	SPK
B6.04134E	C3-SB7-0012-01	00733722E		77.05 %	7.00 %	SPK
B6.04135F	C3-SB7-3648-01	00733725H		54.25 %	5.47 %	SPK
B6.04136G	C3-SB8-0012-01	00733728L		86.38 %	7.60 %	SPK
B6.04137H	C3-SB8-1224-01	00733731F		63.56 %	6.02 %	SPK
LCS-00735461L *		00735461L	LCS	82.23 %	7.30 %	SPK
RBK-00735460K *		00735460K	RBK	75.23 %	6.95 %	SPK

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

QC RESULTS FOR BATCH 0013452K

NAREL Sample #	Analysis #	QC Type	Analyte	%R	RPD	Z	Evaluation
B6.04121Z	00735459T	DUP	U234		0.4	0.03	PASS-J
B6.04121Z	00735459T	DUP	U235		117.1	1.91	PASS-J
B6.04121Z	00735459T	DUP	U238		39.3	3.25	FAIL-J
LCS-00735461L	00735461L	LCS	U234	94.5		-0.92	PASS
LCS-00735461L	00735461L	LCS	U235	115.7		0.64	PASS
LCS-00735461L	00735461L	LCS	U238	96.2		-0.63	PASS
RBK-00735460K	00735460K	RBK	U234				PASS
RBK-00735460K	00735460K	RBK	U235				PASS
RBK-00735460K	00735460K	RBK	U238				PASS

Note: Results qualified with -J may be significantly under or over-estimated and are not evaluated for QC purposes.

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1600016

PREPARATION BATCH SUMMARY

Preparation batch #: 0013488Y
Analysis method: NAREL ACT-02F-U
Preparation procedure: N/A

NAREL Sample #	Client Sample ID	Analysis #	QC Type	Yield	± 2 σ Uncertainty	Analyst
B6.04121Z	C2-SB3-8496-01	00736139H		71.96 %	6.64 %	SPK
B6.04121Z	C2-SB3-8496-01	00736161F	DUP	78.88 %	7.12 %	SPK
B6.04122A	C3-SB1-0012-01	00736140A		74.95 %	6.71 %	SPK
B6.04123B	C3-SB1-3648-01	00736141B		71.14 %	6.60 %	SPK
B6.04124C	C3-SB1-3648-02	00736142C		78.52 %	7.14 %	SPK
B6.04125D	C3-SB2-0012-01	00736143D		73.61 %	6.64 %	SPK
B6.04126E	C3-SB2-1224-01	00736145F		74.25 %	6.78 %	SPK
B6.04127F	C3-SB3-0012-01	00736146G		65.65 %	6.30 %	SPK
B6.04128G	C3-SB3-1224-01	00736147H		76.44 %	6.90 %	SPK
B6.04129H	C3-SB4-0012-01	00736148J		69.98 %	6.52 %	SPK
B6.04130A	C3-SB4-1224-01	00736149K		66.12 %	6.36 %	SPK
B6.04131B	C3-SB5-0012-01	00736150C		77.57 %	6.99 %	SPK
B6.04132C	C3-SB6-0012-01	00736151D		74.69 %	6.83 %	SPK
B6.04133D	C3-SB6-3648-01	00736152E		55.30 %	5.22 %	SPK
B6.04134E	C3-SB7-0012-01	00736153F		79.30 %	6.68 %	SPK
B6.04135F	C3-SB7-3648-01	00736154G		55.28 %	5.67 %	SPK
B6.04136G	C3-SB8-0012-01	00736155H		79.02 %	7.10 %	SPK
B6.04137H	C3-SB8-1224-01	00736156J		68.53 %	6.05 %	SPK
LCS-00736160E *		00736160E	LCS	77.35 %	7.08 %	SPK
RBK-00736159M *		00736159M	RBK	74.36 %	6.89 %	SPK

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

QC RESULTS FOR BATCH 0013488Y

NAREL Sample #	Analysis #	QC Type	Analyte	%R	RPD	Z	Evaluation
B6.04121Z	00736161F	DUP	U234		9.4	-0.73	PASS
B6.04121Z	00736161F	DUP	U235		69.4	-1.00	PASS
B6.04121Z	00736161F	DUP	U238		5.0	-0.39	PASS
LCS-00736160E	00736160E	LCS	U234	99.1		-0.15	PASS
LCS-00736160E	00736160E	LCS	U235	99.1		-0.04	PASS
LCS-00736160E	00736160E	LCS	U238	97.3		-0.44	PASS
RBK-00736159M	00736159M	RBK	U234				PASS
RBK-00736159M	00736159M	RBK	U235				PASS
RBK-00736159M	00736159M	RBK	U238				PASS

ED_006395_00001795-00287

U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY
540 S. MORRIS AVE., MONTGOMERY, AL 36115
TH ANALYSES

REPORT OF SAMPLE DELIVERY GROUP #1600017

Project:	Canadian Radium & Uranium, Mt. Kisco, NY
Analysis method:	Isotopic Thorium Using NaOH Fusion
Report ID:	1600017-TH
Report type:	Original
Date reported:	06/29/2016
Total pages in report:	29

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B6.04138J	C3-SB9-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04139K	C3-SB9-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04140C	C3-SB10-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04141D	C3-SB10-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04142E	C3-SB10-6072-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04143F	C3-SB10-7284-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04144G	C3-SB10-8496-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04145H	C3-SB11-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04146J	C3-SB11-3648-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04147K	C3-SB12-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04148L	C3-SB13-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04149M	C3-SB13-1224-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04150E	C3-SB14-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04151F	C3-SB15-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04152G	C3-SB15-2436-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04153H	C3-SB16-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04154J	C3-SB16-3648-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016

EXCEPTIONS

1. **Packaging and shipping** – No problems were observed.
2. **Documentation** – No problems were observed.
3. **Sample preparation** – No problems were encountered.
4. **Analysis** – No problems were encountered.
5. **Holding times** – No holding times were specified.

QUALITY CONTROL

1. **QC samples** – All QC analysis results met NAREL acceptance criteria.
2. **Yields** – All chemical yields were within acceptance limits.
3. **Instruments** – Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

ED_006395_00001795-00288

ACCREDITATION

All analyses included in this data package are accredited by the Oregon Environmental Laboratory Accreditation Program (ORELAP) to the TNI standard.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Project Acceptance Form and/or the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Director of the Center for Environmental Radioanalytical Laboratory Science and the NAREL Quality Assurance Manager, or their designees, as verified by the following signatures.

Velinda Herbert — 6/30/16
Velinda Herbert
Quality Assurance Manager, NAREL
Date

Cynthia White — 6-30-16
Cynthia White
Director, Center for Environmental Radioanalytical Laboratory Science
Date

ED_006395_00001795-00289

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample, or blank spike
MS	Matrix spike
MSD	Matrix spike duplicate (not currently analyzed)
RBK	Method blank
STD	External standard (used for ^{228}Ra yield determination)

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

RADIOCHEMICAL DATA

Radiochemical analyses usually require the subtraction of an instrument background measurement result from a gross sample measurement result. Both values are positive, but when the sample activity is low, random variations in the two measurements can cause the gross value to be less than the background, resulting in a measured activity less than zero. Although negative activities have no physical significance, they do have statistical importance, as for example in the evaluation of trends or the comparison of two groups of samples.

To the extent practical, it is the policy of NAREL to report results as generated, whether positive, negative, or zero, together with the "2-sigma" measurement uncertainty and a sample-specific estimate of the minimum detectable concentration (MDC). The measurement result, uncertainty, and MDC are always expressed in the same unit of measurement.

EVALUATION OF QC ANALYSES

A method blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "*Z* scores." A *Z* score is the number of standard deviations by which the QC result differs from its ideal value. Generally the score is considered acceptable if its absolute value is not greater than 3.

The *Z* score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference. The *Z* score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation of most analyses. An exception is the use of %R in the evaluation of gross alpha matrix spike results. A gross alpha matrix spike result is considered acceptable if either $|Z| \leq 3$ or $60 \leq \%R \leq 110$.

ED_006395_00001795-00290

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
Did not collect	~~C003-SB007-2436-02~~	~~4/5/2016~~	~~16:23~~	~~Gamma Spec. (Modified)~~	~~Soil~~	~~4 C~~	~~N~~	~~1~~	~~16 oz glass jar~~
	C003-SB007-3648-01	4/5/2016	16:23	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB007-3648-01	4/5/2016	16:23	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB007-3648-01 ✓	4/5/2016	16:23	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
3	C003-SB008-0012-01 ✓	4/5/2016	16:58 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB008-0012-01 ✓	4/5/2016	16:58 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB008-0012-01 ✓	4/5/2016	16:58 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
3	C003-SB008-1224-01 ✓	4/5/2016	16:59 ✓	Isotopic Thorium ✓	Soil	4 C	Y	✓2	8 oz glass jar ✓
3	C003-SB008-1224-01 ✓	4/5/2016	16:59 ✓	Isotopic Uranium ✓	Soil	4 C	Y	✓2	8 oz glass jar ✓
3	C003-SB008-1224-01 ✓	4/5/2016	16:59 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	LABLE ISSUE	16 oz glass jar ✓
	C003-SB009-0012-01	4/5/2016	18:02	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB010-0012-01 ✓	4/5/2016	15:52 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-0012-01 ✓	4/5/2016	15:52 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-0012-01 ✓	4/5/2016	15:52 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓

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Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		NARL	4/18/16 @ 11:15	Good

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

Cont #4

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
3	C003-SB010-1224-01 ✓	4/5/2016	15:52 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-1224-01 ✓	4/5/2016	15:52 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-1224-01 ✓	4/5/2016	15:52 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
3	C003-SB010-6072-01 ✓	4/5/2016	15:52 ✓	Isotopic Thorium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-6072-01 ✓	4/5/2016	15:52 ✓	Isotopic Uranium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-6072-01 ✓	4/5/2016	15:52 ✓	Gamma Spec (Modified) ✓✓	Soil	4 C	N	1	16 oz glass jar ✓
3	C003-SB010-7284-01 ✓	4/5/2016	15:52 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-7284-01 ✓	4/5/2016	15:52 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-7284-01 ✓	4/5/2016	15:52 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
3	C003-SB010-8496-01 ✓	4/5/2016	15:52 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-8496-01 ✓	4/5/2016	15:52 ✓	Isotopic Uranium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-8496-01 ✓	4/5/2016	15:52 ✓	Gamma Spec (Modified) ✓✓	Soil	4 C	N	1	16 oz glass jar ✓
4	C003-SB011-0012-01 ✓	4/6/2016	11:13	Isotopic Thorium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C003-SB011-0012-01 ✓	4/6/2016	11:13	Isotopic Uranium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C003-SB011-0012-01 ✓	4/6/2016	11:13	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
4	C003-SB011-3648-01 ✓	4/6/2016	11:13	Isotopic Thorium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C003-SB011-3648-01 ✓	4/6/2016	11:13	Isotopic Uranium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C003-SB011-3648-01 ✓	4/6/2016	11:13	Gamma Spec (Modified) ✓	Soil	4 C	N	Broken 1	16 oz glass jar ✓ Broke
3	C003-SB012-0012-01 ✓	4/6/2016	11:35 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓

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Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM

CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		NAREL	04/19/16 @ 1115	Good (1) Broken Jar

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (349) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
	C003-SB012-0012-01	4/6/2016	11:35	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB012-0012-01	4/6/2016	11:35	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB013-0012-01	4/6/2016	12:00	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB013-0012-01	4/6/2016	12:00	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB013-0012-01	4/6/2016	12:00	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB013-1224-01	4/6/2016	12:01	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB013-1224-01	4/6/2016	12:01	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB013-1224-01	4/6/2016	12:01	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB014-0012-01	4/6/2016	12:28	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB014-0012-01	4/6/2016	12:28	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB014-0012-01	4/6/2016	12:28	Gamma Spec (Modified)	Soil	4 C	N	Broken 1	16 oz glass jar
5	C003-SB015-0012-01	4/6/2016	10:43	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
5	C003-SB015-0012-01	4/6/2016	10:43	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
5	C003-SB015-0012-01	4/6/2016	10:43	Gamma Spec (Modified)	Soil	4 C	N	Broken 1	16 oz glass jar
5	C003-SB015-2436-01	4/6/2016	10:43	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
5	C003-SB015-2436-01	4/6/2016	10:43	Isotopic Uranium	Soil	4 C	N	Broken 1	8 oz glass jar
5	C003-SB015-2436-01	4/6/2016	10:43	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB016-0012-01	4/6/2016	08:35	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
6	C003-SB016-0012-01	4/6/2016	08:35	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		NAREL	04/19/16 @1115	Good 2 Broken containers

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
✓	C003-SB016-0012-01	4/6/2016	08:35	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar
	C003-SB016-3648-01	4/6/2016	08:36	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar
✓	C003-SB016-3648-01	4/6/2016	08:36	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar
	C003-SB016-3648-01	4/6/2016	08:36	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	RST3		NAREL	04/18/16 1115	Good

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

ANALYSIS SUMMARY

Analysis method: NAREL ACT-02F-TH
Title: Isotopic Thorium Using NaOH Fusion

NAREL Sample #	Client Sample ID	QC Type	Date Completed	Preparation Batch #	Assay Batch #
B6.04138J	C3-SB9-0012-01		06/23/2016	0013480P	0020964H
B6.04139K	C3-SB9-1224-01		06/23/2016	0013480P	0020964H
B6.04140C	C3-SB10-0012-01		06/23/2016	0013480P	0020964H
B6.04141D	C3-SB10-1224-01		06/23/2016	0013480P	0020964H
B6.04142E	C3-SB10-6072-01		06/23/2016	0013480P	0020964H
B6.04142E	C3-SB10-6072-01	DUP	06/23/2016	0013480P	0020964H
B6.04143F	C3-SB10-7284-01		06/23/2016	0013480P	0020964H
B6.04144G	C3-SB10-8496-01		06/23/2016	0013480P	0020964H
B6.04145H	C3-SB11-0012-01		06/24/2016	0013480P	0020966K
B6.04146J	C3-SB11-3648-01		06/24/2016	0013480P	0020966K
B6.04147K	C3-SB12-0012-01		06/24/2016	0013480P	0020966K
B6.04148L	C3-SB13-0012-01		06/24/2016	0013480P	0020966K
B6.04149M	C3-SB13-1224-01		06/24/2016	0013480P	0020966K
B6.04150E	C3-SB14-0012-01		06/24/2016	0013480P	0020966K
B6.04151F	C3-SB15-0012-01		06/24/2016	0013480P	0020966K
B6.04152G	C3-SB15-2436-01		06/24/2016	0013480P	0020966K
B6.04153H	C3-SB16-0012-01		06/24/2016	0013480P	0020966K
B6.04154J	C3-SB16-3648-01		06/24/2016	0013480P	0020966K
LCS-00736018Z *		LCS	06/23/2016	0013480P	0020964H
RBK-00736017Y *		RBK	06/23/2016	0013480P	0020964H

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

ED_006395_00001795-00295

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04138J	Amount analyzed:	7.943e-01 GASH
Client sample ID:	C3-SB9-0012-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020964H
Collected:	2016-04-05 18:02 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	96.88 %	Analyst:	SPK
Ash/dry weight:	93.31 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:11	1000.0	AS144	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	6.99e-02	4.6e-02	4.3e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th228	3.79e-01	8.3e-02	3.6e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th230	5.47e-01	1.1e-01	6.8e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th232	3.17e-01	7.4e-02	2.4e-02	PCI/GDRY	06/22/2016 17:11 CDT

ED_006395_00001795-00296

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04139K	Amount analyzed:	1.004e+00 GASH
Client sample ID:	C3-SB9-1224-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020964H
Collected:	2016-04-05 18:02 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	94.08 %	Analyst:	SPK
Ash/dry weight:	96.64 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:11	1000.0	AS125	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	-3.48e-03	1.2e-02	3.6e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th228	4.64e-01	8.7e-02	2.8e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th230	9.52e-01	1.4e-01	5.6e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th232	4.98e-01	9.1e-02	1.5e-02	PCI/GDRY	06/22/2016 17:11 CDT

ED_006395_00001795-00297

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04140C	Amount analyzed:	1.009e+00 GASH
Client sample ID:	C3-SB10-0012-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020964H
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	97.86 %	Analyst:	SPK
Ash/dry weight:	92.49 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:11	1000.0	AS129	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	8.28e-02	4.2e-02	3.1e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th228	4.61e-01	8.2e-02	3.1e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th230	4.39e-01	8.3e-02	5.3e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th232	5.43e-01	9.0e-02	1.9e-02	PCI/GDRY	06/22/2016 17:11 CDT

ED_006395_00001795-00298

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04141D	Amount analyzed:	1.012e+00 GASH
Client sample ID:	C3-SB10-1224-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020964H
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	91.93 %	Analyst:	SPK
Ash/dry weight:	92.48 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:11	1000.0	AS132	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	7.01e-01	1.5e-01	2.6e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th228	8.61e-01	1.3e-01	1.8e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th230	1.50e+01	1.5e+00	5.4e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th232	9.06e-01	1.4e-01	2.0e-02	PCI/GDRY	06/22/2016 17:11 CDT

ED_006395_00001795-00299

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04142E	Amount analyzed:	1.013e+00 GASH
Client sample ID:	C3-SB10-6072-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020964H
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	80.93 %	Analyst:	SPK
Ash/dry weight:	88.93 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:11	1000.0	AS134	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	2.48e-01	7.3e-02	2.9e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th228	1.79e+00	2.1e-01	2.5e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th230	4.46e+00	4.6e-01	5.0e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th232	1.67e+00	2.0e-01	1.6e-02	PCI/GDRY	06/22/2016 17:11 CDT

ED_006395_00001795-00300

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04142E	Amount analyzed:	1.007e+00 GASH
Client sample ID:	C3-SB10-6072-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020964H
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	80.93 %	Analyst:	SPK
Ash/dry weight:	88.93 %	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:11	1000.0	AS135	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	2.76e-01	8.4e-02	3.1e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th228	1.67e+00	2.2e-01	2.0e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th230	4.24e+00	4.7e-01	5.2e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th232	1.56e+00	2.0e-01	1.8e-02	PCI/GDRY	06/22/2016 17:11 CDT

ED_006395_00001795-00301

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04143F	Amount analyzed:	9.732e-01 GASH
Client sample ID:	C3-SB10-7284-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020964H
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	64.74 %	Analyst:	SPK
Ash/dry weight:	77.25 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:11	1000.0	AS136	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	2.55e-01	8.9e-02	3.9e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th228	2.35e+00	3.2e-01	2.7e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th230	3.98e+00	5.0e-01	5.2e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th232	2.38e+00	3.2e-01	2.7e-02	PCI/GDRY	06/22/2016 17:11 CDT

ED_006395_00001795-00302

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04144G	Amount analyzed:	9.936e-01 GASH
Client sample ID:	C3-SB10-8496-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020964H
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	71.62 %	Analyst:	SPK
Ash/dry weight:	92.51 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:11	1000.0	AS140	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.32e-01	5.8e-02	3.8e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th228	1.06e+00	1.6e-01	2.3e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th230	1.13e+00	1.7e-01	5.5e-02	PCI/GDRY	06/22/2016 17:11 CDT
Th232	1.22e+00	1.7e-01	1.9e-02	PCI/GDRY	06/22/2016 17:11 CDT

ED_006395_00001795-00303

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04145H	Amount analyzed:	9.616e-01 GASH
Client sample ID:	C3-SB11-0012-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020966K
Collected:	2016-04-06 11:13 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	96.90 %	Analyst:	SPK
Ash/dry weight:	94.29 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:19	1000.0	AS97	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.48e-01	8.9e-02	5.7e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th228	1.04e+00	2.1e-01	4.5e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th230	7.89e-01	1.8e-01	7.5e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th232	8.50e-01	1.9e-01	4.5e-02	PCI/GDRY	06/23/2016 16:19 CDT

ED_006395_00001795-00304

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04146J	Amount analyzed:	1.007e+00 GASH
Client sample ID:	C3-SB11-3648-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020966K
Collected:	2016-04-06 11:13 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	87.49 %	Analyst:	SPK
Ash/dry weight:	97.41 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:19	1000.0	AS98	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.01e-01	4.9e-02	3.2e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th228	6.86e-01	1.1e-01	2.0e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th230	4.44e-01	8.9e-02	5.6e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th232	7.01e-01	1.1e-01	1.8e-02	PCI/GDRY	06/23/2016 16:19 CDT

ED_006395_00001795-00305

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04147K	Amount analyzed:	1.018e+00 GASH
Client sample ID:	C3-SB12-0012-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020966K
Collected:	2016-04-06 11:35 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	98.86 %	Analyst:	SPK
Ash/dry weight:	80.06 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:19	1000.0	AS99	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.26e-01	5.2e-02	2.8e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th228	4.04e-01	7.6e-02	1.8e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th230	3.64e-01	7.5e-02	4.7e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th232	4.58e-01	8.3e-02	1.8e-02	PCI/GDRY	06/23/2016 16:19 CDT

ED_006395_00001795-00306

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04148L	Amount analyzed:	1.004e+00 GASH
Client sample ID:	C3-SB13-0012-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020966K
Collected:	2016-04-06 12:00 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	99.04 %	Analyst:	SPK
Ash/dry weight:	83.55 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:19	1000.0	AS100	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	5.55e-02	4.5e-02	4.5e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th228	5.11e-01	1.1e-01	3.1e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th230	5.34e-01	1.2e-01	5.8e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th232	5.85e-01	1.2e-01	2.8e-02	PCI/GDRY	06/23/2016 16:19 CDT

ED_006395_00001795-00307

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04149M	Amount analyzed:	1.031e+00 GASH
Client sample ID:	C3-SB13-1224-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020966K
Collected:	2016-04-06 12:01 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	93.44 %	Analyst:	SPK
Ash/dry weight:	98.23 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:19	1000.0	AS101	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.23e-01	5.5e-02	2.7e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th228	6.55e-01	1.1e-01	1.9e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th230	1.24e+00	1.8e-01	5.6e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th232	4.97e-01	9.1e-02	1.5e-02	PCI/GDRY	06/23/2016 16:19 CDT

ED_006395_00001795-00308

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04150E	Amount analyzed:	9.574e-01 GASH
Client sample ID:	C3-SB14-0012-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020966K
Collected:	2016-04-06 12:28 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	97.41 %	Analyst:	SPK
Ash/dry weight:	91.39 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:19	1000.0	AS103	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	8.24e-02	4.8e-02	3.7e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th228	4.73e-01	9.5e-02	3.1e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th230	6.46e-01	1.2e-01	5.8e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th232	4.66e-01	9.3e-02	2.6e-02	PCI/GDRY	06/23/2016 16:19 CDT

ED_006395_00001795-00309

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04151F	Amount analyzed:	9.994e-01 GASH
Client sample ID:	C3-SB15-0012-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020966K
Collected:	2016-04-06 10:43 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	85.96 %	Analyst:	SPK
Ash/dry weight:	95.51 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:19	1000.0	AS104	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.17e-01	5.7e-02	3.7e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th228	9.16e-01	1.5e-01	3.4e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th230	7.78e-01	1.3e-01	5.8e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th232	8.45e-01	1.4e-01	2.5e-02	PCI/GDRY	06/23/2016 16:19 CDT

ED_006395_00001795-00310

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04152G	Amount analyzed:	1.011e+00 GASH
Client sample ID:	C3-SB15-2436-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020966K
Collected:	2016-04-06 10:43 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	91.97 %	Analyst:	SPK
Ash/dry weight:	98.05 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:19	1000.0	AS105	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	8.92e-02	4.9e-02	4.2e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th228	8.13e-01	1.3e-01	2.7e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th230	5.41e-01	1.0e-01	5.8e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th232	8.49e-01	1.3e-01	1.9e-02	PCI/GDRY	06/23/2016 16:19 CDT

ED_006395_00001795-00311

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04153H	Amount analyzed:	9.052e-01 GASH
Client sample ID:	C3-SB16-0012-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020966K
Collected:	2016-04-06 08:35 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	96.85 %	Analyst:	SPK
Ash/dry weight:	93.53 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:19	1000.0	AS106	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.06e-01	5.5e-02	3.1e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th228	6.68e-01	1.2e-01	1.8e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th230	4.87e-01	1.0e-01	6.2e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th232	6.04e-01	1.1e-01	1.8e-02	PCI/GDRY	06/23/2016 16:19 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04154J	Amount analyzed:	1.005e+00 GASH
Client sample ID:	C3-SB16-3648-01	Preparation batch #:	0013480P
Matrix:	SOIL	Assay batch #:	0020966K
Collected:	2016-04-06 08:36 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	88.04 %	Analyst:	SPK
Ash/dry weight:	97.34 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:19	1000.0	AS107	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.16e-01	5.6e-02	2.9e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th228	8.07e-01	1.3e-01	3.1e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th230	7.02e-01	1.2e-01	5.8e-02	PCI/GDRY	06/23/2016 16:19 CDT
Th232	8.60e-01	1.4e-01	1.6e-02	PCI/GDRY	06/23/2016 16:19 CDT

ED_006395_00001795-00313

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	LCS-00736018Z	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013480P
Matrix:	N/A	Assay batch #:	0020964H
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:11	1000.0	AS141	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	5.89e-02	3.9e-02	4.1e-02	PCI	06/22/2016 17:11 CDT
Th228	1.71e-02	1.7e-02	2.2e-02	PCI	06/22/2016 17:11 CDT
Th230	2.16e+00	2.4e-01	5.7e-02	PCI	06/22/2016 17:11 CDT
Th232	1.14e-02	1.5e-02	2.2e-02	PCI	06/22/2016 17:11 CDT

ED_006395_00001795-00314

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	RBK-00736017Y	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013480P
Matrix:	N/A	Assay batch #:	0020964H
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-TH
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:11	1000.0	AS142	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
Th227	1.17e-01	5.4e-02	4.0e-02	PCI	06/22/2016 17:11 CDT
Th228	1.20e-02	2.1e-02	3.6e-02	PCI	06/22/2016 17:11 CDT
Th230	3.57e-02	3.6e-02	5.8e-02	PCI	06/22/2016 17:11 CDT
Th232	1.10e-02	1.4e-02	1.8e-02	PCI	06/22/2016 17:11 CDT

ED_006395_00001795-00315

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1600017

PREPARATION BATCH SUMMARY

Preparation batch #: 0013480P
Analysis method: NAREL ACT-02F-TH
Preparation procedure: N/A

NAREL Sample #	Client Sample ID	Analysis #	QC Type	Yield	± 2 σ Uncertainty	Analyst
B6.04138J	C3-SB9-0012-01	00733735K		77.41 %	6.84 %	SPK
B6.04139K	C3-SB9-1224-01	00733738N		91.15 %	8.12 %	SPK
B6.04140C	C3-SB10-0012-01	00733741H		81.54 %	6.98 %	SPK
B6.04141D	C3-SB10-1224-01	00733744L		86.17 %	7.81 %	SPK
B6.04142E	C3-SB10-6072-01	00733747P		88.02 %	7.43 %	SPK
B6.04142E	C3-SB10-6072-01	00736016X	DUP	92.02 %	8.41 %	SPK
B6.04143F	C3-SB10-7284-01	00733750J		63.96 %	6.73 %	SPK
B6.04144G	C3-SB10-8496-01	00733753M		80.40 %	7.38 %	SPK
B6.04145H	C3-SB11-0012-01	00733756Q		41.54 %	5.21 %	SPK
B6.04146J	C3-SB11-3648-01	00733759U		92.46 %	8.15 %	SPK
B6.04147K	C3-SB12-0012-01	00733762N		85.03 %	7.81 %	SPK
B6.04148L	C3-SB13-0012-01	00733765R		58.64 %	6.44 %	SPK
B6.04149M	C3-SB13-1224-01	00733768V		87.51 %	7.91 %	SPK
B6.04150E	C3-SB14-0012-01	00733771P		79.37 %	7.55 %	SPK
B6.04151F	C3-SB15-0012-01	00733774T		78.55 %	7.43 %	SPK
B6.04152G	C3-SB15-2436-01	00733777W		84.29 %	7.70 %	SPK
B6.04153H	C3-SB16-0012-01	00733780Q		83.08 %	7.77 %	SPK
B6.04154J	C3-SB16-3648-01	00733783U		79.17 %	7.37 %	SPK
LCS-00736018Z *		00736018Z	LCS	83.88 %	7.24 %	SPK
RBK-00736017Y *		00736017Y	RBK	77.71 %	6.87 %	SPK

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

QC RESULTS FOR BATCH 0013480P

NAREL Sample #	Analysis #	QC Type	Analyte	%R	RPD	Z	Evaluation
B6.04142E	00736016X	DUP	TH227		10.7	0.50	PASS
B6.04142E	00736016X	DUP	TH228		6.5	-0.75	PASS
B6.04142E	00736016X	DUP	TH230		5.0	-0.66	PASS
B6.04142E	00736016X	DUP	TH232		6.8	-0.77	PASS
LCS-00736018Z	00736018Z	LCS	TH230	108.2		1.33	PASS
RBK-00736017Y	00736017Y	RBK	TH227				WARN
RBK-00736017Y	00736017Y	RBK	TH228				PASS
RBK-00736017Y	00736017Y	RBK	TH230				PASS
RBK-00736017Y	00736017Y	RBK	TH232				PASS

ED_006395_00001795-00316

U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY
540 S. MORRIS AVE., MONTGOMERY, AL 36115
U ANALYSES

REPORT OF SAMPLE DELIVERY GROUP #1600017

Project:	Canadian Radium & Uranium, Mt. Kisco, NY
Analysis method:	Isotopic Uranium Using NaOH Fusion
Report ID:	1600017-U
Report type:	Original
Date reported:	06/29/2016
Total pages in report:	29

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B6.04138J	C3-SB9-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04139K	C3-SB9-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04140C	C3-SB10-0012-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04141D	C3-SB10-1224-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04142E	C3-SB10-6072-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04143F	C3-SB10-7284-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04144G	C3-SB10-8496-01	NY:MT. KISCO	SOIL	04/05/2016	04/19/2016
B6.04145H	C3-SB11-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04146J	C3-SB11-3648-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04147K	C3-SB12-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04148L	C3-SB13-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04149M	C3-SB13-1224-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04150E	C3-SB14-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04151F	C3-SB15-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04152G	C3-SB15-2436-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04153H	C3-SB16-0012-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016
B6.04154J	C3-SB16-3648-01	NY:MT. KISCO	SOIL	04/06/2016	04/19/2016

EXCEPTIONS

1. **Packaging and shipping** – No problems were observed.
2. **Documentation** – No problems were observed.
3. **Sample preparation** – No problems were encountered.
4. **Analysis** – No problems were encountered.
5. **Holding times** – No holding times were specified.

QUALITY CONTROL

1. **QC samples** – All QC analysis results met NAREL acceptance criteria.
2. **Yields** – All chemical yields were within acceptance limits.
3. **Instruments** – Response and background checks for all instruments used in these analyses met NAREL acceptance criteria.

ED_006395_00001795-00317

ACCREDITATION

All analyses included in this data package are accredited by the Oregon Environmental Laboratory Accreditation Program (ORELAP) to the TNI standard.

CERTIFICATION

I certify that this data report complies with the terms and conditions of the Project Acceptance Form and/or the Quality Assurance Project Plan, except as noted above. Release of the data contained in this report has been authorized by the Director of the Center for Environmental Radioanalytical Laboratory Science and the NAREL Quality Assurance Manager, or their designees, as verified by the following signatures.

Velinda Herbert — 6/30/16
Velinda Herbert
Quality Assurance Manager, NAREL
Date

Cynthia White — 6-30-16
Cynthia White
Director, Center for Environmental Radioanalytical Laboratory Science
Date

ED_006395_00001795-00318

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample, or blank spike
MS	Matrix spike
MSD	Matrix spike duplicate (not currently analyzed)
RBK	Method blank
STD	External standard (used for ^{228}Ra yield determination)

QUALITY INDICATORS

RPD	Relative Percent Difference
%R	Percent Recovery
Z	Number of standard deviations by which a QC measurement differs from the expected value

RADIOCHEMICAL DATA

Radiochemical analyses usually require the subtraction of an instrument background measurement result from a gross sample measurement result. Both values are positive, but when the sample activity is low, random variations in the two measurements can cause the gross value to be less than the background, resulting in a measured activity less than zero. Although negative activities have no physical significance, they do have statistical importance, as for example in the evaluation of trends or the comparison of two groups of samples.

To the extent practical, it is the policy of NAREL to report results as generated, whether positive, negative, or zero, together with the "2-sigma" measurement uncertainty and a sample-specific estimate of the minimum detectable concentration (MDC). The measurement result, uncertainty, and MDC are always expressed in the same unit of measurement.

EVALUATION OF QC ANALYSES

A method blank result is considered unacceptable if it is more than 3 standard deviations below zero or more than 3 standard deviations above a predetermined upper control limit. For some analyses NAREL has set the upper control limit at zero. For others the control limit is a small positive number.

NAREL evaluates the results of duplicate and spike analyses using "*Z* scores." A *Z* score is the number of standard deviations by which the QC result differs from its ideal value. Generally the score is considered acceptable if its absolute value is not greater than 3.

The *Z* score for a spiked sample is computed by dividing the difference between the measured value and the target value by the combined standard uncertainty of the difference. The *Z* score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation of most analyses. An exception is the use of %R in the evaluation of gross alpha matrix spike results. A gross alpha matrix spike result is considered acceptable if either $|Z| \leq 3$ or $60 \leq \%R \leq 110$.

ED_006395_00001795-00319

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
Did not collect	~~C003-SB007-2436-02~~	~~4/5/2016~~	~~16:23~~	~~Gamma Spec. (Modified)~~	~~Soil~~	~~4 C~~	~~N~~	~~1~~	~~16 oz glass jar~~
	C003-SB007-3648-01	4/5/2016	16:23	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB007-3648-01	4/5/2016	16:23	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB007-3648-01	4/5/2016	16:23	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB008-0012-01	4/5/2016	16:58	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB008-0012-01	4/5/2016	16:58	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB008-0012-01	4/5/2016	16:58	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB008-1224-01	4/5/2016	16:59	Isotopic Thorium	Soil	4 C	Y	2	8 oz glass jar
3	C003-SB008-1224-01	4/5/2016	16:59	Isotopic Uranium	Soil	4 C	Y	2	8 oz glass jar
3	C003-SB008-1224-01	4/5/2016	16:59	Gamma Spec (Modified)	Soil	4 C	N	LABLE ISSUE	16 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-0012-01	4/5/2016	18:02	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB009-1224-01	4/5/2016	18:02	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
3	C003-SB010-0012-01	4/5/2016	15:52	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB010-0012-01	4/5/2016	15:52	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
3	C003-SB010-0012-01	4/5/2016	15:52	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar

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Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		NAREL	4/18/16 @ 11:15	Good

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

Cont #4

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
3	C003-SB010-1224-01 ✓	4/5/2016	15:52 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-1224-01 ✓	4/5/2016	15:52 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-1224-01 ✓	4/5/2016	15:52 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
3	C003-SB010-6072-01 ✓	4/5/2016	15:52 ✓	Isotopic Thorium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-6072-01 ✓	4/5/2016	15:52 ✓	Isotopic Uranium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-6072-01 ✓	4/5/2016	15:52 ✓	Gamma Spec (Modified) ✓✓	Soil	4 C	N	1	16 oz glass jar ✓
3	C003-SB010-7284-01 ✓	4/5/2016	15:52 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-7284-01 ✓	4/5/2016	15:52 ✓	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-7284-01 ✓	4/5/2016	15:52 ✓	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
3	C003-SB010-8496-01 ✓	4/5/2016	15:52 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-8496-01 ✓	4/5/2016	15:52 ✓	Isotopic Uranium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
3	C003-SB010-8496-01 ✓	4/5/2016	15:52 ✓	Gamma Spec (Modified) ✓✓	Soil	4 C	N	1	16 oz glass jar ✓
4	C003-SB011-0012-01 ✓	4/6/2016	11:13	Isotopic Thorium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C003-SB011-0012-01 ✓	4/6/2016	11:13	Isotopic Uranium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C003-SB011-0012-01 ✓	4/6/2016	11:13	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar ✓
4	C003-SB011-3648-01 ✓	4/6/2016	11:13	Isotopic Thorium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C003-SB011-3648-01 ✓	4/6/2016	11:13	Isotopic Uranium ✓✓	Soil	4 C	N	1	8 oz glass jar ✓
4	C003-SB011-3648-01 ✓	4/6/2016	11:13	Gamma Spec (Modified) ✓	Soil	4 C	N	Broken 1	16 oz glass jar ✓ Broke
3	C003-SB012-0012-01 ✓	4/6/2016	11:35 ✓	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar ✓

6

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		NAREL	04/19/16 @ 1115	Good (1) Broken Jar

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (349) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
	C003-SB012-0012-01	4/6/2016	11:35	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB012-0012-01	4/6/2016	11:35	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB013-0012-01	4/6/2016	12:00	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB013-0012-01	4/6/2016	12:00	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB013-0012-01	4/6/2016	12:00	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB013-1224-01	4/6/2016	12:01	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB013-1224-01	4/6/2016	12:01	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB013-1224-01	4/6/2016	12:01	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB014-0012-01	4/6/2016	12:28	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB014-0012-01	4/6/2016	12:28	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB014-0012-01	4/6/2016	12:28	Gamma Spec (Modified)	Soil	4 C	N	Broken 1	16 oz glass jar
	C003-SB015-0012-01	4/6/2016	10:43	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB015-0012-01	4/6/2016	10:43	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar
	C003-SB015-0012-01	4/6/2016	10:43	Gamma Spec (Modified)	Soil	4 C	N	Broken 1	16 oz glass jar
	C003-SB015-2436-01	4/6/2016	10:43	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
	C003-SB015-2436-01	4/6/2016	10:43	Isotopic Uranium	Soil	4 C	N	Broken 1	8 oz glass jar
	C003-SB015-2436-01	4/6/2016	10:43	Gamma Spec (Modified)	Soil	4 C	N	1	16 oz glass jar
	C003-SB016-0012-01	4/6/2016	08:35	Isotopic Thorium	Soil	4 C	N	1	8 oz glass jar
6	C003-SB016-0012-01	4/6/2016	08:35	Isotopic Uranium	Soil	4 C	N	1	8 oz glass jar

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Bernard Nwosu RST3		NAREL	04/19/16 @1115	Good 2 Broken Containers

USEPA
DateShipped: 4/18/2016
CarrierName: FedEx
AirbillNo: 8022 3572 1333

CHAIN OF CUSTODY RECORD
Canadian Radium & Uranium Corp/NY
Contact Name: Bernard Nwosu
Contact Phone: (908) 565-2980

No: 2-041816-105138-0008
Lab: NAREL
Lab Contact: Tonya Hudson
Lab Phone: (343) 270-3433

Lab #	Sample #	Sample Date	Sample Time	Analyses	Matrix	Preservative	Lab QC	Numb Cont	Container
✓	C003-SB016-0012-01	4/6/2016	08:35	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar
	C003-SB016-3648-01	4/6/2016	08:36	Isotopic Thorium ✓	Soil	4 C	N	1	8 oz glass jar
✓	C003-SB016-3648-01	4/6/2016	08:36	Isotopic Uranium ✓	Soil	4 C	N	1	8 oz glass jar
	C003-SB016-3648-01	4/6/2016	08:36	Gamma Spec (Modified) ✓	Soil	4 C	N	1	16 oz glass jar

Special Instructions: Sample Analysis PO#-0091198: Gamma Spectroscopy analysis for soil samples to include: Ra-226 (in-growth), Ra-228, K-40, Tl-208, Bi-212, Bi-214, Pb-212, Pb-214, Ra-226, Ra-228, Th-234, U-235, Pb-210, Bi-210. Email results to s.sumbaly@westonsolutions.com and ben.nwosu@westonsolutions.com

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	RST3		NAREL	04/18/16 1115	Good

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

ANALYSIS SUMMARY

Analysis method: NAREL ACT-02F-U
Title: Isotopic Uranium Using NaOH Fusion

NAREL Sample #	Client Sample ID	QC Type	Date Completed	Preparation Batch #	Assay Batch #
B6.04138J	C3-SB9-0012-01		06/23/2016	0013481Q	0020965J
B6.04139K	C3-SB9-1224-01		06/23/2016	0013481Q	0020965J
B6.04140C	C3-SB10-0012-01		06/23/2016	0013481Q	0020965J
B6.04141D	C3-SB10-1224-01		06/23/2016	0013481Q	0020965J
B6.04142E	C3-SB10-6072-01		06/23/2016	0013481Q	0020965J
B6.04142E	C3-SB10-6072-01	DUP	06/23/2016	0013481Q	0020965J
B6.04143F	C3-SB10-7284-01		06/23/2016	0013481Q	0020965J
B6.04144G	C3-SB10-8496-01		06/23/2016	0013481Q	0020965J
B6.04145H	C3-SB11-0012-01		06/24/2016	0013481Q	0020967L
B6.04146J	C3-SB11-3648-01		06/24/2016	0013481Q	0020967L
B6.04147K	C3-SB12-0012-01		06/24/2016	0013481Q	0020967L
B6.04148L	C3-SB13-0012-01		06/24/2016	0013481Q	0020967L
B6.04149M	C3-SB13-1224-01		06/24/2016	0013481Q	0020967L
B6.04150E	C3-SB14-0012-01		06/24/2016	0013481Q	0020967L
B6.04151F	C3-SB15-0012-01		06/24/2016	0013481Q	0020967L
B6.04152G	C3-SB15-2436-01		06/24/2016	0013481Q	0020967L
B6.04153H	C3-SB16-0012-01		06/24/2016	0013481Q	0020967L
B6.04154J	C3-SB16-3648-01		06/24/2016	0013481Q	0020967L
LCS-00736021U *		LCS	06/23/2016	0013481Q	0020965J
RBK-00736020T *		RBK	06/23/2016	0013481Q	0020965J

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

ED_006395_00001795-00324

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04138J	Amount analyzed:	7.983e-01 GASH
Client sample ID:	C3-SB9-0012-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020965J
Collected:	2016-04-05 18:02 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	96.88 %	Analyst:	SPK
Ash/dry weight:	93.31 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:05	1000.0	AS80	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	3.73e-01	8.5e-02	2.9e-02	PCI/GDRY	06/22/2016 17:05 CDT
U235	2.17e-02	2.3e-02	2.9e-02	PCI/GDRY	06/22/2016 17:05 CDT
U238	3.71e-01	8.5e-02	2.7e-02	PCI/GDRY	06/22/2016 17:05 CDT

ED_006395_00001795-00325

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04139K	Amount analyzed:	1.004e+00 GASH
Client sample ID:	C3-SB9-1224-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020965J
Collected:	2016-04-05 18:02 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	94.08 %	Analyst:	SPK
Ash/dry weight:	96.64 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:06	1000.0	AS113	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	4.62e-01	8.2e-02	2.0e-02	PCI/GDRY	06/22/2016 17:06 CDT
U235	1.81e-02	1.7e-02	2.0e-02	PCI/GDRY	06/22/2016 17:06 CDT
U238	5.37e-01	9.0e-02	1.3e-02	PCI/GDRY	06/22/2016 17:06 CDT

ED_006395_00001795-00326

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04140C	Amount analyzed:	1.009e+00 GASH
Client sample ID:	C3-SB10-0012-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020965J
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	97.86 %	Analyst:	SPK
Ash/dry weight:	92.49 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:06	1000.0	AS115	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	3.92e-01	7.2e-02	1.5e-02	PCI/GDRY	06/22/2016 17:06 CDT
U235	1.28e-02	1.5e-02	2.1e-02	PCI/GDRY	06/22/2016 17:06 CDT
U238	4.94e-01	8.3e-02	1.5e-02	PCI/GDRY	06/22/2016 17:06 CDT

ED_006395_00001795-00327

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04141D	Amount analyzed:	1.012e+00 GASH
Client sample ID:	C3-SB10-1224-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020965J
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	91.93 %	Analyst:	SPK
Ash/dry weight:	92.48 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:06	1000.0	AS116	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	6.30e-01	9.9e-02	1.8e-02	PCI/GDRY	06/22/2016 17:06 CDT
U235	3.85e-02	2.4e-02	1.9e-02	PCI/GDRY	06/22/2016 17:06 CDT
U238	7.15e-01	1.1e-01	1.6e-02	PCI/GDRY	06/22/2016 17:06 CDT

ED_006395_00001795-00328

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04142E	Amount analyzed:	1.013e+00 GASH
Client sample ID:	C3-SB10-6072-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020965J
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	80.93 %	Analyst:	SPK
Ash/dry weight:	88.93 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:06	1000.0	AS117	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	1.34e+00	1.7e-01	2.0e-02	PCI/GDRY	06/22/2016 17:06 CDT
U235	7.06e-02	3.2e-02	1.9e-02	PCI/GDRY	06/22/2016 17:06 CDT
U238	1.35e+00	1.7e-01	1.6e-02	PCI/GDRY	06/22/2016 17:06 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04142E	Amount analyzed:	1.007e+00 GASH
Client sample ID:	C3-SB10-6072-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020965J
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	80.93 %	Analyst:	SPK
Ash/dry weight:	88.93 %	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:06	1000.0	AS118	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	1.38e+00	1.7e-01	1.9e-02	PCI/GDRY	06/22/2016 17:06 CDT
U235	5.48e-02	2.8e-02	1.5e-02	PCI/GDRY	06/22/2016 17:06 CDT
U238	1.33e+00	1.7e-01	1.6e-02	PCI/GDRY	06/22/2016 17:06 CDT

ED_006395_00001795-00330

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04143F	Amount analyzed:	9.732e-01 GASH
Client sample ID:	C3-SB10-7284-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020965J
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	64.74 %	Analyst:	SPK
Ash/dry weight:	77.25 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:06	1000.0	AS119	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	1.74e+00	2.1e-01	2.0e-02	PCI/GDRY	06/22/2016 17:06 CDT
U235	8.15e-02	3.3e-02	1.7e-02	PCI/GDRY	06/22/2016 17:06 CDT
U238	1.85e+00	2.2e-01	1.6e-02	PCI/GDRY	06/22/2016 17:06 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04144G	Amount analyzed:	9.936e-01 GASH
Client sample ID:	C3-SB10-8496-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020965J
Collected:	2016-04-05 15:52 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	71.62 %	Analyst:	SPK
Ash/dry weight:	92.51 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:05	1000.0	AS120	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	1.41e+00	1.8e-01	1.7e-02	PCI/GDRY	06/22/2016 17:05 CDT
U235	7.80e-02	3.5e-02	2.0e-02	PCI/GDRY	06/22/2016 17:05 CDT
U238	1.44e+00	1.8e-01	1.4e-02	PCI/GDRY	06/22/2016 17:05 CDT

ED_006395_00001795-00332

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04145H	Amount analyzed:	9.616e-01 GASH
Client sample ID:	C3-SB11-0012-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020967L
Collected:	2016-04-06 11:13 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	96.90 %	Analyst:	SPK
Ash/dry weight:	94.29 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:17	1000.0	AS33	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	8.44e-01	1.4e-01	2.4e-02	PCI/GDRY	06/23/2016 16:17 CDT
U235	2.16e-02	2.3e-02	2.9e-02	PCI/GDRY	06/23/2016 16:17 CDT
U238	8.11e-01	1.4e-01	2.9e-02	PCI/GDRY	06/23/2016 16:17 CDT

ED_006395_00001795-00333

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04146J	Amount analyzed:	1.007e+00 GASH
Client sample ID:	C3-SB11-3648-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020967L
Collected:	2016-04-06 11:13 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	87.49 %	Analyst:	SPK
Ash/dry weight:	97.41 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:17	1000.0	AS34	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	4.83e-01	1.1e-01	2.9e-02	PCI/GDRY	06/23/2016 16:17 CDT
U235	3.35e-02	3.0e-02	2.8e-02	PCI/GDRY	06/23/2016 16:17 CDT
U238	4.85e-01	1.1e-01	3.5e-02	PCI/GDRY	06/23/2016 16:17 CDT

ED_006395_00001795-00334

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04147K	Amount analyzed:	1.018e+00 GASH
Client sample ID:	C3-SB12-0012-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020967L
Collected:	2016-04-06 11:35 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	98.86 %	Analyst:	SPK
Ash/dry weight:	80.06 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:17	1000.0	AS36	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	3.72e-01	7.2e-02	1.8e-02	PCI/GDRY	06/23/2016 16:17 CDT
U235	1.02e-02	1.4e-02	2.1e-02	PCI/GDRY	06/23/2016 16:17 CDT
U238	3.43e-01	6.8e-02	1.3e-02	PCI/GDRY	06/23/2016 16:17 CDT

ED_006395_00001795-00335

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04148L	Amount analyzed:	1.004e+00 GASH
Client sample ID:	C3-SB13-0012-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020967L
Collected:	2016-04-06 12:00 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	99.04 %	Analyst:	SPK
Ash/dry weight:	83.55 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:17	1000.0	AS37	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	4.14e-01	9.5e-02	2.6e-02	PCI/GDRY	06/23/2016 16:17 CDT
U235	2.82e-02	2.7e-02	3.1e-02	PCI/GDRY	06/23/2016 16:17 CDT
U238	4.13e-01	9.5e-02	2.9e-02	PCI/GDRY	06/23/2016 16:17 CDT

ED_006395_00001795-00336

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04149M	Amount analyzed:	1.031e+00 GASH
Client sample ID:	C3-SB13-1224-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020967L
Collected:	2016-04-06 12:01 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	93.44 %	Analyst:	SPK
Ash/dry weight:	98.23 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:17	1000.0	AS38	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	3.53e-01	8.7e-02	3.2e-02	PCI/GDRY	06/23/2016 16:17 CDT
U235	2.04e-02	2.3e-02	2.6e-02	PCI/GDRY	06/23/2016 16:17 CDT
U238	4.44e-01	9.9e-02	3.0e-02	PCI/GDRY	06/23/2016 16:17 CDT

ED_006395_00001795-00337

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04150E	Amount analyzed:	9.574e-01 GASH
Client sample ID:	C3-SB14-0012-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020967L
Collected:	2016-04-06 12:28 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	97.41 %	Analyst:	SPK
Ash/dry weight:	91.39 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:17	1000.0	AS40	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	3.95e-01	8.9e-02	2.9e-02	PCI/GDRY	06/23/2016 16:17 CDT
U235	4.33e-02	3.2e-02	3.2e-02	PCI/GDRY	06/23/2016 16:17 CDT
U238	4.36e-01	9.4e-02	3.1e-02	PCI/GDRY	06/23/2016 16:17 CDT

ED_006395_00001795-00338

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04151F	Amount analyzed:	9.994e-01 GASH
Client sample ID:	C3-SB15-0012-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020967L
Collected:	2016-04-06 10:43 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	85.96 %	Analyst:	SPK
Ash/dry weight:	95.51 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:17	1000.0	AS65	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	5.28e-01	1.0e-01	4.6e-02	PCI/GDRY	06/23/2016 16:17 CDT
U235	2.94e-02	2.9e-02	4.2e-02	PCI/GDRY	06/23/2016 16:17 CDT
U238	6.03e-01	1.1e-01	4.2e-02	PCI/GDRY	06/23/2016 16:17 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04152G	Amount analyzed:	1.011e+00 GASH
Client sample ID:	C3-SB15-2436-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020967L
Collected:	2016-04-06 10:43 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	91.97 %	Analyst:	SPK
Ash/dry weight:	98.05 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:17	1000.0	AS66	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	5.15e-01	1.1e-01	3.2e-02	PCI/GDRY	06/23/2016 16:17 CDT
U235	2.69e-02	2.6e-02	2.9e-02	PCI/GDRY	06/23/2016 16:17 CDT
U238	4.63e-01	9.8e-02	2.4e-02	PCI/GDRY	06/23/2016 16:17 CDT

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04153H	Amount analyzed:	9.052e-01 GASH
Client sample ID:	C3-SB16-0012-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020967L
Collected:	2016-04-06 08:35 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	96.85 %	Analyst:	SPK
Ash/dry weight:	93.53 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:17	1000.0	AS68	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	4.90e-01	1.0e-01	3.1e-02	PCI/GDRY	06/23/2016 16:17 CDT
U235	3.12e-03	1.4e-02	2.8e-02	PCI/GDRY	06/23/2016 16:17 CDT
U238	4.84e-01	9.9e-02	2.9e-02	PCI/GDRY	06/23/2016 16:17 CDT

ED_006395_00001795-00341

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	B6.04154J	Amount analyzed:	1.005e+00 GASH
Client sample ID:	C3-SB16-3648-01	Preparation batch #:	0013481Q
Matrix:	SOIL	Assay batch #:	0020967L
Collected:	2016-04-06 08:36 EDT	Prep procedure:	N/A
Sample type:	SAM	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	88.04 %	Analyst:	SPK
Ash/dry weight:	97.34 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/23/2016 16:17	1000.0	AS69	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	5.87e-01	1.3e-01	2.6e-02	PCI/GDRY	06/23/2016 16:17 CDT
U235	1.67e-02	2.6e-02	3.9e-02	PCI/GDRY	06/23/2016 16:17 CDT
U238	5.07e-01	1.2e-01	3.2e-02	PCI/GDRY	06/23/2016 16:17 CDT

ED_006395_00001795-00342

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	LCS-00736021U	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013481Q
Matrix:	N/A	Assay batch #:	0020965J
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:06	1000.0	AS121	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	1.91e+00	2.3e-01	2.2e-02	PCI	06/22/2016 17:06 CDT
U235	8.48e-02	4.1e-02	2.1e-02	PCI	06/22/2016 17:06 CDT
U238	2.02e+00	2.4e-01	2.2e-02	PCI	06/22/2016 17:06 CDT

ED_006395_00001795-00343

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG #1600017

SAMPLE ANALYSIS REPORT

Lab sample #:	RBK-00736020T	Amount analyzed:	1.000e+00 SAMP
Client sample ID:	N/A	Preparation batch #:	0013481Q
Matrix:	N/A	Assay batch #:	0020965J
Collected:	N/A	Prep procedure:	N/A
Sample type:	N/A	Analysis method:	NAREL ACT-02F-U
Dry/wet weight:	N/A	Analyst:	SPK
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
06/22/2016 17:06	1000.0	AS122	RCL

ANALYTICAL RESULTS

Analyte	Activity	± 2 σ Uncertainty	MDC	Unit	Reference Date
U234	2.01e-02	2.0e-02	2.5e-02	PCI	06/22/2016 17:06 CDT
U235	1.33e-03	1.2e-02	2.8e-02	PCI	06/22/2016 17:06 CDT
U238	1.78e-02	1.8e-02	2.3e-02	PCI	06/22/2016 17:06 CDT

ED_006395_00001795-00344

U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL ANALYTICAL RADIATION ENVIRONMENTAL LABORATORY

SDG 1600017

PREPARATION BATCH SUMMARY

Preparation batch #: 0013481Q
Analysis method: NAREL ACT-02F-U
Preparation procedure: N/A

NAREL Sample #	Client Sample ID	Analysis #	QC Type	Yield	± 2 σ Uncertainty	Analyst
B6.04138J	C3-SB9-0012-01	00733734J		87.35 %	7.71 %	SPK
B6.04139K	C3-SB9-1224-01	00733737M		82.61 %	6.94 %	SPK
B6.04140C	C3-SB10-0012-01	00733740G		84.17 %	7.02 %	SPK
B6.04141D	C3-SB10-1224-01	00733743K		80.77 %	6.76 %	SPK
B6.04142E	C3-SB10-6072-01	00733746N		80.38 %	6.88 %	SPK
B6.04142E	C3-SB10-6072-01	00736019A	DUP	78.40 %	6.65 %	SPK
B6.04143F	C3-SB10-7284-01	00733749R		78.53 %	6.67 %	SPK
B6.04144G	C3-SB10-8496-01	00733752L		75.55 %	6.43 %	SPK
B6.04145H	C3-SB11-0012-01	00733755P		70.62 %	6.56 %	SPK
B6.04146J	C3-SB11-3648-01	00733758T		58.86 %	5.83 %	SPK
B6.04147K	C3-SB12-0012-01	00733761M		80.51 %	7.06 %	SPK
B6.04148L	C3-SB13-0012-01	00733764Q		56.08 %	5.62 %	SPK
B6.04149M	C3-SB13-1224-01	00733767U		64.43 %	6.23 %	SPK
B6.04150E	C3-SB14-0012-01	00733770N		65.22 %	6.12 %	SPK
B6.04151F	C3-SB15-0012-01	00733773R		71.37 %	6.59 %	SPK
B6.04152G	C3-SB15-2436-01	00733776V		70.31 %	6.61 %	SPK
B6.04153H	C3-SB16-0012-01	00733779Y		74.54 %	6.78 %	SPK
B6.04154J	C3-SB16-3648-01	00733782T		51.65 %	5.32 %	SPK
LCS-00736021U *		00736021U	LCS	80.74 %	7.26 %	SPK
RBK-00736020T *		00736020T	RBK	83.22 %	7.36 %	SPK

* Samples marked with an asterisk are not in this sample delivery group but were analyzed with it for QC purposes.

QC RESULTS FOR BATCH 0013481Q

NAREL Sample #	Analysis #	QC Type	Analyte	%R	RPD	Z	Evaluation
B6.04142E	00736019A	DUP	U234		2.8	0.31	PASS
B6.04142E	00736019A	DUP	U235		25.2	-0.74	PASS
B6.04142E	00736019A	DUP	U238		1.4	-0.15	PASS
LCS-00736021U	00736021U	LCS	U234	95.8		-0.70	PASS
LCS-00736021U	00736021U	LCS	U235	90.4		-0.44	PASS
LCS-00736021U	00736021U	LCS	U238	99.4		-0.10	PASS
RBK-00736020T	00736020T	RBK	U234				PASS
RBK-00736020T	00736020T	RBK	U235				PASS
RBK-00736020T	00736020T	RBK	U238				PASS

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