Attachment 2.9-7 Technical Memorandum: Radiological Vegetation, Soils, and Sediment Sampling

# TECHNICAL MEMORANDUM

10:	Or-Energy Inc.
FROM:	AATA International, Inc.
DATE:	April 2010
SUBJECT:	Radiological Vegetation, Soils, and Sediment Sampling
<ul><li>2.0 VEGETA</li><li>3.0 SURFAC</li><li>4.0 SOIL PRO</li><li>5.0 SEDIMEN</li></ul>	tents JCTION
Figure VSS-2 Figure VSS-3 Figure VSS-4 Figure VSS-5 Figure VSS-6 Figure VSS-7	Photograph of Representative Vegetation Sampling Transect  Vegetation and Surface Soil Sampling Locations  Vegetation Radiology by Time Period  Vegetation Radiology in Areas with High and Low Gamma Activity  Surface Soil Radiology vs. Background Gamma Activity  Soil Profile Sampling Locations  Sediment Sampling Locations  Photograph of Representative Sediment Sampling Location
Table VSS-2 - Table VSS-3 -	- Baseline Vegetation Radiological Sampling Results - Baseline Surface Soil Radiological Sampling Results - Baseline Soil Profile Radiological Sampling Results - Baseline Sediment Radiological Sampling Results

# List of Appendices

**Appendix VSS-1 - Laboratory Data Sheets** 

### 1.0 INTRODUCTION

AATA collected samples of vegetation, soils, and sediment from the Lost Creek Permit Area between September 2008 and July 2009, which were analyzed for various radiological parameters by Energy Laboratories, Inc. (ELI) in Casper, Wyoming. The results of these sampling efforts are presented in this memorandum.

### 2.0 VEGETATION SAMPLING

As detailed in Sections 2.8.1 and 3.6.1 of the Technical Report and Environmental Report, respectively, two vegetation types were identified in the Permit Area. Both of these vegetation types are dominated by Big Sagebrush. The vegetation samples for radiological analysis were collected primarily from upland sites; **Figure VSS-1** is a photograph of a typical vegetation sampling location.

Methods: The sampling objective was to quantify baseline radiological characteristics of vegetation in several portions of the Permit Area, including vegetation downwind of the Plant, in areas of potential radon deposition, and in areas of different baseline gamma activity. **Figure VSS-2** shows the 2008 and 2009 vegetation sampling locations.

Downwind of the Plant - Sites A, B, and C were sampled in summer 2008, and the results presented in a technical memorandum from AATA International to Ur-Energy dated January 16, 2009 (LC ISR, LLC Response to RAI 2.9 #3); these sites were not re-sampled in 2009.

Areas of Potential Radon Deposition - Sites D and E correspond with the areas with highest predicted radon-daughter activity during operations, as modeled by MILDOS; the rectangular sampling areas are oriented to maximize coverage of predicted high radon areas.

Areas of Different Baseline Gamma Activity - Sites F, G, H and I correspond with high gamma readings during the initial site gamma scan, although it should be noted that sites F and H have been disturbed by the drilling program since that study. The sampling areas for sites F, G, H and I are oriented to maximize coverage of high gamma areas. Site J represents low gamma and predicted radon daughter activity; the sampling site is oriented to maximize coverage of low gamma areas.

Samples were collected from sites D, E, F, G, H, I, and J three times during the 2009 growing season at two to three week intervals: June 24 and 25, July 9 and 10, and July 28 and 29. During the first sampling event, a transect was established along the north- or northeastern boundary of each area, and grazing fodder within 16.5 feet (5 meters) of those transects was sampled. During

subsequent sampling events, the transect in each area was relocated 33 ft (10 meters) to the south or southwest, and parallel to the first transect.

Sagebrush, rabbitbrush, succulents, and other non-grazing vegetation were avoided, since they are generally not consumed by cattle, and therefore any radionuclides that might be present in shrubs or succulents are less likely to enter the human food chain. In addition, sampling of shrubs (especially sagebrush) can be detrimental to the plant survival. Historical data at a different uranium project in Wyoming shows that levels of uranium (U-nat), lead-210 (Pb-210), polonium-210 (Po-210), radium-226 (Ra-226), and thorium-230 (Th-230) are very similar between grasses and sagebrush (Conoco, 1980 in EMC, 2007). ELI analyzed the vegetation samples for these five parameters.

Results: Analytical results for vegetation samples are presented in **Table VSS-1**. Pb-210 ranged from 1.2E-4 to 1.5E-3  $\mu$ Ci/kg (average = 4.6E-4  $\mu$ Ci/kg), Po-210 ranged from 2.8E-6 to 3.3E-5  $\mu$ Ci/kg (average = 1.4E-5  $\mu$ Ci/kg), Ra-226 ranged from 5.4E-5 to 5.5E-4  $\mu$ Ci/kg (average = 1.4E-4  $\mu$ Ci/kg), Th-230 ranged from 6.4E-6 to 7.1E-5  $\mu$ Ci/kg (average = 2.0E-5  $\mu$ Ci/kg), and U-nat ranged from 0.019 to 0.15 mg/kg (average = 0.048 mg/kg). Original lab reports are included in **Addendum VSS-1**.

Figure VSS-3 shows that the mean measured level of each parameter increased between the first sample in late June and the final sample in late July. For all parameters except Po-210, the mean value for the early July sample was greater than the initial mean value, and less than the final mean value. Increased radiological activity and uranium concentrations over time may be due to vegetation becoming more dormant as summer progressed.

As shown in **Figure VSS-4**, the sites with high background gamma activity (F, G, H, and I) also averaged higher levels of all parameters except Po-210 than sites with lower background gamma (D, E, and J). The isotopes that were most markedly elevated at the high gamma sites were Ra-226 (90% higher) and Th-230 (42% higher).

### 3.0 SURFACE SOILS SAMPLING

Methods: The sampling objective was to quantify baseline radiological characteristics of surface soils in portions of the permit area that represent a wide range of background gamma activity and modeled radon deposition. Surface soil samples were collected from within the vegetation sampling sites D, E, F, G, H, I, and J on June 24 and 25, 2009. Soil sample locations are shown in **Figure 2**. The samples from sites D and E were collected at the center of the highest radon isopleths, as modeled by MILDOS, and field located using GPS. The precise location of the

remaining sites was determined in the field using a hand-held NaI detector. The surface soil samples at sites F, G, H and I were collected from the area with the highest gamma reading. The surface soil sample at site J was collected adjacent to the LCDS-W soil profile sampling site, in the undisturbed area with the lowest gamma reading. This location was chosen so that background gamma measurements, vegetation samples, soil profile samples, and surface soil samples were all collected at a single site.

Ten surface soil sub-samples were collected at each site along 33 x 33 foot (10 x 10 m) sampling grids, as described in Section 2.9.1.1 and Figure 2.9-2 of the Technical Report. Sub-samples were collected to a depth of 6 inches (15 cm), then composited into a single sample. After the soils were sampled, 70-80 gamma readings were taken along the scan trajectories shown in Figure 2.9-2 of the Technical Report. These readings were later repeated due to QA/QC concerns with the NaI detector used on June 24 and 25, 2009. ELI analyzed samples for U-nat, Ra-226, Th-230, and Pb-210.

Results: Analytical results for surface soil samples are presented in **Table VSS-2**. Pb-210 was present in detectible concentrations in only one sample, Ra-226 ranged from 1.3 to 6.5 pCi/g (average = 3.6 pCi/g), Th-230 ranged from 0.8 to 5.2 pCi/g (average = 2.3 pCi/g), and U-nat ranged from 2.1 to 23.6 mg/kg (average = 8.5 mg/kg). Original lab reports are included in **Addendum VSS-1**.

The soil sampling locations for sites F,G, H, I, and J were determined in the field with an NaI detector. The gamma measurements showed an unexpectedly high degree of variability when soil samples were collected on June 24 and 25. It was later determined that the instrument had a faulty coaxial cable, and not all instrument readings were reliable. Gamma measurements were repeated at each surface soil sampling site on July 9 and 10, and the average of these readings at each site are presented in **Table VSS-2**.

Because the surface soil sites were selected using unreliable gamma readings, sites F, G, H, and I do not all represent areas of elevated background gamma activity: the mean gamma at soil sites H and I was 27.6 and 38.9  $\mu$ R/hr, respectively, as compared to 45.2 and 48.2 9  $\mu$ R/hr at sites F and G. An unintended consequence is that the surface soil sampling sites represent a wide spectrum of gamma values, from 26.3 to 48.2  $\mu$ R/hr. The linear regressions in **Figure VSS-5** show strong and statistically significant (p < 0.005) correlations between Ra-226, Th-230, and U-nat in the surface soils and background gamma activity.

#### 4.0 SOIL PROFILE SAMPLING

Methods: The sampling objective was to characterize the baseline radiological characteristics of the soil profile in the soil types underlying and surrounding the Plant site. A detailed soil survey in September 2008 identified three distinct soil types within a half mile (0.8 km) of the Plant Site: Pepal Sandy Loam, Poposhia Loam, and Teagulf Sandy Loam. Figure VSS-6 shows the soil profile sampling sites. Soil profiles were excavated and sampled at sites LSDS-C, LCDS-CE, and LCDS-S in September 2008. Additional samples were collected in December 2008 from locations LCDS-N, LCDS-E, and LCDS-W, which are approximately 2500 feet (750 m) from the center of the plant site. Each horizon was sampled according to the depth intervals identified in nearby soil profiles during the Summer 2006 soil survey. All samples were analyzed by ELI for Pb-210, Ra-226, Th-230, and U-nat.

Results: Analytical results for soil profile samples are presented in **Table VSS-3**. Pb-210 was present in detectible concentrations in only one sample, Ra-226 ranged from 0.8 to 2.8 pCi/g (average = 1.6 pCi/g), Th-230 ranged from 0.1 to 2.7 pCi/g (average = 1.1 pCi/g), and U-nat ranged from 0.52 to 4.84 mg/kg (average = 2.26 mg/kg). The highest values for Pb-210, Ra-226, and Th-230 occurred in the deepest sample from location LCDS-C, 33-60 inches. With the exception of location LCDS-C, Ra-226 generally decreased with depth, whereas Th-230 increased with depth at four of the six locations. The highest U-nat concentration occurred in the deepest sample from location LCDS-N, 33-40 inches, but there was no trend with depth that was generally consistent among the sampling locations. There also was no clear association between isotope activity or uranium concentration and soil type.

Five of the U-nat results were qualified by the laboratory; the reporting limit on those samples was increased due to sample matrix interference (generally caused by dilution). Because U-nat was present in concentrations that exceeded the reporting limit, the sample matrix interference is not believed to have affected the results. Original lab reports are included in **Addendum VSS-1**.

### 5.0 SEDIMENT SAMPLING

As detailed in Sections 2.7.1 and 3.5.1 of the Technical Report and Environmental Report, respectively, there are three watersheds in the Permit Area (**Figure VSS-7**). The associated drainages are naturally ephemeral and primarily flow (if at all) during spring snowmelt, when saturated overland flow when soil moisture is at a maximum. The drainages are typically incised three to six feet and are ten to fifteen feet wide near the downstream boundary of the Permit Area. The bed material in the larger draws is sandy textured and non-cohesive, and the draws are typically vegetated with sagebrush.

Radiological Vegetation, Soil, and Sediment Sampling
Lost Creek Project
April 2010
Page VSS-5

Methods: The sampling objective was to quantify the baseline radiological characteristics of the alluvium at the upstream and downstream Permit Area boundaries. Six sampling locations were selected on the three primary drainages, as shown in **Figure VSS-7**. An additional sampling location was selected at the Crooked Well Reservoir, a small on-site impoundment of East Battle Spring Draw which traps sediment when there is flow in the drainage.

Samples were collected on December 15, 2008, when the bed material was completely dry, but light snow had accumulated in some of the drainages (Figure VSS-8). At each sampling location, a transect was established across the channel or reservoir, and any snow was carefully removed. Ten to twenty subsamples were collected at a constant interval along the transect, to a depth of approximately three inches (eight cm). Subsamples were composited in a Ziploc bag, and analyzed by ELI for U-nat, Ra-226, Th-230, and Pb-210.

Results: Analytical results for sediment samples are presented in **Table VSS-4**. Pb-210 was not present in detectible concentrations, Ra-226 ranged from <0.2 to 1.3 pCi/g (average = 0.8 pCi/g, calculated with non-detects as half the detection limit), Th-230 ranged from <0.1 to 2.5 pCi/g (average = 1.0 pCi/g, calculated with non-detects as half the detection limit), and U-nat ranged from 1.0 to 5.0 mg/kg (average = 2.2 mg/kg). The highest concentrations of Th-230 and U-nat, and the second-highest concentration of Ra-226 occurred at site LCSS-6, Crooked Well Reservoir, which traps suspended and bedload sediment during runoff events. Within the same drainage, isotope and uranium concentrations were not consistently higher at either the upstream or downstream sampling locations. Original lab reports are included in **Addendum VSS-1**.

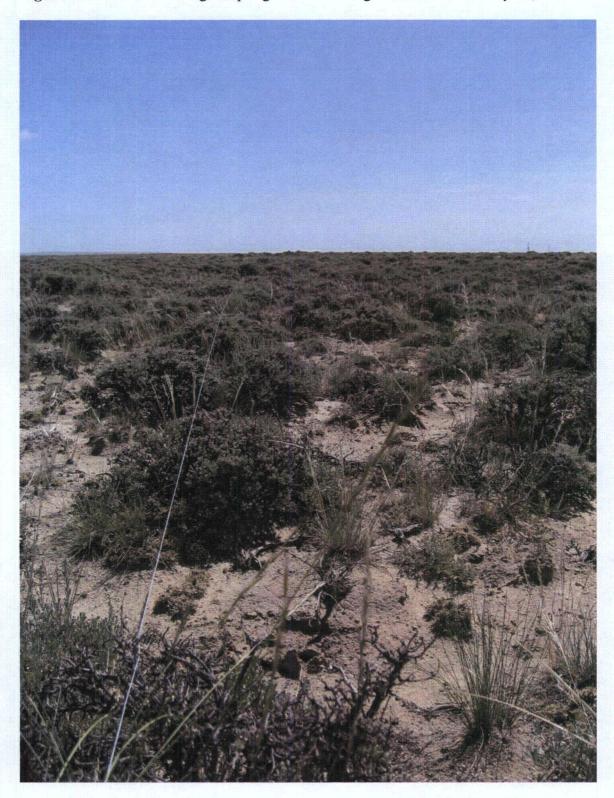
Radiological Vegetation, Soil, and Sediment Sampling
Lost Creek Project
April 2010
Page VSS-6

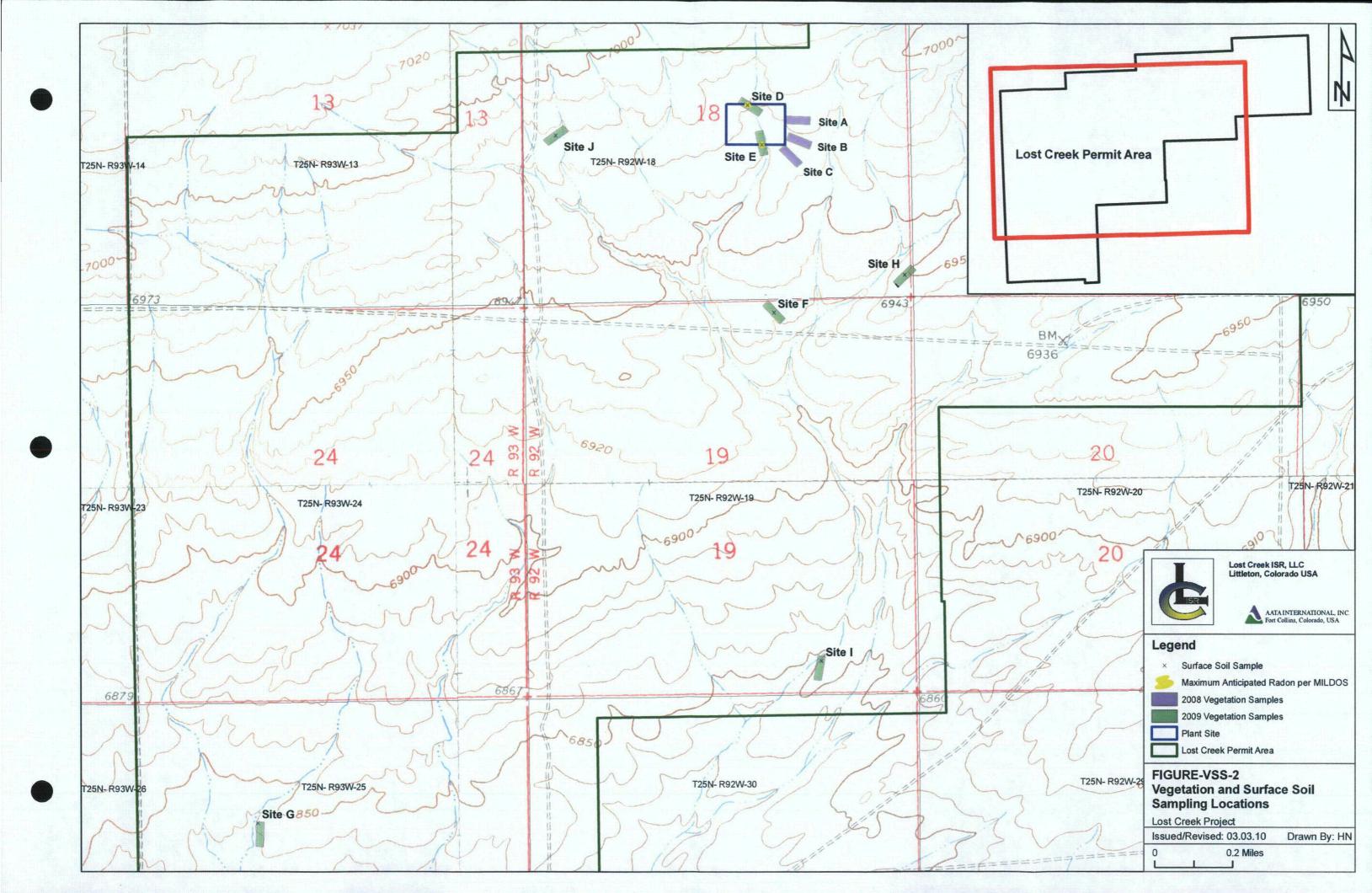
## 6.0 REFERENCES

Conoco, Inc. 1980. Environmental Report for the Sand Rock Mill Project, Campbell County, Wyoming. Docket No. 40-8743. July, 1980.

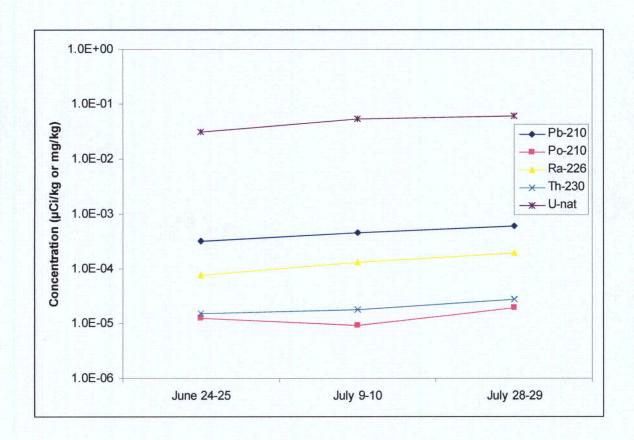
EMC (Energy Metals Corporation US). 2007. Application for US NRC Source Material License, Moore Ranch Uranium Project. Technical Report, Volume II. NRC website, ADAMS accession number ML072851268

Figure VSS-1 View along sampling transect at Vegetation Site A on July 22, 2008.

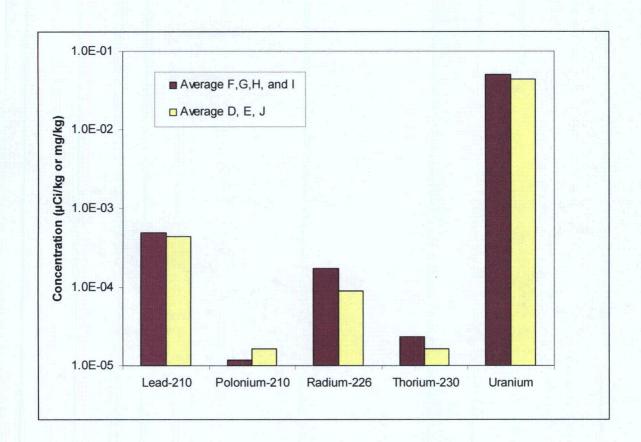




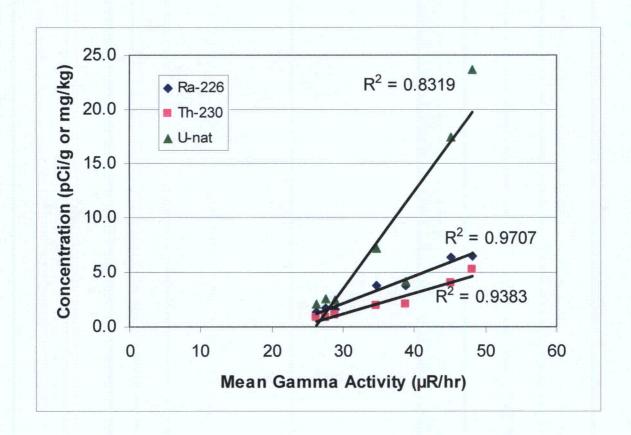
**Figure VSS-3** Mean Measured Radiological Activity or Concentration in Vegetation Samples by Time Period

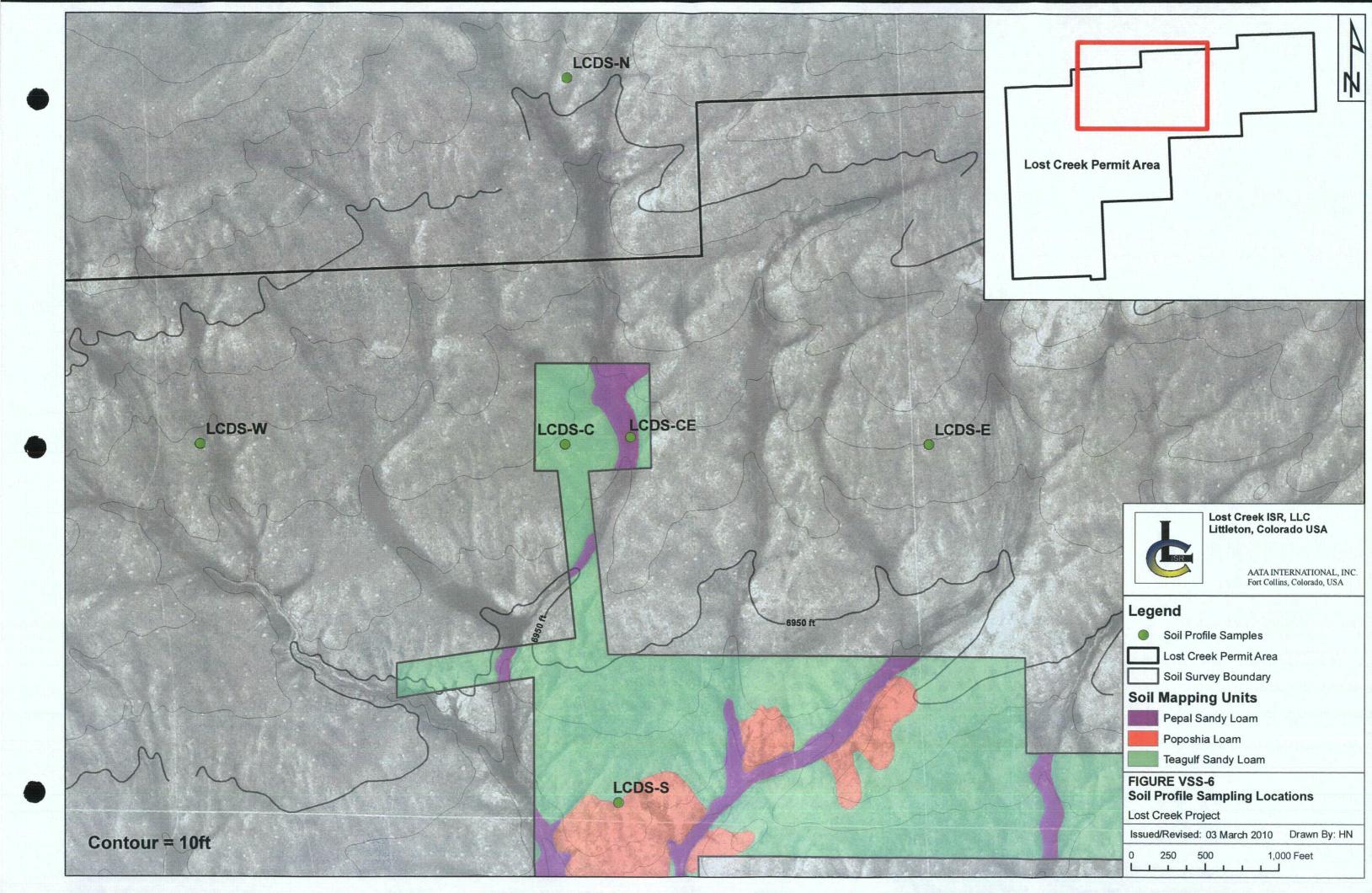


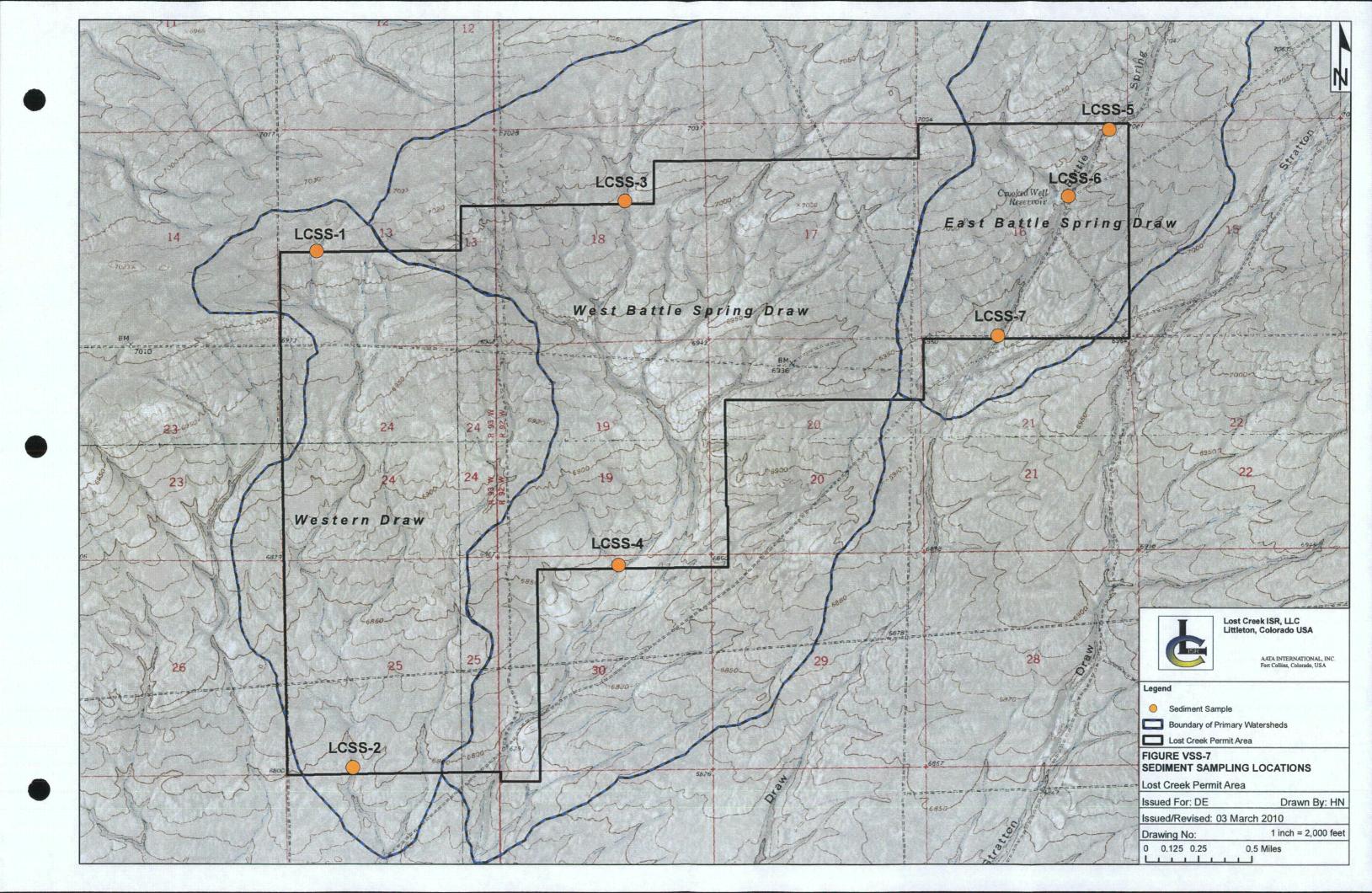
**Figure VSS-4** Mean measured levels in vegetation samples among sites with high background gamma radiation (F, G, H, and I), and sites with lower background gamma radiation (D, E, and J).



**Figure VSS-5** Relationship between background gamma activity and radiological concentrations in surface soils.







**Figure VSS-8** Sandy, non-cohesive soils collected at site LCSS-5 on December 15, 2008 (View to north)



**Table VSS-1** Baseline Vegetation Radiological Sampling Results—Lost Creek Project June and July 2009

Location <sup>1</sup>	Date	Lead-210 Polonium- (μCi/kg) 210		Radium- 226	Thorium- 230	Uranium (mg/kg)
Location	<del> </del>		(μCi/kg)	(μCi/kg)	(μCi/kg)	
	6/24/2009	3.1E-04	1.4E-05	5.4E-05	1.5E-05	0.029
LCVEGRAD-D	7/10/2009	3.7E-04	7.0E-06	8.8E-05	7.0E-06	0.029
	7/29/2009	5.2E-04	2.3E-05	1.4E-04	2.7E-05	0.053
	6/24/2009	2.8E-04	1.4E-05	5.4E-05	6.4E-06	0.019
LCVEGRAD-E	7/10/2009	3.3E-04	1.5E-05	7.1E-05	8.8E-06	0.023
	7/29/2009	2.8E-04	1.6E-05	9.9E-05	1.7E-05	0.033
,	6/25/2009	2.0E-04	1.1E-05	9.3E-05	2.1E-05	0.051
LCVEGRAD-F	7/9/2009	2.2E-04	6.0E-06	8.9E-05	1.1E-05	0.029
	7/28/2009	3.1E-04	7.3E-06	2.4E-04	2.3E-05	0.078
	6/25/2009	6.3E-04	5.3E-06	1.1E-04	1.7E-05	0.028
LCVEGRAD-G	7/9/2009	7.8E-04	1.2E-05	2.1E-04	2.6E-05	0.066
	7/28/2009	1.5E-03	2.7E-05	5.5E-04	7.1E-05	0.150
	6/25/2009	1.2E-04	2.8E-06	7.1E-05	9.2E-06	0.025
LCVEGRAD-H	7/9/2009	2.9E-04	5.2E-06	1.6E-04	1.6E-05	0.059
	7/28/2009	2.4E-04	1.1E-05	1.1E-04	2.0E-05	0.040
	6/25/2009	3.6E-04	1.1E-05	9.0E-05	2.5E-05	0.029
LCVEGRAD-I	7/9/2009	4.8E-04	1.1E-05	1.6E-04	2.2E-05	0.027
	7/28/2009	7.2E-04	3.3E-05	1.5E-04	2.0E-05	0.029
	6/24/2009	3.7E-04	2.9E-05	6.9E-05	1.6E-05	0.038
LCVEGRAD-J	7/10/2009	7.6E-04	9.1E-06	1.6E-04	3.5E-05	0.140
	7/29/2009	6.5E-04	2.0E-05	6.7E-05	1.6E-05	0.033

<sup>&</sup>lt;sup>1</sup>See Figure VSS-2 for sampling locations.

**Table VSS-2** Baseline Surface Soil Radiological Sampling Results Lost Creek Project June, 2009

	Lead-210	Radium- 226	Thorium- 230	Uranium	Mean
Location <sup>1</sup>	(pCi/g)	(pCi/g)	(pCi/g)	(mg/kg)	Gamma
LCSSURF-D	<2.1	3.8	2.0	7.2	34.6
LCSSURF-E	<2.0	1.6	1.1	2.5	28.9
LCSSURF-F	<2.0	6.3	4.0	17.5	45.2
LCSSURF-G	<2.0	6.5	5.2	23.6	48.2
LCSSURF-H	<2.0	1.7	0.9	2.6	27.6
LCSSURF-I	2.9	3.8	2.1	4.1	38.9
LCSSURF-J	<2.0	1.3	0.8	2.1	26.3

<sup>&</sup>lt;sup>1</sup>See Figure 2 for sampling locations.

Table VSS-3Baseline Soil Profile Sampling Results - Lost Creek Project<br/>September and December 2008

Location <sup>1</sup>	Depth (in)	Lead-210 (pCi/g)	Radium- 226 (pCi/g)	Thorium- 230 (pCi/g)	Uranium (mg/kg)	Soil Type	Sample ID
	0-12	<3.0	1.7	0.5	1.08	Pepal	
LCDS-C	12-33	<3.0	2.3	1.3	2.14	Sandy	MU1PR33
	33-60	4.2	2.8	2.7	0.52	Loam	
	0-8	<3.0	2.1	1.3	3.37		
LCDS-	8-18	<3.0	2.1	1.3	2.17	Poposhia	MU1PR35
CE	18-34	<3.0	1.7	1.6	1.49	Loam	MUTPRSS
	34-48	<3.0	1.2	1.9	3.72		
	0-24	<3.0	1.5	1.0	2.19	Pepal	-
LCDS-N	24-33	<3.1	1.0	0.8	1.77	Sandy	LCDS-N
	33-40	<3.0	1.1	1.4	4.84	Loam	
	0-8	<3.5	. 1.2	0.1	2.9	Pepal	
LCDS-E	8-40	<3.0	0.8	0.9	2.71	Sandy Loam	LCDS-E
	0-10	<4.0	1.9	0.8	0.57	Teagulf	
LCDS-S	10-60	<3.0	1.2	0.6	1.55	Sandy Loam	MU1PR23
	0-21	<3.0	1.5	1.1	2.53	Pepal	
LCDS-W	21-31	<3.0	1.2	1.1	1.79	Sandy	LCDS-W
	31-40	<3.0	1.4	0.6	3.01	Loam	

<sup>&</sup>lt;sup>1</sup> See Figure VSS-6 for sampling locations.

**Table VSS-4** Baseline Sediment Sampling Results - Lost Creek Project December 2008

Location 1	Lead-210 (pCi/g)	Radium-226 (pCi/g)	Thorium-230 (pCi/g)	Uranium (mg/kg)
LCSS-1	<3.4	1.3	1.2	2.7
LCSS-2	<3.5	0.3	<0.1	1.1
LCSS-3	<3.5	1.0	<0.1	2.0
LCSS-4	<3.5	1.2	1.5	2.2
LCSS-5	<3.5	0.6	0.2	1.2
LCSS-6	<3.5	1.2	2.5	5.0
LCSS-7	<3.4	<0.2	1.3	1.0

<sup>&</sup>lt;sup>1</sup> See Figure VSS-7 for sampling locations.

## Attachment 5.7.2 Site Specific Risk Analysis of Potential Interactions between Chemical Systems & Radioactive Material (Page 8 of 8)

## Analysis of Risks (Instrument Failure):

### Chemical

Chemicai	
All	It is likely that instrumentation will fail at some point. However, there will be redundant instrumentation on the chemical systems at the
	tank (i.e. level and flow) as well as at the destination point (i.e. level and pH). It is highly unlikely that all of the instrumentation would
1	fail at once. Therefore, the likelihood of occurrence can be moved from the "B" level down to the "F" level in the risk chart. No further
	countermeasures are required.

## **TABLE OF CONTENTS**

1.0	Effluent Control Systems	4-1
4.1	Gaseous Emissions and Airborne Particulates	4-1
4.1	Non-Radioactive Emissions and Particulates	4-1
4.1	2 Radioactive Emissions	4-3
4	-1.2.1 Particulates	4-3
4	-1.2.2 Radon	4-5
4.2	Liquid Wastes	4-8
4.2	1 "Native" Groundwater Recovered during Well Developm	ient,
	Sample Collection, and Pump Testing	4-9
4.2	2 Storm Water Runoff	4-9
4.2	3 Waste Petroleum Products and Chemicals	4-10
4.2	1	4-10
4.2		4-11
	2.5.1 Liquid Process Wastes	4-11
	2.5.2 "Affected" Groundwater Generated during Well Devel	opment
	and Sample Collection	4-11
	2.5.3 Groundwater Generated during Aquifer Restoration	4-11
	2.5.4 Disposal of Liquid 11(e)(2) Byproduct Materials	4-12
4	2.5.5 Prevention and Remediation of Accidental Releases	4-15
4	2.5.6 Activity Concentration Cleanup Criteria	4-18
4.3	Solid Wastes	4-22
4.3	Solid Non-11(e)(2) Byproduct Materials	4-22
4.3	2 Solid 11(e)(2) Byproduct Materials	4-23

## LIST OF FIGURES

- Figure 4.1-1 Pourbaix Diagram for Uranium in Non-Complexing Aqueous Media
- Figure 4.1-2 Downwind Doses versus Distance from U<sub>3</sub>O<sub>8</sub> Spill
- Figure 4.1-3 Proposed Plant Ventilation

### LIST OF TABLES

- Table 4.1-1 Comparison of NRC Accident Scenario for Thickener Failure and Spill with Lost Creek Project Emergency Response
- Table 4.1-2 Preliminary Fan Specifications
- Table 4.2-1 Example of Waste Stream Composition for Deep Disposal Well
- Table 4.2-2 Summary of Initial Cleanup Criteria

## LIST OF ATTACHMENTS

Attachment 4.1-1 Preliminary HVAC Designs (Plates M1 through M4)

Attachment 4.2-1 Storage Pond Specifications

Lost Creek Project NRC Technical Report Original Oct07; Rev2 Apr10 Attachment 2.9-8 2008 and 2009 Tissue Sampling Results



## ANALYTICAL SUMMARY REPORT

ebruary 18, 2009

UR Energy USA Inc 10758 W Centennial Rd Ste 200 Ken Caryl Ranch, CO 80127

Workorder No.: C09010211

Project Name: Lost Creek Bioassay

Energy Laboratories, Inc. received the following 3 samples for UR Energy USA Inc on 1/8/2009 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C09010211-00	01 Bone		01/08/09	Solid	Metals by ICP/ICPMS, Total Digestion For RadioChemistry Lead 210 Polonium 210 Radium 226 Thorium, Isotopic
C09010211-00	02 Kidney		01/08/09	Solid	Same As Above
C09010211-00	03 Meat		01/08/09	Solid	Metals by ICP/ICPMS, Total Composite of two or more samples Digestion For RadioChemistry Lead 210 Polonium 210 Radium 226 Thorium, Isotopic

As appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these tests results, please call.

Report Approved By:

Stephanie Weldup



Client:

UR Energy USA Inc

Project:

Lost Creek Bioassay

Lab ID:

C09010211-001

Client Sample ID: Bone

Report Date: 02/18/09
Collection Date: Not Provided
DateReceived: 01/08/09

Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg		0.5		SW6020	02/18/09 03:10 / sml
RADIONUCLIDES - TOTAL							
Lead 210	0.2	pCi/g				E909.0M	01/21/09 09:43 / dm
Lead 210 precision (±)	0.06	pCi/g				E909.0M	01/21/09 09:43 / dm
Lead 210 MDC	0.09	pCi/g				E909.0M	01/21/09 09:43 / dm
Polonium 210	0.6	pCi/g		0.1		RMO-3008	01/23/09 09:19 / plj
Polonium 210 precision (±)	0.2	pCi/g				RMO-3008	01/23/09 09:19 / plj
Radium 226	0.3	pCi/g				E903.0	01/27/09 11:36 / trs
Radium 226 precision (±)	0.01	pCi/g				E903.0	01/27/09 11:36 / trs
Radium 226 MDC	0.003	pCi/g				E903.0	01/27/09 11:36 / trs
Thorium 230	0.0	pCi/g	U	0.1		E907.0	02/04/09 16:27 / dmf
Thorium 230 precision (±)	0.2	pCi/g				E907.0	02/04/09 16:27 / dmf

Report Definitions:

RL - Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

U . Not detected at minimum detectable concentration



Client:

UR Energy USA Inc

Project:

Lost Creek Bioassay

Lab ID:

C09010211-002

Client Sample ID: Kidney

Report Date: 02/18/09
Collection Date: Not Provided
DateReceived: 01/08/09

Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL MCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg		0.5		SW6020	02/18/09 03:24 / sml
RADIONUCLIDES - TOTAL							
Lead 210	0.2	pCi/g				E909.0M	01/21/09 09:43 / dm
Lead 210 precision (±)	0.06	pCi/g				E909.0M	01/21/09 09:43 / dm
Lead 210 MDC	0.09	pCi/g				E909.0M	01/21/09 09:43 / dm
Polonium 210	1.0	pCi/g		0.1		RMO-3008	01/23/09 09:19 / plj
Polonium 210 precision (±)	0.2	pCi/g				RMO-3008	01/23/09 09:19 / plj
Radium 226	0.02	pCi/g				E903.0	01/27/09 11:36 / trs
Radium 226 precision (±)	0.004	pCi/g				E903.0	01/27/09 11:36 / trs
Radium 226 MDC	0.003	pCi/g				E903.0	01/27/09 11:36 / trs
Thorium 230	0.0	pCi/g	U	0.1		E907.0	01/25/09 13:33 / dmf
Thorium 230 precision (±)	0.01	pCi/g				E907.0	01/25/09.13:33 / dmf





Client:

**UR Energy USA Inc** 

Project:

Lost Creek Bioassay

Lab ID:

C09010211-003

Client Sample ID: Meat

Report Date: 02/18/09

Collection Date: Not Provided

DateReceived: 01/08/09

Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium	ND	mg/kg		0.5		SW6020	02/18/09 03:30 / sml
RADIONUCLIDES - TOTAL							
Lead 210	0.003	pCi/g	U			E909.0M	01/21/09 09:43 / dm
Lead 210 precision (±)	0.04	pCi/g				E909.0M	01/21/09 09:43 / dm
Lead 210 MDC	0.07	pCi/g				E909.0M	01/21/09 09:43 / dm
Polonium 210	0.0	pCi/g	U	0.1		RMO-3008	01/23/09 09:19 / plj
Polonium 210 precision (±)	0.009	pCi/g	4			RMO-3008	01/23/09 09:19 / plj
Radium 226	0.01	pCi/g				E903.0	01/27/09 11:36 / trs
Radium 226 precision (±)	0.002	pCi/g				E903.0	01/27/09 11:36 / trs
Radium 226 MDC	0.002	pCi/g				E903.0	01/27/09 11:36 / trs
Thorium 230	0.0	pCi/g	U	0.1		E907.0	01/25/09 13:33 / dmf
Thorium 230 precision (±)	0.004	pCi/g				E907.0	01/25/09 13:33 / dmf

Report Definitions:

RL - Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

MCL - Maximum contaminant level.

ND . Not detected at the reporting limit.

U = Not detected at minimum detectable concentration



# **QA/QC Summary Report**

Client: UR Energy USA Inc

Report Date: 02/18/09
Work Order: C09010211

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0		<u></u>		· · · · · · · · · · · · · · · · · · ·				Batch:	R113930
Sample ID: LCS-21105	Laboratory C	ontrol Sample			Run: BER	THOLD 770-2	_090119B	01/27	7/09 11:36
Radium 226	1.4	pCi/g-dry		97	70	130			
Sample ID: MB-21105	Method Blank	k			Run: BER	THOLD 770-2	_090119B	01/27	7/09 11:36
Radium 226	-0.03	pCi/g-dry							U
Sample ID: C09010304-004AMS	Sample Matr				Run: BER	THOLD 770-2	_090119B	01/27	7/09 13:20
Radium 226	7.5	pCi/g-dry		95	70	130			
Sample ID: C09010304-004AMSD	Sample Matr	ix Spike Duplicate			Run: BER	THOLD 770-2	_090119B	01/27	7/09 13:20
Radium 226	7.5	pCi/g-dry		98	70	130	0	23.3	
Method: E907.0				•				Bat	ch: 21105
Sample ID: C09010211-002AMS	Sample Matr	ix Spike			Run: EGG	-ORTEC_090	120A	01/23	3/09 14:19
Thorium 230	0.304	pCi/g	0.10	. 100	70	130			
Sample ID: C09010211-002AMSD	Sample Matr	ix Spike Duplicate			Run: EGG	-ORTEC_090	120A	01/23	3/09 14:19
Thorium 230	0.306	pCi/g	0.10	100	70	130	0.7	55.5	
Sample ID: LCS-21105	Laboratory C	ontrol Sample			Run: EGG	-ORTEC_090	120A	01/25	5/09 13:33
orium 230	0.491	pCi/g-dry	0.10	103	70	130			
Sample ID: MB-21105	Method Blan	k			Run: EGG	-ORTEC_090	120A	01/25	5/09 13:33
Thorium 230	-0.002	pCi/g-dry							U
Method: E909.0M			}					Batch	R113959
Sample ID: C09010302-002AMS	Sample Matr	ix Spike	ĺ		Run; PACI	KARD 3100TF	R_090121A	01/2	1/09 09:43
Lead 210	1100	pCi/Filter		95	70	130			
Sample ID: C09010302-002AMSD	Sample Matr	ix Spike Duplicate			Run: PAC	KARD 3100TF	R_090121A	01/2	1/09 09:43
Lead 210	1140	pCi/Filter		99	70	130	3.6	30	
Sample ID: MB-R113959	Method Blan	k			Run: PAC	KARD 3100TF	R_090121A	01/2	1/09 09:43
Lead 210	-0.9	pCi/Filter							U
Sample ID: LCS-R113959	Laboratory C	ontrol Sample			Run: PAC	KARD 3100TF	R_090121A	01/2	1/09 09:43
Lead 210	101	pCi/Filter		93	70	130			



# **QA/QC Summary Report**

Client: UR Energy USA Inc

**Report Date:** 02/18/09 **Work Order:** C09010211

Project: Lost Creek Bioassay

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit Qual
Method: RMO-3008								Batch: 21105
Sample ID: C09010211-003AMS	Sample Matri	x Spike			Run: EGG	-ORTEC_090122/	A	01/23/09 09:19
Polonium 210	0.175	pCi/g	0.10	88	70	130		
Sample ID: C09010211-003AMSD	Sample Matri	x Spike Duplicate			Run: EGG	-ORTEC_090122	A	01/23/09 09:19
Polonium 210	0.177	pCi/g	0.10	86	70	130	1.1	54.7
Sample ID: LCS-21105	Laboratory Co	ontrol Sample			Run: EGG	-ORTEC_090122	A	01/23/09 09:19
Polonium 210		pCi/g-dry	0.10	111	70	130		
Sample ID: MB-21105	Method Blank	;			Run: EGG	-ORTEC_090122	A	01/23/09 09:19
Polonium 210	-0.04	pCi/g-dry				_		U
Method: SW6020								Batch: 21105
Sample ID: MB-21105	Method Blank				Run: ICPM	IS4-C_090217B		02/18/09 02:56
Uranium	0.01	mg/kg	0.004					
Sample ID: LCS1-21105	Laboratory Co	ontrol Sample			Run: ICPM	IS4-C_090217B		02/18/09 03:03
Uranium	5.1	mg/kg	0.50	106	70	130		
Sample ID: C09010211-003AMS4	Sample Matri	x Spike			Run: ICPM	IS4-C_090217B		02/18/09 03:37
Uranium	1.2	mg/kg	0.50	84	75	125		
Sample ID: C09010211-003AMSD4	Sample Matri	x Spike Duplicate			Run: ICPM	IS4-C_090217B		02/18/09 04:11
Uranium	1.2	mg/kg	0.50	84	75	125	8.0	20



**CLIENT:** 

**UR Energy USA Inc** 

Project: Lost Cre

Lost Creek Bioassay

Sample Delivery Group: C09010211

Date: 18-Feb-09

CASE NARRATIVE

### ORIGINAL SAMPLE SUBMITTAL(S)

All original sample submittals have been returned with the data package.

### SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)

Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

#### **GROSS ALPHA ANALYSIS**

Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

### RADON IN AIR ANALYSIS

The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

### SOIL/SOLID SAMPLES

All samples reported on an as received basis unless otherwise indicated.

#### ATRAZINE, SIMAZINE AND PCB ANALYSIS USING EPA 505

Data for Atrazine and Simazine are reported from EPA 525.2, not from EPA 505. Data reported by ELI using EPA method 505 reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

### SUBCONTRACTING ANALYSIS

Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

### **BRANCH LABORATORY LOCATIONS**

eli-b - Energy Laboratories, Inc. - Billings, MT

eli-g - Energy Laboratories, Inc. - Gillette, WY

eli-h - Energy Laboratories, Inc. - Helena, MT

eli-r - Energy Laboratories, Inc. - Rapid City, SD

eli-t - Energy Laboratories, Inc. - College Station, TX

### **CERTIFICATIONS:**

USEPA: WY00002; FL-DOH NELAC: E87641; California: 02118CA

Oregon: WY200001; Utah: 3072350515; Virginia: 00057; Washington: C1903

### ISO 17025 DISCLAIMER:

The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER,WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.

THIS IS THE FINAL PAGE OF THE LABORATORY ANALYTICAL REPORT



## ANALYTICAL SUMMARY REPORT

December 16, 2009

UR Energy USA Inc 10758 W Centennial Rd Ste 200 Ken Caryl Ranch, CO 80127

Workorder No.: C09100685

Project Name: Lost Creek Project

Energy Laboratories, Inc. received the following 4 samples for UR Energy USA Inc on 10/16/2009 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C09100685-001	Meat	10/16/09 00:00	10/16/09	Animal	Uranium, Total Digestion For RadioChemistry Lead 210 Polonium 210 Radium 226 Thorium, Isotopic
C09100685-002	Kidney	10/16/09 00:00	10/16/09	Animal	Same As Above
C09100685-003	Liver	10/16/09 00:00	10/16/09	Animal	Same As Above
C09100685-004	Bone	10/16/09 00:00	10/16/09	Animal	Same As Above

As appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

f you have any questions regarding these tests results, please call.

Report Approved By:

Stephanie D. Waldrop Reporting Supervisor



Client:

UR Energy USA Inc

Project: Lab ID: Lost Creek Project

Client Sample ID: Meat

C09100685-001

Report Date: 12/16/09

Collection Date: 10/16/09

DateReceived: 10/16/09

Matrix: Animal

Analyses	Result	Units	Qualifiers R	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL						
Uranium, Activity	ND	uCi/kg	2.0E	-07	SW6020	10/27/09 18:06 / ts
RADIONUCLIDES - TOTAL						
Lead 210	-1.0E-05	uCi/kg	U		E909.0M	11/23/09 04:46 / dm
Lead 210 precision (±)	3.0E-05	uCi/kg			E909.0M	11/23/09 04:46 / dm
Lead 210 MDC	6.0E-05	uCi/kg			E909.0M	11/23/09 04:46 / dm
Polonium 210	2.0E-05	uCi/kg			E912.0	10/31/09 14:59 / plj
Polonium 210 precision (±)	9.0E-06	uCi/kg			E912.0	10/31/09 14:59 / plj
Polonium 210 MDC	6.0E-06	uCi/kg			E912.0	10/31/09 14:59 / plj
Radium 226	-3.0E-06	uCi/kg	U		E903.0	11/20/09 13:40 / jah
Radium 226 precision (±)	5.0E-07	uCi/kg			E903.0	11/20/09 13:40 / jah
Radium 226 MDC	1.0E-06	uCi/kg			E903.0	11/20/09 13:40 / jah
Thorium 230	-5.0E-07	uCi/kg	U		E907.0	11/20/09 11:59 / dmf
Thorium 230 precision (±)	1.0E-06	uCi/kg			E907.0	11/20/09 11:59 / dmf
Thorium 230 MDC	2.0E-06	uCi/kg			E907.0	11/20/09 11:59 / dmf

Report Definitions:

RL - Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



Client:

UR Energy USA Inc

Project:

Lost Creek Project

Lab ID:

C09100685-002

Client Sample ID: Kidney

Report Date: 12/16/09

Collection Date: 10/16/09

DateReceived: 10/16/09

Matrix: Animal

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium, Activity	ND	uCi/kg	2	2.0E-07		SW6020	10/27/09 18:31 / ts
RADIONUCLIDES - TOTAL							
Lead 210	2.0E-04	uCi/kg				E909.0M	11/23/09 04:46 / dm
Lead 210 precision (±)	5.0E-05	uCi/kg				E909.0M	11/23/09 04:46 / dm
Lead 210 MDC	9.0E-05	uCi/kg				E909.0M	11/23/09 04:46 / dm
Polonium 210	1.0E-03	uCi/kg				E912.0	10/31/09 14:59 / plj
Polonium 210 precision (±)	2.0E-04	uCi/kg				E912.0	10/31/09 14:59 / plj
Polonium 210 MDC	1.0E-05	uCi/kg				E912.0	10/31/09 14:59 / plj
Radium 226	9.0E-06	uCi/kg				E903.0	11/03/09 15:12 / trs
Radium 226 precision (±)	3.0E-06	uCi/kg				E903.0	11/03/09 15:12 / trs
Radium 226 MDC	3.0E-06	uCi/kg				E903.0	11/03/09 15:12 / trs
Thorium 230	-2.0E-06	uCi/kg	U			E907.0	11/22/09 12:05 / dmf
Thorium 230 precision (±)	3.0E-06	uCi/kg				E907.0	11/22/09 12:05 / dmf
Thorium 230 MDC	5.0E-06	uCi/kg				E907.0	11/22/09 12:05 / dmf



Client:

UR Energy USA Inc

Project:

Lost Creek Project

Lab ID:

C09100685-003

Client Sample ID: Liver

Report Date: 12/16/09

Collection Date: 10/16/09

DateReceived: 10/16/09

Matrix: Animal

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium, Activity	9.7E-06	uCi/kg	2	2.0E-07		SW6020	11/02/09 19:14 / ts
RADIONUCLIDES - TOTAL							
Lead 210	1.0E-04	uCi/kg				E909.0M	11/23/09 04:46 / dm
Lead 210 precision (±)	4:0E-05	uCi/kg				E909.0M	11/23/09 04:46 / dm
Lead 210 MDC	7.0E-05	uCi/kg				E909.0M	11/23/09 04:46 / dm
Polonium 210	8.0E-04	uCi/kg				E912.0	10/31/09 14:59 / plj
Polonium 210 precision (±)	2.0E-04	uCi/kg				E912.0	10/31/09 14:59 / plj
Polonium 210 MDC	1.0E-05	uCi/kg				E912.0	10/31/09 14:59 / plj
Radium 226	-1.0E-06	uCi/kg	U			E903.0	11/20/09 13:36 / trs
Radium 226 precision (±)	2.0E-07	uCi/kg				E903.0	11/20/09 13:36 / trs
Radium 226 MDC	5.0E-07	uCi/kg				£903.0	11/20/09 13:36 / trs
Thorium 230	1.0E-06	uCi/kg	U			E907.0	11/22/09 12:05 / dmf
Thorium 230 precision (±)	6.0E-06	uCi/kg				E907.0	. 11/22/09 12:05 / dmf
Thorium 230 MDC	1.0E-05	úCi/kg				E907.0	11/22/09 12:05 / dmf

Report Definitions:

RL - Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



Client:

UR Energy USA Inc

Project: Lab ID: Lost Creek Project C09100685-004

Client Sample ID: Bone

Report Date: 12/16/09

Collection Date: 10/16/09

DateReceived: 10/16/09

Matrix: Animal

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS - TOTAL							
Uranium, Activity	4.2E-06	uCi/kg	2	2.0E-07		SW6020	10/27/09 18:39 / ts
RADIONUCLIDES - TOTAL							
Lead 210	5.0E-04	uCi/kg				E909.0M	11/23/09 04:46 / dm
Lead 210 precision (±)	6.0E-05	uCi/kg				E909.0M	11/23/09 04:46 / dm
Lead 210 MDC	1.0E-04	uCi/kg				E909.0M	11/23/09 04:46 / dm
Polonium 210	4.0E-04	uCi/kg				E912.0	11/02/09 09:02 / plj
Polonium 210 precision (±)	8.0E-05	uCi/kg				E912.0	11/02/09 09:02 / pli
Polonium 210 MDC	3.0E-06	uCi/kg				E912.0	11/02/09 09:02 / plj
Radium 226	4.0E-05	uCi/kg				E903.0	11/03/09 15:12 / trs
Radium 226 precision (±)	3.0E-06	uCi/kg				E903.0	11/03/09 15:12 / trs
Radium 226 MDC	1.0E-06	uCi/kg				E903.0	11/03/09 15:12 / trs
Thorium 230	5.0E-06	uCi/kg	U			E907.0	11/30/09 18:07 / dmf
Thorium 230 precision (±)	1.0E-05	uCi/kg				E907.0	11/30/09 18:07 / dmf
Thorium 230 MDC	2.0E-05	uCi/kg				E907.0	11/30/09 18:07 / dmf



# **QA/QC Summary Report**

LIR Energy LISA Inc.

Report Date: 12/16/09

09100685

Client: OR Energy USA inc	Report Date.	12/
Project: Lost Creek Project	Work Order:	C0

Analyte	Result	Units	RL %	REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0								Batch	R125968
Sample ID: C09100521-001AMS	Sample Matr	ix Spike			Run: BERT	HOLD 770-1	_091026B	11/03	3/09 13:31
Radium 226	0.00070	uCi/kg		119	70	130			
Sample ID: C09100521-001AMSD	Sample Matr	ix Spike Duplicate			Run: BERT	THOLD 770-1	_091026B	11/0	3/09 13:31
Radium 226	0.00068	uCi/kg		115	70	130	2.7	20.8	
Sample ID: LCS-24140	Laboratory C	Control Sample			Run: BERT	HOLD 770-1	_091026B	11/03	3/09 13:31
Radium 226	1.7E-05	uCi/kg		108	70	130			
Sample ID: MB-24140	Method Blan	k			Run: BERT	THOLD 770-1	_091026B	11/03	3/09 15:12
Radium 226	2E-07	uCi/kg							U
Radium 226 precision (±)	1E-07	uCi/kg							
Radium 226 MDC	3E-07	uCi/kg							
Method: E903.0		77.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3						Batch	R126576
Sample ID: LCS-24156	Laboratory C	Control Sample			Run: BERT	HOLD 770-2	_091109A	11/16	5/09 18:04
Radium 226	0.016	pCi/g-dry		98	70	130			
Sample ID: MB-24156	Method Blan	k			Run: BERT	THOLD 770-2	_091109A	11/16	5/09 18:04
Radium 226	0.0002	pCi/g-dry							U
Radium 226 precision (±)	0.0003	pCi/g-dry							4
Radium 226 MDC	0.0004	pCi/g-dry							. \
Sample ID: C09100973-017AMS	Sample Matr	•			Run: BERT	THOLD 770-2	_091109A	11/17	7/09 00:39
Radium 226	7.5	pCi/g-dry		96	70	130			
Sample ID: C09100973-017AMSD	Sample Mati	rix Spike Duplicate			Run: BERT	THOLD 770-2	_091109A	11/1	7/09 00:39
Radium 226	7.6	pCi/g-dry		97	70	130	0.7	24	
Method: E907.0								Bat	ch: 24156
Sample ID: C09100685-001AMS	Sample Mati	ix Spike			Run: EGG-	ORTEC_091	118A	11/20	0/09 11:59
Thorium 230	0.0602	pCi/g-dry		117	70	130			
Sample ID: C09100685-001AMSD	Sample Mate	rix Spike Duplicate			Run: EGG-	ORTEC_091	118A	11/20	0/09 11:59
Thorium 230	0.0563	pCi/g-dry		108	70	130	6.6	44.4	
Sample ID: LCS-24156	Laboratory C	Control Sample			Run: EGG-	ORTEC_091	118A	11/22	2/09 12:05
Thorium 230	0.00186	pCi/g-dry		91	70	130			
Sample ID: MB-24156	Method Blan	k			Run: EGG-	ORTEC_091	118A	11/22	2/09 12:05
Thorium 230	5E-06	pCi/g-dry							U
Thorium 230 precision (±)	0.0001	pCi/g-dry							
Thorium 230 MDC	0.0002	pCi/g-dry							

Qualifiers:

RL - Analyte reporting limit.

MDC - Minimum detectable concentration

ND . Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



Client: UR Energy USA Inc roject: Lost Creek Project **Report Date: 12/16/09** 

Work Order: C09100685

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E907.0							******	Batch: F	R12717
Sample ID: C09100685-004AMS	Sample Matri	x Spike			Run: EGG-	-ORTEC_091129/	4	11/30/	09 18:0
Thorium 230	0.325	pCi/g-dry		111	70	130			
Sample ID: C09100685-004AMSD	Sample Matri	x Spike Duplicate			Run: EGG	-ORTEC_091129	A	11/30/	09 18:0
Thorium 230	0.324	pCi/g-dry		110	70	130	0.4	41.6	
Sample ID: LCS-24156	Laboratory C	ontrol Sample			Run: EGG	-ORTEC_091129	A	11/30/	09 18:0
Thorium 230	0.532	pCi/g-dry		112	70	130			
Sample ID: MB-24156	Method Blank	•			Run: EGG	-ORTEC_091129	A	11/30/	09 18:0
Thorium 230	-0.01	pCi/g-dry							U
Thorium 230 precision (±)	0.02	pCi/g-dry							
Thorium 230 MDC	0.03	pCi/g-dry							
Method: E909.0M								Batch: I	R12762
Sample ID: C09100685-003AMS	Sample Matri	x Spike			Run: BEC	KMAN 6100TA_09	91123A	11/23/	09 04:4
Lead 210	•	pCi/g-dry		90	70	130			
Sample ID: C09100685-003AMSD	Sample Matri	x Spike Duplicate			Run: BECI	KMAN 6100TA_09	91123A	11/23/	09 04:4
Lead 210	2.06	pCi/g-dry		54	70	130	48	30	SR
<ul> <li>Spike response is outside of the acceptant</li> </ul>	ce range for this ar	nalysis. Since the MB,	LCS, and	MS are a	ceptable the t	batch is approved.			
l Sample ID: MB-R127621	Method Blani	<			Run: BEC	KMAN 6100TA_09	91123A	11/23/	09 04:4
Lead 210	-3	pCi/L							U
Lead 210 precision (±)	3	pCi/L							
Lead 210 MDC	4	pCi/L							
Sample ID: LCS-R127621	Laboratory C	ontrol Sample			Run: BECI	KMAN 6100TA_0	91123A	11/23/	09 04:4
Lead 210	540	pCi/L		96	70	130			
Method: E912.0				****				Batc	h: 2415
Sample ID: C09100685-002AMS	Sample Matr	ix Spike			Run; EGG	-ORTEC_091028	D	10/31/	09 14:5
Polonium 210	1.37	pCi/g-dry		103	70	130			
Sample ID: C09100685-002AMSD	Sample Matr	ix Spike Duplicate			Run: EGG	-ORTEC_091028	D	10/31/	09 14:5
Polonium 210	1.03	pCi/g-dry		-3	70	130	29	45.6	S
- Sample response is much larger than spik meets acceptance criteria; this batch is app		re small variances in th	e sample	adversely	affected the re	ecovery The LCS an	d the RI	PD of the MS/MS	SD pair
Sample ID: LCS-24156	Laboratory C	ontrol Sample			Run: EGG	-ORTEC_091028	D	11/02/	09 09:0
Polonium 210	0.0790	pCi/g-dry		95	70	130			
Sample ID: MB-24156	Method Blank				Run: EGG	-ORTEC_091028	D	11/02/	09 09:0
Polonium 210		pCi/g-dry				•			U
Polonium 210 precision (±)	0.002	pCi/g-dry						•	
Polonium 210 MDC	0.003	pCi/g-dry							

#### Qualifiers:

- Analyte reporting limit.

MDC - Minimum detectable concentration

S - Spike recovery outside of advisory limits.

ND - Not detected at the reporting limit.

R \* RPD exceeds advisory limit.

U - Not detected at minimum detectable concentration



Client: UR Energy USA Inc

**Report Date: 12/16/09** 

Project: Lost Creek Project

Work Order: C09100685

Analyte	Result Units	RL	%REC Low Limit High Limit RPD RPDLimit	Qual
Method: SW6020			Bato	h: 24156
Sample ID: MB-24156 Uranium	Method Blank ND mg/kg-dry	3E-05	Run: ICPMS2-C_091027A 10/27/	09 17:58
Sample ID: LCS2-24156 Uranium	Laboratory Control Sample 0.0543 mg/kg-dry	0.015	Run: ICPMS2-C_091027A 10/27/ 109 85 115	/09 18:02
Sample ID: C09100685-004AMS Uranium	Sample Matrix Spike 0.625 mg/kg-dry	0.015	Run: ICPMS2-C_091027A 10/27/ 83 75 125	09 18:43
Sample ID: C09100685-004AMSD Uranium	Sample Matrix Spike Duplicate 0.621 mg/kg-dry	0.015	Run: ICPMS2-C_091027A 10/27/ 82 75 125 0,7 20	09 18:47

LABORA RIES
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## Chain of Custody and Anaptical Request Record

Page	of	
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Company Name:			Project Nan						7777	ri ha h	7093101	<u> </u>		Sam	ple Origin	EPAS	tate Compliance:
Ur-Energy USA Inc.			Lost Creek Project									State	<b>:</b>	Yes [	] No 🔯		
Report Mail Address: 5880 Enterpris Sulte 200 Саврет, WY 82				Contact Name: Phone/Fax: John Cash 307-265-2373 มู่น่ำกู cash @ ผ					~~ e	ney	Emai 5 y 4 J	i: 9,00m	Sampler: (Please Print) Butcher				
Invoice Address: Same			1	Invoice Contact & Phone: John Cash 265-2373										Purcl	hase Order:	Quote	/Bottle Order:
GSA	he following A2LA EDD/EDT(E Format: LEVEL IV NELAC	j: lectronic Data)	Number of Containers Sample Type: AWSVBO Arr Water Soils/Soilds Vegetation Broassay Other	uranium							TBO	SEE ATTACHED	Normal Turnaround (TAT)	R U S H	Contact ELI prio RUSH sample si for charges and scheduling – Se Instruction Page Comments:	ubmittal e	Shipped by:  Cooler ID(s):  Roceipt Tamp   COTIV  Con Ice:  Yes No  Custody Seal Y/N  Intact
SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	Natural	Ra-226	Th-230	Pb-210	Po-210									Signature Y N Match
<sup>1</sup> Meat	10/16/09		0	X	X	X	X	X					-				$\gg$
<sup>2</sup> Kidney	10/16/09		0	X	X	X	X	X									
<sup>3</sup> Liver	10/16/09		0	X	X	X	X	X									(E)
<sup>4</sup> Bone	10/16/09		0	X	X	X	X	X								_	Mæl
5																	<b>A</b>
6																	0
7																	AT
8							{					1					© W
8																	(A)
10			•														Y'09/10/28
Restriction Restriction Literature Restriction Literature Restriction Restriction Literature Restriction Literatur	Date/Til	/16/09	Signa Signa			-			Received	by (pri	nt):		7	Date/Time	:	Signa Signa Signa	fure:
Signed Sample Disposal: F	Return to Client:		Lab Dispos	al:	1	_		_   '	Receive	o by La	L /	12/1		Terror In Lie	14/15 14.3		IN V

# **Energy Laboratories Inc Workorder Receipt Checklist**



### **UR Energy USA Inc**

Login completed by: Edith McPike Date and Time Received: 10/16/2009 2:31 PM Reviewed by: Received by: em Reviewed Date: Carrier name: Hand Del Shipping container/cooler in good condition? Yes 🗸 No 🗍 Not Present Custody seals intact on shipping container/cooler? Yes 🗌 No 🗌 Not Present [✓] Custody seals intact on sample bottles? Not Present [✓] Yes 🗀 No 🗍 Chain of custody present? Yes 🗸 No 🗌 Chain of custody signed when relinquished and received? Yes 🗸 No 🖂 Chain of custody agrees with sample labels? Yes 🗸 No 🗌 Samples in proper container/bottle? Yes ✓ No 🗌 Sample containers intact? Yes 🗸 No 🗌 Sufficient sample volume for indicated test? Yes 🗸 No 🗌 All samples received within holding time? Yes 🔽 No 🗌 Container/Temp Blank temperature: -3°C Water - VOA vials have zero headspace? Yes 🖂 No 🗌 Not Applicable 🔽 Water - pH acceptable upon receipt? Yes 🗌 No 🗌

**Contact and Corrective Action Comments:** 

None



CLIENT:

**UR Energy USA Inc** 

Date: 16-Dec-09

Project:

Lost Creek Project

CASE NARRATIVE

Sample Delivery Group: C09100685

#### ORIGINAL SAMPLE SUBMITTAL(S)

All original sample submittals have been returned with the data package.

#### SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)

Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

#### **GROSS ALPHA ANALYSIS**

Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

#### RADON IN AIR ANALYSIS

The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

#### SOIL/SOLID SAMPLES

All samples reported on an as received basis unless otherwise indicated.

#### ATRAZINE, SIMAZINE AND PCB ANALYSIS

Data for PCBs, Atrazine and Simazine are reported from EPA 525.2. PCB data reported by ELI reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

#### SUBCONTRACTING ANALYSIS

Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

#### BRANCH LABORATORY LOCATIONS

eli-b - Energy Laboratories, Inc. - Billings, MT

eli-g - Energy Laboratories, Inc. - Gillette, WY

eli-h - Energy Laboratories, Inc. - Helena, MT

eli-r - Energy Laboratories, Inc. - Rapid City, SD

eli-t - Energy Laboratories, Inc. - College Station, TX

#### CERTIFICATIONS:

USEPA: WY00002, Radiochemical WY00937; FL-DOH NELAC; E87641, Radiochemical E871017; California; 02118CA; Oregon: WY200001; Utah: 3072350515; Virginia: 00057; Washington: C1903

#### ISO 17025 DISCLAIMER:

The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER, WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.

THIS IS THE FINAL PAGE OF THE LABORATORY ANALYTICAL REPORT

Attachment 2.9-9 Technical Memorandum: Radiological Air Particulate Sampling

#### TECHNICAL MEMORANDUM

TO:

**Ur-Energy Inc.** 

FROM:

**AATA International, Inc.** 

DATE:

January 16, 2009

**SUBJECT:** 

Radiological Air Particulate Sampling

#### **Table of Contents**

Introduction	APS-1
Sample Collection	APS-2
Analytical Results	

#### List of Figures

Figure APS-1 - Sampling Locations

Figure APS-2 - Photograph of Sampler HV-4

#### List of Tables

Table APS-1 – Summary of Analytical Results

#### **List of Appendices**

Appendix APS-1 - Laboratory Data Sheets

Appendix APS-2 - Energy Laboratories Explanation for Q2 Qualified Uranium Results

#### Introduction

Radiological air particulate sampling for the Lost Creek Project was initiated on November 30, 2007. Four quarters of continuous sampling was completed on December 2, 2008. Because the samplers were installed at the end of November 2007, Sampling Quarters 1, 2, 3, and 4 (Q1, Q2, Q3, and Q4) essentially correspond to winter, spring, summer, and fall.

Figure APS-1 shows the five sampling locations that were selected using criteria from NRC Regulatory Guide 4.14. Sampler HV-1 represented the closest residence, and was located about 15 miles northwest of the Lost Creek Project in Bairoil, Wyoming. The remaining sampling locations were within the Lost Creek Permit Area. Sampler HV-2 is located near the northern license area boundary, on the downwind eastern edge of the plant site enclosure. Sampler HV-3 is at the southwest corner of the License Area, upwind of all project activities, and represents background conditions. Samplers HV-4 and HV-5 represent the northern and eastern site boundaries, respectively.

#### **Sample Collection**

The air particulate samplers are digitally controlled low wattage F&J DF-40L-8 instruments, powered by solar panels with a gel battery backup, and housed in custom enclosures. **Figure APS-2** shows Sampler HV-4 with the enclosure door open, before the sampler was fenced to exclude cattle. Filter holders were set to a height of approximately five feet, and equipped with 47-mm fiberglass filters. The instruments were set for an actual (i.e. uncorrected for temperature and pressure) flow rate of 30 liters per minute (lpm).

Under optimal conditions, filters were changed on a weekly basis. However, during the winter quarter (Q1), the maximum period between filter changes ranged from 50 to 73 days, depending on the sampler location and whether blowing and drifting snow prevented safe access. During this long period, dust loading in the filters did not seriously impede sampling. The average flow rate for the five samplers during the long period was 28.6 lpm, which represents a reduction of about 2% relative to the mean flow rate for the shorter periods in Q1. At the end of the long period, a tracked vehicle was purchased that could provide safe and reliable on-site transportation despite the adverse conditions. After Q1, the time between filter changes was generally one week, and averaged less than ten days.

The flow rate on each sampler was calibrated and certified by the manufacturer prior to installation, and per manufacturer recommendation, the flow rates were checked in June 2008, after approximately seven months of operation. All the samplers were found to be operating within 4% of the reference instrument across the full scale, so the calibration certifications were updated.

#### **Analytical Results**

All filters from each instrument were composited on a quarterly basis and analyzed by Energy Laboratories, Inc. in Casper, Wyoming for the parameters listed in NRC Regulatory Guide 4.14. **Table APS-1** summarizes the analytical results from the air particulate sampling, and the original laboratory reports are included as **Appendix APS-1**. Field duplicate analysis was not possible due to the nature of air particulate sampling, however a set of field blank filters (labeled HV-B in the laboratory reports) were analyzed by Energy Laboratories along with both the Q3 and the Q4 filters.

As outlined below by parameter, all of the concentrations are low or non-detect. No consistent trends were noted by location.

Uranium. Concentrations of natural uranium were less than the 1.00E-16 microCuries per milliLiter ( $\mu$ Ci/mL) detection limit for all samples in Q1, Q2 and Q4. Natural uranium was present in low but detectable concentrations in four of the five samples from Q3, as well as in the field blank and the laboratory method blank. Energy Laboratories, Inc. believes that either the method blank or the entire batch was exposed to uranium

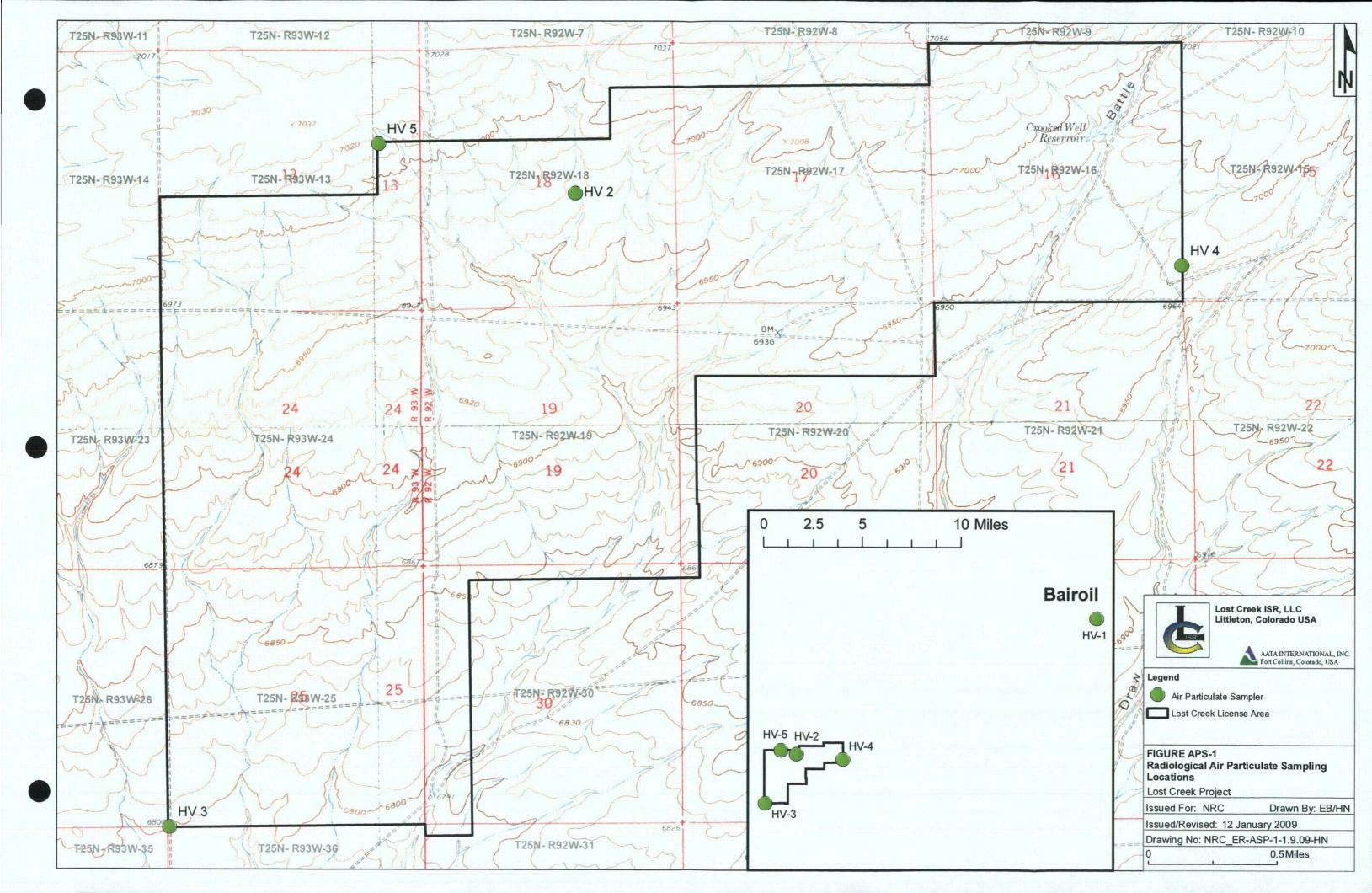
Radiological Air Particulate Sampling Lost Creek Project January 16, 2009 Page APS-3

contamination during the digestion process, but the analysis could not be re-run because all filter material was consumed during the original digestion process. A memorandum from Energy Laboratories, Inc. explaining the issue is included in **Appendix APS-2**. Despite the apparent contamination, the highest recorded level was  $5.61E-16~\mu\text{Ci/mL}$ , which is less than 1% of the  $9.00E-14~\mu\text{Ci/mL}$  effluent concentration limit from Appendix B of 10~CFR~20.

Thorium. Thorium-230 (Th-230) concentrations were also less than the 1.00E-16  $\mu$ Ci/mL detection limit for sixteen of the twenty samples. All samples in both Q2 and Q4 were below the detection limit. Two samples in Q1 and two samples Q3 had Th-230 concentrations above the detection limit. The maximum concentration was 2.59E-16, which is less than 1% of the 3.00E-14  $\mu$ Ci/mL effluent concentration limit from Appendix B of 10 CFR 20.

Radium. Concentrations of Radium-226 (Ra-226) were less than the 1.00E-16 uCi/mL detection limit for all samples in Q2, Q3, and Q4. Ra-226 was present in all the samples from Q1, in concentrations ranging from 2.34E-16 to 2.23E-15  $\mu$ Ci/mL. The highest observed concentration is less than 1% of the 9.00E-13 uCi/mL effluent concentration limit from Appendix B of 10 CFR 20. Although detectable concentrations were present only during Q1, the laboratory QA/QC process did not flag any of Q1 Ra-226 results with qualifiers.

Lead. Lead-210 (Pb-210) was present in measurable concentrations in all samples, ranging from 3.02E-15 to 2.38E-14  $\mu$ Ci/mL. The Pb-210 concentrations were lower in Q2 than any other period. The maximum concentration occurred in Q1, and represented less than 4% of the 6.00E-13  $\mu$ Ci/mL effluent concentration limit from Appendix B of 10 CFR 20. Pb-210 concentrations were not consistently high or low at any of the individual sampling locations.



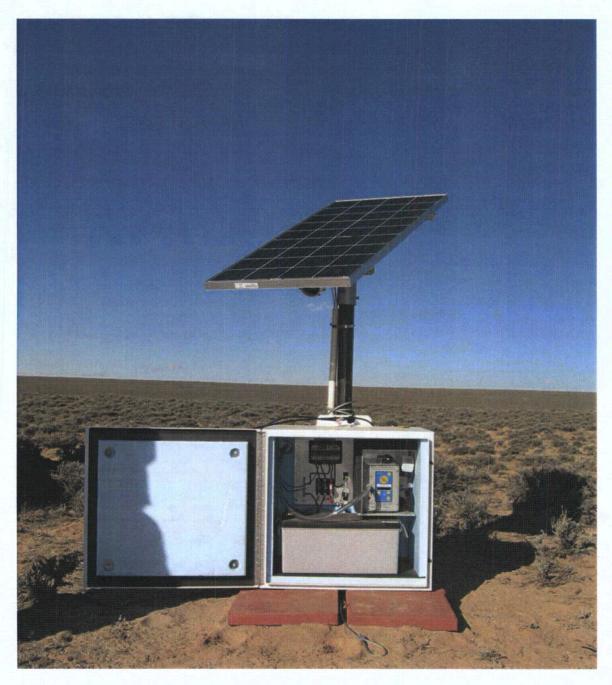


Figure APS-2 High Volume Air Particulate Sampler #HV-4 Lost Creek Project - Great Divide Basin, Wyoming November 29, 2007

Table APS-1 Summary of Analytical Results - Radiological Air Particulate Sampling

				Volume	U-nat	Th-230	Ra-226	Pb-210
Quarter	Location	Start Date	End Date	(mL)	(μCi/mL)	(μCi/mL)	(μCi/mL)	(μCi/mL)
	HV1	11/30/2007	3/1/2008	3.85E+09	<1.00E-16	<1.00E-16	2.86E-16	1.78E-14
	HV2	11/30/2007	3/1/2008	3.84E+09	<1.00E-16	<1.00E-16	2.34E-16	1.53E-14
Q1	HV3	11/30/2007	3/8/2008	4.08E+09	<1.00E-16	<1.00E-16	2.23E-15	1.31E-14
	HV4	11/30/2007	3/1/2008	3.70E+09	<1.00E-16	1.62E-16	3.51E-16	2.38E-14
	HV5	11/30/2007	3/1/2008	3.78E+09	<1.00E-16	2.38E-16	2.91E-16	1.81E-14
,	HV1	3/1/2008	6/5/2008	4.08E+09	<1.00E-16	<1.00E-16	<1.00E-16	6.81E-15
	HV2	3/1/2008	6/5/2008	3.70E+09	<1.00E-16	<1.00E-16	<1.00E-16	3.02E-15
Q2	HV3	3/8/2008	6/5/2008	4.11E+09	<1.00E-16	<1.00E-16	<1.00E-16	5.01E-15
	HV4	3/1/2008	6/5/2008	4.11E+09	<1.00E-16	<1.00E-16	<1.00E-16	9.24E-15
	HV5	3/1/2008	6/5/2008	4.11E+09	<1.00E-16	<1.00E-16	<1.00E-16	5.28E-15
	HV1	6/5/2008	8/29/2008	3.39E+09	5.61E-15*	1.95E-16	<1.00E-16	2.22E-14
	HV2	6/5/2008	8/29/2008	3.39E+09	1.48E-15*	<1.00E-16	<1.00E-16	1.62E-14
Q3	HV3	6/5/2008	8/29/2008	3.39E+09	1.18E-15*	2.59E-16	<1.00E-16	1.41E-14
	HV4	6/5/2008	8/29/2008	3.39E+09	<1.00E-16*	<1.00E-16	<1.00E-16	1.95E-14
	HV5	6/5/2008	8/29/2008	3.17E+09	2.21E-15*	<1.00E-16	<1.00E-16	1.51E-14
	HV1	8/29/2008	12/2/2008	4.07E+09	<1.00E-16	<1.00E-16	<1.00E-16	1.69E-14
	HV2	8/29/2008	12/2/2008	4.08E+09	<1.00E-16	<1.00E-16	<1.00E-16	1.62E-14
Q4	HV3	8/29/2008	12/2/2008	4.04E+09	<1.00E-16	<1.00E-16	<1.00E-16	1.91E-14
	HV4	8/29/2008	12/2/2008	4.08E+09	<1.00E-16	<1.00E-16	<1.00E-16	1.72E-14
	HV5	8/29/2008	12/2/2008	3.85E+09	<1.00E-16	<1.00E-16	<1.00E-16	2.31E-14

<sup>\*</sup> Method blank or entire sample batch apparently exposed to uranium contamination during the digestion process.

## Appendix APS-1

Laboratory Data Sheets Baseline Radiological Air Particulate Sampling Lost Creek In Situ Uranium Project



## **ANALYTICAL SUMMARY REPORT**

June 09, 2008

**AATA International Inc** 300 E Boardwalk Dr STE 4A Fort Collins, CO 80525

Workorder No.: C08040520

Quote ID: C2783 - UR Energy Lost Creek

Project Name:

Lost Creek

Energy Laboratories, Inc. received the following 5 samples from AATA International Inc on 4/10/2008 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C08040520-001	1 HV3Q1	03/08/08 00:00	04/10/08	Filter	Composite of two or more samples Metals, Total Digestion, Total Metals Lead 210 Radium 226 Thorium, Isotopic
C08040520-002	HV4Q1	03/01/08 00:00	04/10/08	Filter	Same As Above
C08040520-003	B HV5Q1	03/01/08 00:00	04/10/08	Filter	Same As Above
C08040520-004	HV2Q1	03/01/08 00:00	04/10/08	Filter	Same As Above
C08040520-005	5 HV1Q1	03/01/08 00:00	04/10/08	Filter	Same As Above

As appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these tests results, please call.



Client:

AATA International Inc

Project:

Lost Creek

Lab ID:

C08040520-001

Client Sample ID: HV3Q1

Report Date: 06/09/08 Collection Date: 03/08/08

DateReceived: 04/10/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS				_			
Uranium	ND	mg/filter		0.0003		SW6020	04/28/08 03:56 / ts
Uranium, Activity	ND	pCi/Filter		0.2		SW6020	04/28/08 03:56 / ts
RADIONUCLIDES - TOTAL							
Lead 210	53.5	pCi/Filter		1.0		E909.0M	04/17/08 10:30 / dm
Lead 210 precision (±)	6.7	pCi/Filter				E909.0M	04/17/08 10:30 / dm
Thorium 230	0.1	pCi/Filter	U	0.2		E907.0	04/17/08 15:35 / dmf
Thorium 230 precision (±)	0.4	pCi/Filter				E907.0	04/17/08 15:35 / dmf
Radium 226	9.1	pCi/Filter				E903.0	04/25/08 07:03 / trs
Radium 226 precision (±)	2.5	pCi/Filter				E903.0	04/25/08 07:03 / trs
Radium 226 MDC	2.5	pCi/Filter				E903.0	04/25/08 07:03 / trs



CLIENT: AATA International Inc.

REPORT DATE: June 9, 2008

**SAMPLE ID: HV3Q1** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. µCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08040520-001	nat U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
11/30/07-03/08/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	2.23E-15	6.13E-16	1.00E-16	9.00E-13	2.48E-01
4.08E+09	<sup>210</sup> Pb	1.31E-14	1.64E-15	2.00E-15	6.00E-13	2.19E+00

LLD's are from Reg. Guide 4.14



Client:

**AATA International Inc** 

Project:

Lost Creek

Lab ID:

C08040520-002

Client Sample ID: HV4Q1

Report Date: 06/09/08

Collection Date: 03/01/08

DateReceived: 04/10/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	ND	mg/filter		0.0003		SW6020	04/29/08 11:24 / sml
Uranium, Activity	ND	pCi/Filter		0.2		SW6020	04/29/08 11:24 / sml
RADIONUCLIDES - TOTAL							
Lead 210	88.0	pCi/Filter		1.0		E909.0M	04/18/08 07:05 / dm
Lead 210 precision (±)	7.7	pCi/Filter				E909.0M	04/18/08 07:05 / dm
Thorium 230	0.6	pCi/Filter		0.2		E907.0	04/17/08 14:30 / dmf
Thorium 230 precision (±)	1.0	pCi/Filter				E907.0	04/17/08 14:30 / dmf
Radium 226	1.3	pCi/Filter				E903.0	05/12/08 15:13 / trs
Radium 226 precision (±)	0.6	pCi/Filter				E903.0	05/12/08 15:13 / trs
Radium 226 MDC	0.5	pCi/Filter				E903.0	05/12/08 15:13 / trs



CLIENT: AATA International Inc.

REPORT DATE: June 9, 2008

**SAMPLE ID: HV4Q1** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μĊi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08040520-002	nat U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
11/30/07-03/01/08	<sup>230</sup> Th	1.62E-16	2.70E-16	1.00E-16	3.00E-14	5.40E-01
Air Volume in mLs	<sup>226</sup> Ra	3.51E-16	1.62E-16	1.00E-16	9.00E-13	3.90E-02
3.70E+09	<sup>210</sup> Pb	2.38E-14	2.08E-15	2.00E-15	6.00E-13	3.96E+00

LLD's are from Reg. Guide 4.14



Client:

**AATA International Inc** 

Project:

**Lost Creek** 

Lab ID:

C08040520-003

Client Sample ID: HV5Q1

Report Date: 06/09/08

Collection Date: 03/01/08

DateReceived: 04/10/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	ND	mg/filter		0.0003		SW6020	04/29/08 11:32 / sml
Uranium, Activity	ND	pCi/Filter		0.2		SW6020	04/29/08 11:32 / sml
RADIONUCLIDES - TOTAL							
Lead 210	68.4	pCi/Filter		1.0		E909.0M	04/18/08 07:05 / dm
Lead 210 precision (±)	6.8	pCi/Filter				E909.0M	04/18/08 07:05 / dm
Thorium 230	0.9	pCi/Filter		0.2		E907.0	04/17/08 14:30 / dmf
Thorium 230 precision (±)	0.6	pCi/Filter				E907.0	04/17/08 14:30 / dmf
Radium 226	1.1	pCi/Filter				E903.0	05/12/08 15:13 / trs
Radium 226 precision (±)	0.6	pCi/Filter	•			E903.0	05/12/08 15:13 / trs
Radium 226 MDC	0.5	pCi/Filter				E903.0	05/12/08 15:13 / trs



CLIENT: AATA International Inc.

REPORT DATE: June 9, 2008

**SAMPLE ID: HV5Q1** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration µCi/mL	Error Estimate µCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08040520-003	natU	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
11/30/07-03/01/08	<sup>230</sup> Th	2.38E-16	1.59E-16	1.00E-16	3.00E-14	7.95E-01
Air Volume in mLs	<sup>226</sup> Ra	2.91E-16	1.59E-16	1.00E-16	9.00E-13	3.24E-02
3.78E+09	<sup>210</sup> Pb	1.81E-14	1.80E-15	2.00E-15	6.00E-13	3.02E+00

LLD's are from Reg. Guide 4.14



Client:

AATA International Inc

Project:

**Lost Creek** 

Lab ID:

C08040520-004

Client Sample ID: HV2Q1

.....

Report Date: 06/09/08

Collection Date: 03/01/08

DateReceived: 04/10/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	ND	mg/filter		0.0003		SW6020	04/29/08 11:37 / sml
Uranium, Activity	ND	pCi/Filter		0.2		SW6020	04/29/08 11:37 / sml
RADIONUCLIDES - TOTAL							
Lead 210	58.6	pCi/Filter		1.0		E909.0M	04/18/08 07:05 / dm
Lead 210 precision (±)	6.4	pCi/Filter				E909.0M	04/18/08 07:05 / dm
Thorium 230	0.0	pCi/Filter	U	0.2		E907.0	04/17/08 14:30 / dmf
Thorium 230 precision (±)	0.4	pCi/Filter				E907.0	04/17/08 14:30 / dmf
Radium 226	0.9	pCi/Filter				E903.0	05/12/08 15:13 / trs
Radium 226 precision (±)	0.5	pCi/Filter				E903.0	05/12/08 15:13 / trs
Radium 226 MDC	0.4	pCi/Filter				E903.0	05/12/08 15:13 / trs



CLIENT: AATA International Inc.

REPORT DATE: June 9, 2008

**SAMPLE ID: HV2Q1** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration µCi/mL	Error Estimate μCi/mL	L.L.D. µCi/mL	Effluent Conc.* µCi/mL	% Effluent Concentration
C08040520-004	nat U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
11/29/07-03/01/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	2.34E-16	1.30E-16	1.00E-16	9.00E-13	2.61E-02
3.84E+09	<sup>210</sup> Pb	1.53E-14	1.67E-15	2.00E-15	6.00E-13	2.54E+00

LLD's are from Reg. Guide 4.14



Client:

**AATA International Inc** 

Project:

**Lost Creek** 

Lab ID:

C08040520-005

Client Sample ID: HV1Q1

0000400

Report Date: 06/09/08

Collection Date: 03/01/08

DateReceived: 04/10/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	ND	mg/filter		0.0003		SW6020	04/29/08 11:53 / sml
Uranium, Activity	ND	pCi/Filter		0.2		SW6020	04/29/08 11:53 / sml
RADIONUCLIDES - TOTAL							
Lead 210	68.4	pCi/Filter		1.0		E909.0M	04/18/08 07:05 / dm
Lead 210 precision (±)	6.8	pCi/Filter				E909.0M	04/18/08 07:05 / dm
Thorium 230	0.2	pCi/Filter	U	0.2		E907.0	04/17/08 14:30 / dmf
Thorium 230 precision (±)	0.5	pCi/Filter				E907.0	04/17/08 14:30 / dmf
Radium 226	1.1	pCi/Filter				E903.0	05/12/08 15:13 / trs
Radium 226 precision (±)	0.6	pCi/Filter				E903.0	05/12/08 15:13 / trs
Radium 226 MDC	0.4	pCi/Filter				E903.0	05/12/08 15:13 / trs



CLIENT: AATA International Inc.

REPORT DATE: June 9, 2008

**SAMPLE ID: HV1Q1** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate µCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08040520-005	<sup>nat</sup> U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
11/30/07-03/01/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	2.86E-16	1.56E-16	1.00E-16	9.00E-13	3.18E-02
3.85E+09	<sup>210</sup> Pb	1.78E-14	1.77E-15	2.00E-15	6.00E-13	2.96E+00

LLD's are from Reg. Guide 4.14





Client: AATA International Inc

Project: Lost Creek

**Report Date:** 06/09/08 **Work Order:** C08040520

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0	· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·			Bat	ch: 1828
Sample ID: C08040356-001AMS	Sample Matri	x Spike			Run: BER1	THOLD 770_08	1417Δ	DAPSA	/08 15:2 <u>9</u>
Radium 226	•	pCi/Filter		111	70	130	A111A	04/24	700 15.2
Sample ID: C08040356-001AMSD	Sample Matrix	x Spike Duplicate			Run: BERT	THOLD 770_080	)417A	04/24	/08 17:29
Radium 226	60.7	pCi/Filter		95	70	130	15	26.7	
Sample ID: MB-18283	Method Blank	i .	•		Run: BERT	THOLD 770_080	0417A	04/25	i/08 07:0
Radium 226	-3	pCi/L							U
Sample ID: LCS-18283	Laboratory Co	ontrol Sample			Run: BERT	HOLD 770_080	417A	04/25	/08 07:03
Radium 226	11	pCi/L		98	70	130			
Method: E903.0					· · · · · · · · · · · · · · · · · · ·			Batch:	R101053
Sample ID: C08040520-002AMS	Sample Matrix	x Spike			Run: BERT	HOLD 770_080	425A	05/12	/08 15:13
Radium 226	56.6	pCi/Filter		88	70	130			
Sample ID: C08040520-002AMSD	Sample Matrix	x Spike Duplicate			Run: BERT	HOLD 770_080	425A	05/12	/08 15:13
Padium 226	69.4	pCi/Filter		108	70	130	20	23.9	
Sample ID: MB-18279	Method Blank	:			Run: BERT	HOLD 770_080	)425A	05/12	/08 15:13
Radium 226	0.002	pCi/g-dry							
Sample ID: LCS-18279	Laboratory Co	ontrol Sample			Run: BERT	HOLD 770_080	425A	05/12	/08 16:53
Radium 226	0.013	pCi/g-dry		82	70	130			
Method: E907.0								Bat	ch: 1828
Sample ID: C08040302-005AMS	Sample Matrix	k Spike			Run: EGG-	ORTEC_08041	7C	04/17	/08 15:35
Thorium 230 - Spike response is outside of the acceptant matrix related. The batch is approved.		pCi/Filter alysis. Since the LCS	0.20 and the RI	68 O for the	70 MS MSD pair	130 are acceptable, the	ne low resp	oonse is consid	S dered to be
Sample ID: C08040302-005AMSD	Sample Matrix	x Spike Duplicate			Run: EGG-	ORTEC_08041	7C	04/17	/08 15:35
Thorium 230 - Spike response is outside of the acceptance	79.7	pCi/Filter	, 0.20	69	70	130	5.1	့30	S
matrix related. The batch is approved.				_ 10. 010	mon pan	COOP ( COOP ( COOP)		2230 10 0011010	JO 10 DC
Sample ID: LCS-R100216	Laboratory Co	·		4		ORTEC_08041	7C	04/17	/08 15:35
Thorium 230	49.0	pCi/Filter	0.20	102	70	130			
Sample ID: MB-R100216	Method Blank				Run: EGG-	ORTEC_08041	7C	04/17	/08 15:35
Thorium 230	0.1	pCi/Filter		,					



Client: AATA International Inc

**Report Date: 06/09/08** 

**Project:** Lost Creek

Work Order: C08040520

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Quai
Method: E907.0								Batch:	R100072
Sample ID: C08040520-004AMS	Sample Matri	x Spike			Run: EGG-	ORTEC_080417A		04/17	'/08 14:30
Thorium 230	42.7	pCi/Filter	0.20	92	70	130			
Sample ID: C08040520-004AMSD	Sample Matri	x Spike Duplicate			Run: EGG-	ORTEC_080417A		04/17	7/08 14:30
Thorium 230	41.8	pCi/Filter	0.20	90	70	130	2.0	30	
Sample ID: LCS-R100072	Laboratory Co	ontrol Sample			Run: EGG-	ORTEC_080417A		04/17	7/08 14:30
Thorium 230	42.4	pCi/Filter	0.20	90	70	130			
Sample ID: MB-R100072	Method Blank	•			Run: EGG-	ORTEC_080417A		04/17	7/08 14:30
Thorium 230	0.3	pCi/Filter							
Method: E909.0M								Bat	ch: 18283
Sample ID: C08040302-001AMS	Sample Matri	x Spike			Run: PACK	ARD 3100TR_080	0417A	04/17	/08 10:30
Lead 210	1550	pCi/Filter	1.0	57	70	130			S
- Spike response is outside of the acceptan	ce range for this ar	nalysis. Since the LCS	and the M	ISD are a	cceptable the b	atch is approved.			
Sample ID: C08040302-001AMSD	Sample Matri	x Spike Duplicate	•		Run: PACK	ARD 3100TR_080	0417A	04/17	708 10:30
									_
Lead 210	2300	pCi/Filter	1.0	120	70	130	39	30	R
Lead 210 Sample ID: MB-R100552	2300 Method Blank	•	1.0	120		130 (ARD 3100TR_080			
		•	1.0	120					
Sample ID: MB-R100552	Method Blank	•	1.0	120	Run: PACk		0417A	04/17	7/08 10:30
Sample ID: MB-R100552 Lead 210	Method Blank	pCi/L	1.0	120	Run: PACk	(ARD 3100TR_080	0417A	04/17	R //08 10:30 7/08 10:30
Sample ID: MB-R100552 Lead 210 Sample ID: LCS-R100552	Method Blank ND Laboratory Co	pCi/L			Run: PACk	(ARD 3100TR_080	0417A	04/17	7/08 10:30 7/08 10:30
Sample ID: MB-R100552 Lead 210 Sample ID: LCS-R100552 Lead 210	Method Blank ND Laboratory Co	pCi/L pCi/L ontrol Sample pCi/L			Run: PACK Run: PACK 70	(ARD 3100TR_080	0417A	04/17 04/17 Bat	7/08 10:30 7/08 10:30  ch: 18284
Sample ID: MB-R100552 Lead 210 Sample ID: LCS-R100552 Lead 210 Method: E909.0M	Method Blank ND Laboratory Co 130 Sample Matri	pCi/L pCi/L ontrol Sample pCi/L			Run: PACK Run: PACK 70	(ARD 3100TR_080 (ARD 3100TR_080 130	0417A	04/17 04/17 Bat	7/08 10:30 7/08 10:30  ch: 18284
Sample ID: MB-R100552 Lead 210 Sample ID: LCS-R100552 Lead 210 Method: E909.0M Sample ID: C08040520-005AMS Lead 210	Method Blank ND Laboratory Co 130 Sample Matri 1210	pCi/L ontrol Sample pCi/L	1.0	106	Run: PACK 70 Run: PACK 70	(ARD 3100TR_080 130 (ARD 3100TR_080	0417A 0417A 0418B	04/17 04/17 Bat 04/18	7/08 10:30 7/08 10:30  ch: 18284 8/08 07:05
Sample ID: MB-R100552 Lead 210 Sample ID: LCS-R100552 Lead 210 Method: E909.0M Sample ID: C08040520-005AMS	Method Blank ND Laboratory Co 130 Sample Matri 1210 Sample Matri	pCi/L ontrol Sample pCi/L  x Spike pCi/Filter	1.0	106	Run: PACK 70 Run: PACK 70	(ARD 3100TR_080 130 (ARD 3100TR_080 130 (ARD 3100TR_080	0417A 0417A 0418B	04/17 04/17 Bat 04/18	7/08 10:30
Sample ID: MB-R100552 Lead 210 Sample ID: LCS-R100552 Lead 210 Method: E909.0M Sample ID: C08040520-005AMS Lead 210 Sample ID: C08040520-005AMSD	Method Blank ND Laboratory Co 130 Sample Matri 1210 Sample Matri	pCi/L ontrol Sample pCi/L  x Spike pCi/Filter x Spike Duplicate pCi/Filter	1.0	106	Run: PACK 70 Run: PACK 70 Run: PACK 70	(ARD 3100TR_080 130 (ARD 3100TR_080 130 (ARD 3100TR_080	0417A 0417A 0418B 0418B	04/17 04/17 Bat 04/18 04/18	7/08 10:30 7/08 10:30  ch: 18284 8/08 07:05
Sample ID: MB-R100552 Lead 210  Sample ID: LCS-R100552 Lead 210  Method: E909.0M  Sample ID: C08040520-005AMS Lead 210  Sample ID: C08040520-005AMSD Lead 210	Method Blank ND Laboratory Co 130  Sample Matri 1210  Sample Matri 1070  Method Blank	pCi/L ontrol Sample pCi/L  x Spike pCi/Filter x Spike Duplicate pCi/Filter	1.0	106	Run: PACK 70 Run: PACK 70 Run: PACK 70	(ARD 3100TR_080 130 (ARD 3100TR_080 130 (ARD 3100TR_080 130	0417A 0417A 0418B 0418B	04/17 04/17 Bat 04/18 04/18	7/08 10:30 7/08 10:30 
Sample ID: MB-R100552 Lead 210  Sample ID: LCS-R100552 Lead 210  Method: E909.0M  Sample ID: C08040520-005AMS Lead 210  Sample ID: C08040520-005AMSD  Lead 210  Sample ID: MB-R100646	Method Blank ND Laboratory Co 130  Sample Matri 1210  Sample Matri 1070  Method Blank ND	pCi/L ontrol Sample pCi/L  x Spike pCi/Filter x Spike Duplicate pCi/Filter	1.0	106	Run: PACK 70 Run: PACK 70 Run: PACK 70 Run: PACK	(ARD 3100TR_080 130 (ARD 3100TR_080 130 (ARD 3100TR_080 130	0417A 0417A 0418B 12 0418B	04/17  Bat  04/18  04/18  04/18	7/08 10:30 7/08 10:30 

#### Qualifiers:

RL - Analyte reporting limit.

R - RPD exceeds advisory limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.





Client: AATA International Inc

**Report Date:** 06/09/08 **Work Order:** C08040520

Project: Lost Creek

**Analyte** Result Units RL %REC Low Limit High Limit **RPD RPDLimit** Qual Method: SW6020 Batch: 18283 Method Blank Sample ID: MB-18283 Run: ICPM\$2-C\_080427A 04/28/08 02:00 Uranium ND mg/filter 6E-05 Laboratory Control Sample Run: ICPMS2-C 080427A 04/28/08 02:04 Sample ID: LCS1-18283 75 125 Uranium 0.0509 mg/filter 0.00030 97 Run: ICPMS2-C\_080427A Sample Matrix Spike 04/28/08 04:00 Sample ID: C08040520-001AMS 0.0497 mg/filter 0.00030 99 75 Uranium 04/28/08 04:04 Sample ID: C08040520-001AMSD Sample Matrix Spike Duplicate Run: ICPMS2-C\_080427A mg/filter 0.00030 100 75 125 0.6 20 0.0500 Uranium Batch: 18284 SW6020 Method: Run: ICPMS2-C\_080428B 04/29/08 11:16 Method Blank Sample ID: MB-18284 6E-05 ND mg/filter Uranium Run: ICPMS2-C 080428B 04/29/08 11:20 **Laboratory Control Sample** Sample ID: LCS-18284 125 0.514 mg/filter 0.00060 98 75 anium Run: ICPMS2-C\_080428B 04/29/08 11:57 Sample Matrix Spike Sample ID: C08040520-005AMS 0.0472 mg/filter 0.00030 94 75 125 Uranium 04/29/08 12:01 Run: ICPM\$2-C\_080428B Sample Matrix Spike Duplicate Sample ID: C08040520-005AMSD 95 75 125 1.0 20 0.00030 0.0476 mg/filter Uranium



## Chain of Custody and Analytical Request Record PLEASE PRINT, provide as much information as possible. Refer to corresponding notes on reverse side.

Page \_\_\_\_\_ of \_\_/\_

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# **Energy Laboratories Inc Workorder Receipt Checklist**



## **AATA International Inc**

0000405/20

Login completed by: Kimberly Humiston		Date and Time F	Received: 4/10/2008 10:35 AM
Reviewed by:		Red	ceived by: ah
Reviewed Date:		Carr	ier name: FedEx
Shipping container/cooler in good condition?	Yes 🗹	No 🗌	Not Present
Custody seals intact on shipping container/cooler?	Yes 🗸	No 🗌	Not Present
Custody seals intact on sample bottles?	Yes 🗌	No 🔲	Not Present 🔽
Chain of custody present?	Yes 🗹	No 🗀	
Chain of custody signed when relinquished and received?	Yes 🗹	No 🗌	
Chain of custody agrees with sample labels?	Yes 🔽	No 🗌	
Samples in proper container/bottle?	Yes, 🔽	No 🔲	
Sample containers intact?	Yes 🗹	No 🔲	
Sufficient sample volume for indicated test?	Yes 🗸	No 🗌	
All samples received within holding time?	Yes 🗹	No 🔲	
Container/Temp Blank temperature in compliance?	Yes 🗹	No 🔲	N/A°C
Water - VOA vials have zero headspace?	Yes 🗌	No 🔲	No VOA vials submitted
Water - pH acceptable upon receipt?	Yes 🗌	No 🗀	Not Applicable
			•

**Contact and Corrective Action Comments:** 

None



Date: 09-Jun-08

CLIENT:

AATA International Inc.

**Project:** 

Lost Creek

Sample Delivery Group: C08040520

#### CASE NARRATIVE

#### THIS IS THE FINAL PAGE OF THE LABORATORY ANALYTICAL REPORT

#### ORIGINAL SAMPLE SUBMITTAL(S)

All original sample submittals have been returned with the data package.

#### SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)

Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

#### **GROSS ALPHA ANALYSIS**

Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

#### RADON IN AIR ANALYSIS

The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

#### SOIL/SOLID SAMPLES

All samples reported on an as received basis unless otherwise indicated.

#### ATRAZINE, SIMAZINE AND PCB ANALYSIS USING EPA 505

Data for Atrazine and Simazine are reported from EPA 525.2, not from EPA 505. Data reported by ELI using EPA method 505 reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

#### SUBCONTRACTING ANALYSIS

Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

#### **BRANCH LABORATORY LOCATIONS**

eli-b - Energy Laboratories, Inc. - Billings, MT

eli-g - Energy Laboratories, Inc. - Gillette, WY

eli-h - Energy Laboratories, Inc. - Helena, MT

eli-r - Energy Laboratories, Inc. - Rapid City, SD

eli-t - Energy Laboratories, Inc. - College Station, TX

#### **CERTFICATIONS:**

USEPA: WY00002: FL-DOH NELAC: E87641: Arizona: AZ0699: California: 02118CA

Oregon: WY200001; Utah: 3072350515; Virginia: 00057; Washington: C1903

#### ISO 17025 DISCLAIMER:

The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER, WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.



## **ANALYTICAL SUMMARY REPORT**

ugust 08, 2008

AATA International Inc 300 E Boardwalk Dr STE 4A Fort Collins, CO 80525

Workorder No.: C08070118

Quote ID: C2783 • UR Energy Lost Creek

Project Name: URE-Project 301-809

Energy Laboratories, Inc. received the following 5 samples from AATA International Inc on 7/2/2008 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C08070118-001 HV-1		06/05/08 00:00	07/02/08	Filter	Composite of two or more samples Metals, Total Digestion, Total Metals Lead 210 Radium 226 Thorium, Isotopic
C08070118-00	02 HV-2	06/05/08 00:00	07/02/08	Filter	Same As Above
C08070118-00	03 HV-3	06/05/08 00:00	07/02/08	Filter	Same As Above
C08070118-00	04 HV-4	06/05/08 00:00	07/02/08	Filter	Same As Above
C08070118-00	05 HV-5	06/05/08 00:00	07/02/08	Filter	Same As Above

s appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these tests results, please call.

Report Approved By:

Stephanie Waldrep



Client:

**AATA International Inc** 

Project: Lab ID: URE-Project 301-809

Lab ID: C08070118-001 Client Sample ID: HV-1 Report Date: 08/08/08 Collection Date: 06/05/08

DateReceived: 07/02/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	ND	mg/filter	D	0.0006		SW6020	07/25/08 00:47 / ts
Uranium, Activity	ND	pCi/Filter	D	0.4		SW6020	07/25/08 00:47 / ts
RADIONUCLIDES - TOTAL							
Lead 210	27.8	pCi/Filter	U			E909.0M	07/17/08 09:30 / dm
Lead 210 precision (±)	24.0	pCi/Filter				E909.0M	07/17/08 09:30 / dm
Lead 210 MDC	39.4	pCi/Filter				E909.0M	07/17/08 09:30 / dm
Radium 226	0.1	pCi/Filter	υ			E903.0	07/23/08 17:55 / trs
Radium 226 precision (±)	0.9	pCi/Filter				E903.0	07/23/08 17:55 / trs
Radium 226 MDC	1.6	pCi/Fifter				E903.0	07/23/08 17:55 / trs
Thorium 230	0.0	pCi/Filter	U	0.2		E907.0	07/18/08 12:39 / dm
Thorium 230 precision (±)	1.1	pCi/Filter				E907.0	07/18/08 12:39 / dm

Report Definitions:

RL - Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

D - RL increased due to sample matrix interference.



CLIENT: AATA International Inc.

**REPORT DATE: August 8, 2008** 

**SAMPLE ID: HV-1** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. µCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08070118-001	<sup>nat</sup> U	< 1,00E-16	N/A	1.00E-16	9.00E-14	< 1,11E-01
3/1/08 - 6/5/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1,00E-16	N/A	1.00E-16	9.00E-13	< 1,11E-02
4.08E+09	<sup>210</sup> Pb	6.81E-15	5.88E-15	2.00E-15	6.00E-13	1.14E+00

LLD's are from Reg. Guide 4.14



Client:

**AATA International Inc** 

Project: Lab ID:

URE-Project 301-809

Client Sample ID: HV-2

C08070118-002

Report Date: 08/08/08

Collection Date: 06/05/08 DateReceived: 07/02/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS		.,					
Uranium	ND	mg/filter	D	0.0006		SW6020	07/25/08 00:51 / ts
Uranium, Activity	ND	pCi/Filter	D	0.4		SW6020	07/25/08 00:51 / ts
RADIONUCLIDES - TOTAL							
Lead 210	12.4	pCi/Filter	U			E909.0M	07/17/08 09:30 / dm
Lead 210 precision (±)	24.7	pCi/Filter				E909.0M	07/17/08 09:30 / dm
Lead 210 MDC	41.0	pCi/Filter				E909.0M	07/17/08 09:30 / dm
Radium 226	-0.7	pCi/Filter	U			E903.0	07/23/08 21:14 / trs
Radium 226 precision (±)	0.8	pCi/Filter				E903.0	07/23/08 21;14 / trs
Radium 226 MDC	1.8	pCi/Filter				E903.0	07/23/08 21;14 / trs
Thorium 230	-0.1	pCi/Filter	U	0.2		E907.0	07/21/08 15:31 / dmf
Thorium 230 precision (±)	1.0	pCi/Filter				E907.0	07/21/08 15:31 / dmf

Report **Definitions:**  RL - Analyte reporting limit. QCL - Quality control limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

MCL # Maximum contaminant level.

ND - Not detected at the reporting limit.

D - RL increased due to sample matrix interference.



CLIENT: AATA International Inc.

REPORT DATE: August 8, 2008

**SAMPLE ID: HV-2** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. µCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08070118-002	nat U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
3/1/08 ~ 6/5/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
4.11E+09	<sup>210</sup> Pb	3.02E-15	6.01E-15	2.00E-15	6.00E-13	5.03E-01

LLD's are from Reg. Guide 4.14



Client:

**AATA International Inc** 

Project:

URE-Project 301-809

Lab ID:

C08070118-003

Client Sample ID: HV-3

Report Date: 08/08/08

Collection Date: 06/05/08 DateReceived: 07/02/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	ND	mg/filter	D	0.0006		SW6020	07/25/08 00:55 / ts
Uranium, Activity	ND	pCi/Filter	D	0.4		SW6020	07/25/08 00:55 / ts
RADIONUCLIDES - TOTAL							
Lead 210	44.2	pCi/Filter				E909.0M	07/17/08 09:30 / dm
Lead 210 precision (±)	26.3	pCi/Filter				E909.0M	07/17/08 09:30 / dm
Lead 210 MDC	42.6	pCi/Filter				E909.0M	07/17/08 09:30 / dm
Radium 226	-1.2	pCi/Filter	U			E903.0	07/23/08 21:14 / trs
Radium 226 precision (±)	0.7	pCi/Filter				E903.0	07/23/08 21:14 / trs
Radium 226 MDC	17	pCi/Filter				E903.0	07/23/08 21:14 / trs
Thorium 230	-0.6	pCi/Filter	υ	0.2		E907.0	07/18/08 12:39 / dm
Thorium 230 precision (±)	0.8	pCi/Filter				E907.0	07/18/08 12:39 / dm

Report Definitions:

RL - Analyte reporting limit. QCL - Quality control limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit,

D - RL increased due to sample matrix interference.



CLIENT: AATA International Inc.

**REPORT DATE: August 8, 2008** 

**SAMPLE ID: HV-3** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08070118-003	<sup>nat</sup> U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
3/8/08 - 6/5/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
8.81E+09	<sup>210</sup> Pb	5.01E-15	2.98E-15	2.00E-15	6.00E-13	8.36E-01



Client:

**AATA International Inc** 

Project:

URE-Project 301-809

Lab ID:

C08070118-004

Client Sample ID: HV-4

Report Date: 08/08/08 Collection Date: 06/05/08

DateReceived: 07/02/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS		-					
Uranium	ND	mg/filter	D	0.0006		SW6020	07/25/08 00:59 / ts
Uranium, Activity	ND	pCi/Filter	D	0.4		SW6020	07/25/08 00:59 / ts
RADIONUCLIDES - TOTAL						_	
Lead 210	38.0	pCi/Filter	U .			E909.0M	07/17/08 09:30 / dm
Lead 210 precision (±)	24.7	pCi/Filter				E909.0M	07/17/08 09:30 / dm
Lead 210 MDC	. 40.1	pCi/Filter				E909.0M	07/17/08 09:30 / dm
Radium 226	-0.9	pCi/Filter	U	•		E903.0	07/23/08 21:14 / trs
Radium 226 precision (±)	0.7	pCi/Filter	•			E903.0	07/23/08 21:14 / trs
Radium 226 MDC	1.6	pCi/Filter			•	E903.0	07/23/08 21:14 / trs
Thorium 230	-0.1	pCi/Filter	U	0.2		E907.0	07/18/08 12:39 / dmf
Thorium 230 precision (±)	0.8	pCi/Filter				E907.0	07/18/08 12:39 / dmf

Report Definitions: RL - Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.

ND . Not detected at the reporting limit.

D + RL increased due to sample matrix interference.



CLIENT: AATA International Inc.

REPORT DATE: August 8, 2008

**SAMPLE ID: HV-4** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08070118-004	nat U	< 1,00E-16	N/A	1.00E-16	9.00E-14	< 1,11E-01
3/1/08 - 6/5/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1,00E-16	N/A	1.00E-16	9.00E-13	< 1,11E-02
4.11E+09	<sup>210</sup> Pb	9.24E-15	6.01E-15	2.00E-15	6.00E-13	1.54E+00



Client:

AATA International Inc

Project:

URE-Project 301-809

Lab ID:

C08070118-005

Client Sample ID: HV-5

Report Date: 08/08/08 Collection Date: 06/05/08

DateReceived: 07/02/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	ND	mg/filter	D	0.0006		SW6020	07/25/08 01:03 / ts
Uranium, Activity	ND	pCi/Filter	D	0.4		SW6020	07/25/08 01:03 / ts
RADIONUCLIDES - TOTAL							
Lead 210	21.7	pCi/Filter	U			E909.0M	07/17/08 09:30 / dm <sup>-</sup>
Lead 210 precision (±)	26.2	pCi/Filter				E909.0M	07/17/08 09:30 / dm
Lead 210 MDC	43.1	pCi/Filter				E909.0M	07/17/08 09:30 / dm
Radium 226	-1.1	pCi/Filter	U			E903.0	07/23/08 21:14 / trs
Radium 226 precision (±)	0.7	pCi/Filter				E903.0	07/23/08 21:14 / trs
Radium 226 MDC	1.6	pCi/Filter				E903.0	07/23/08 21:14 / trs
Thorium 230	-0.1	pCi/Filter	U	0.2		E907.0	07/18/08 12:39 / dmf
Thorium 230 precision (±)	0.9	pCi/Filter				E907.0	07/18/08 12:39 / dmf

Report Definitions:

RL - Analyte reporting limit.
QCL - Quality control limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

D - RL increased due to sample matrix interference.



CLIENT: AATA International Inc.

**REPORT DATE: August 8, 2008** 

**SAMPLE ID: HV-5** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. µCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08070118-005	nat U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
3/1/08 - 6/5/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
4.11E+09	<sup>210</sup> Pb	5.28E-15	6.37E-15	2.00E-15	6.00E-13	8.79E-01



## **QA/QC Summary Report**

Client: AATA International Inc. Project: URE-Project 301-809

Report Date: 08/08/08 Work Order: C08070118

Analyte	Result Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0			<u> </u>		······································		Bat	ch: 19031
Sample ID: C08070134-001EMS	Sample Matrix Spike			Run: BER1	HOLD 770_080	0717C	07/23	3/08 21:14
Radium 226	81 pCi/L		104	70	130			
Sample ID: C08070134-001EMSD	Sample Matrix Spike Duplicate			Run: BERT	HOLD 770_080	0717C	07/23	/08 21:14
Radium 226	79 pCi/L		102	70	130	2.3	24.5	
Sample ID: MB-19031	Method Blank			Run: BERT	HOLD 770_080	717C	07/23	/08 22:55
Radium 226	-0.6 pCi/L							U
Sample ID: LCS-19031	Laboratory Control Sample				HOLD 770_080	717C	07/23	/08 22:55
Radium 226	15 pCi/L		97	70	130			
Method: E907.0				,			Bate	ch: 19031
Sample ID: C08070118-001AMS	Sample Matrix Spike			Run: EGG-	ORTEC_08071	4B	07/21	/08 15:28
Thorium 230	103 pCi/Filter	0.20	112	70	130			
Sample ID: C08070118-001AMSD	Sample Matrix Spike Duplicate				ORTEC_08071	4B	07/21	/08 15:30
Thorium 230	90.4 pCi/Filter	0.20	99	70	130	13	30	
Sample ID: LCS-19031	Laboratory Control Sample	,		Run: EGG-	ORTEC_08071	4B	07/21	/08 15:33
Thorium 230	52 pCi/L	0.20	104	70	130			
Sample ID: MB-19031	Method Blank			Run: EGG-	ORTEC_08071	4B	07/18	/08 12:39
Thorium 230	0.3 pCi/L					_		U
Method: E909.0M							Batch:	R105519
Sample ID: MB-R105519	Method Blank			Run: PACK	ARD 3100TR_0	080717A	07/17	/08 09:30
Lead 210	-4 pCi/L							U
Sample ID: LCS-R105519	Laboratory Control Sample			Run: PACK	ARD 3100TR_0	080717A	07/17	/08 09:30
Lead 210	98 pCi/L		86	70	130			
Sample ID: C08070206-002AMS	Sample Matrix Spike			Run: PACK	ARD 3100TR_0	080717A	07/17	/08 09:30
Lead 210	1020 pCi/Filter		81	70	130			
Sample ID: C08070206-002AMSD	Sample Matrix Spike Duplicate			Run: PACK	ARD 3100TR_0	080717A	07/17	/08 09:30
Lead 210	1350 pCi/Filter		110	70	130	28	30	



# **QA/QC Summary Report**

Client: AATA International Inc

Report Date: 08/08/08

Project: URE-Project 301-809

Work Order: C08070118

Analyte		Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	SW6020								Bate	ch: 19031
Sample ID: Uranium	MB-19031	Method Blank 4E-05	mg/filter	2E-05		Run: ICPM	IS2-C_080721A		07/21	/08 12:37
Sample ID: Uranium	LCS1-19031	Laboratory Co 0.0528	ontrol Sample mg/filter	0.00030	100	Run: ICPM 80	IS2-C_080721A 120		07/21	/08 12:43
Sample ID: Uranium	C08070118-005AMS	Sample Matrix 0.468	c Spike mg/filter	0.00057	94	Run: ICPM 75	IS2-C_080724A 125		07/25	5/08 01:08
Sample ID: Uranium	C08070118-005AMSD	Sample Matrix 0.493	Spike Duplic	ate 0.00057	99	Run: ICPM 75	IS2-C_080724A 125	5.3	07/25 20	5/08 01:12



Date: 08-Aug-08

**CLIENT:** 

AATA International Inc

Project:

URE-Project 301-809

Sample Delivery Group: C08070118

## **CASE NARRATIVE**

#### THIS IS THE FINAL PAGE OF THE LABORATORY ANALYTICAL REPORT

#### ORIGINAL SAMPLE SUBMITTAL(S)

All original sample submittals have been returned with the data package.

#### SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)

Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

#### **GROSS ALPHA ANALYSIS**

Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

#### RADON IN AIR ANALYSIS

The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

#### SOIL/SOLID SAMPLES

All samples reported on an as received basis unless otherwise indicated.

## ATRAZINE, SIMAZINE AND PCB ANALYSIS USING EPA 505

Data for Atrazine and Simazine are reported from EPA 525.2, not from EPA 505. Data reported by ELI using EPA method 505 reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

#### SUBCONTRACTING ANALYSIS

Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

#### **BRANCH LABORATORY LOCATIONS**

eli-b - Energy Laboratories, Inc. - Billings, MT

eli-g - Energy Laboratories, Inc. - Gillette, WY

eli-h - Energy Laboratories, Inc. - Helena, MT

eli-r - Energy Laboratories, Inc. - Rapid City, SD

eli-t - Energy Laboratories, Inc. - College Station, TX

#### **CERTFICATIONS:**

USEPA: WY00002; FL-DOH NELAC: E87641; Arizona: AZ0699; California: 02118CA

Oregon: WY200001; Utah: 3072350515; Virginia: 00057; Washington: C1903

### ISO 17025 DISCLAIMER:

The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER, WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.



## **ANALYTICAL SUMMARY REPORT**

ecember 05, 2008

AATA International Inc 300 E Boardwalk Dr STE 4A Fort Collins, CO 80525

Workorder No.: C08110642

Quote ID: C2783 - UR Energy Lost Creek

Project Name: UR Energy 301-809

Energy Laboratories, Inc. received the following 6 samples for AATA International Inc on 11/18/2008 for analysis.

Sample ID	Client Sample ID	<b>Collect Date</b>	Receive Date	Matrix	Test
C08110642-00	01 HV-1	08/29/08 00:00	11/18/08	Filter	Composite of two or more samples Metals, Total Digestion, Total Metals Lead 210 Radium 226 Thorium, Isotopic
C08110642-00	)2 HV-2	08/29/08 00:00	11/18/08	Filter	Same As Above
C08110642-00	3 HV-3	08/29/08 00:00	11/18/08	Filter	Same As Above
C08110642-00	)4 HV-4	08/29/08 00:00	11/18/08	Filter	Same As Above
C08110642-00	)5 HV-5	08/29/08 00:00	11/18/08	Filter	Same As Above
C08110642-00	06 HV-B	08/29/08 00:00	11/18/08	Filter	Same As Above

As appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these tests results, please call,

STEVE CARLSTON



Client:

**AATA International Inc** 

Project: Lab ID: UR Energy 301-809 C08110642-001

Client Sample ID: HV-1

Report Date: 12/05/08

Collection Date: 08/29/08 DateReceived: 11/18/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/	Method	Analysis Date / By
TRACE METALS							
Uranium	0.0028	mg/filter	В	0.0003		SW6020	11/21/08 15:55 / ts
Uranium, Activity	1.9	pCi/Filter		0.2		SW6020	11/21/08 15:55 / ts
RADIONUCLIDES - TOTAL							
Lead 210	75	pCi/Filter				E909.0M	11/24/08 10:30 / dm
Lead 210 precision (±)	25	pCi/Filter				E909.0M	11/24/08 10:30 / dm
Lead 210 MDC	. 39	pCi/Filter				E909.0M	11/24/08 10:30 / dm
Radium 226	-0.1	pCi/Filter	υ			E903.0	11/26/08 15:33 / trs
Radium 226 precision (±)	0.9	pCi/Filter				E903.0	11/26/08 15:33 / trs
Radium 226 MDC	1.6	pCi/Filter				E903.0	11/26/08 15:33 / trs
Thorium 230	0.66	pCi/Filter		0.20		E907.0	11/25/08 14:33 / dmf
Thorium 230 precision (±)	1	pCi/Filter				E907.0	11/25/08 14:33 / dmf

Report Definitions:

RL - Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

B . The analyte was detected in the method blank.



CLIENT: AATA International Inc.

**REPORT DATE: December 5, 2008** 

**SAMPLE ID: HV-1** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08110642-001	nat U	5.61E-16	N/A	1.00E-16	9.00E-14	6.24E-01
6/5/08 + 8/29/08	<sup>230</sup> Th	1.95E-16	2.95E-16	1.00E-16	3.00E-14	6.50E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1.00E-16	N/A	1,00E-16	9.00E-13	< 1.11E-02
3.39E+09	<sup>210</sup> Pb	2.22E-14	7.38E-15	2.00E-15	6.00E-13	3.69E+00

LLD's are from Reg. Guide 4.14



Client:

AATA International Inc

Project:

UR Energy 301-809

Lab ID:

C08110642-002

Client Sample ID: HV-2

Report Date: 12/05/08 Collection Date: 08/29/08

DateReceived: 11/18/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	8000.0	mg/filter	• в	0.0003		SW6020	11/21/08 16:01 / ts
Uranium, Activity	0.5	pCi/Filter		0.2		SW6020	11/21/08 16:01 / ts
RADIONUCLIDES - TOTAL							
Lead 210	55	pCi/Filter				E909.0M	11/20/08 11:05 / dm
Lead 210 precision (±)	25	pCi/Filter				E909.0M	11/20/08 11:05 / dm
Lead 210 MDC	41	pCi/Filter				E909.0M	11/20/08 11:05 / dm
Radium 226	-1	pCi/Filter	U			E903.0	11/26/08 15:33 / trs
Radium 226 precision (±)	0.6	pCi/Filter				E903.0	11/26/08 15:33 / trs
Radium 226 MDC	1.6	pCi/Filter	•			E903.0	11/26/08 15:33 / trs
Thorium 230	-1.0	pCi/Filter	υ	0.20		E907.0	11/25/08 14:33 / dmf
Thorium 230 precision (±)	0.7	pCi/Filter				E907.0	11/25/08 14:33 / dmf

Report Definitions:

RL - Analyte reporting limit, QCL - Quality control limit,

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

B - The analyte was detected in the method blank.



CLIENT: AATA International Inc.

REPORT DATE: December 5, 2008

**SAMPLE ID: HV-2** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08110642-002	nat U	1.48E-16	N/A	1.00E-16	9.00E-14	1.64E-01
6/5/08 + 8/29/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
3.39E+09	<sup>210</sup> Pb	1.62E-14	7.38E-15	2.00E-15	6.00E-13	2.70E+00



Client:

**AATA International Inc** 

Project:

UR Energy 301-809

Lab ID:

C08110642-003

Client Sample ID: HV-3

Report Date: 12/05/08 Collection Date: 08/29/08

DateReceived: 11/18/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS	•						
Uranium	0.0006	mg/filter	В	0.0003		SW6020	11/21/08 16:08 / ts
Uranium, Activity	0.4	pCi/Filtér		0.2		SW6020	11/21/08 16:08 / ts
RADIONUCLIDES - TOTAL		•					
Lead 210	48	pCi/Filter				E909.0M	11/20/08 11:05 / dm
Lead 210 precision (±)	25	pCi/Filter				E909.0M	11/20/08 11:05 / dm
Lead 210 MDC	41	pCi/Filter				E909.0M	11/20/08 11:05 / dm
Radium 226	-1	pCi/Filter	υ			E903.0	11/26/08 15:33 / trs
Radium 226 precision (±)	0.7	pCi/Filter				E903.0	11/26/08 15:33 / trs
Radium 226 MDC	1.8	pCi/Filter				E903.0	11/26/08 15:33 / trs
Thorium 230	0.88	pCi/Filter		0.20		E907.0	11/25/08 14:33 / dmf
Thorium 230 precision (±)	1	pCi/Filter				E907.0	11/25/08 14:33 / dmf

Report Definitions:

RL - Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.

ND • Not detected at the reporting limit.

B - The analyte was detected in the method blank.



CLIENT: AATA International Inc.

REPORT DATE: December 5, 2008

**SAMPLE ID: HV-3** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08110642-003	<sup>nat</sup> U	1.18E-16	N/A	1.00E-16	9.00E-14	1.31E-01
6/5/08 + 8/29/08	<sup>230</sup> Th	2.59E-16	2.95E-16	1,00E-16	3.00E-14	8.64E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1,00E-16	N/A	1.00E-16	9.00E-13	< 1,11E-02
3.39E+09	<sup>210</sup> Pb	1.41E-14	7,37E-15	2.00E-15	6.00E-13	2.36E+00

LLD's are from Reg. Guide 4.14



Client:

AATA International Inc

Project:

UR Energy 301-809

Lab ID:

C08110642-004

Client Sample ID: HV-4

Report Date: 12/05/08

Collection Date: 08/29/08

DateReceived: 11/18/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	0.0005	mg/filter	В	0.0003		SW6020	11/21/08 16:14 / ts
Uranium, Activity	.0.3	pCi/Filter		0.2		SW6020	11/21/08 16:14 / ts
RADIONUCLIDES - TOTAL							
Lead 210	66	pCi/Filter				E909.0M	11/20/08 11:05 / dm
Lead 210 precision (±)	25	pCi/Filter				E909.0M	11/20/08 11:05 / dm
Lead 210 MDC	41	pCi/Filter				E909.0M	11/20/08 11:05 / dm
Radium 226	-0.4	pCi/Filter	U			E903.0	11/26/08 15:33 / trs
Radium 226 precision (±)	0.9	pCi/Filter				E903.0	11/26/08 15:33 / trs
Radium 226 MDC	1.6	pCi/Filter				E903.0	11/26/08 15:33 / trs
Thorium 230	0.27	pCi/Filter		0.20		E907.0	11/25/08 14:33 / dmf
Thorium 230 precision (±)	0.6	pCi/Filter				E907.0	11/25/08 14:33 / dmf

Report Definitions:

RL - Analyte reporting limit..

QCL - Quality control limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

B - The analyte was detected in the method blank.



CLIENT: AATA International Inc.

REPORT DATE: December 5, 2008

**SAMPLE ID: HV-4** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08110642-004	nat U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
6/5/08 - 8/29/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1.00E-16	N/A	1,00E-16	9.00E-13	< 1,11E-02
3.39E+09	<sup>210</sup> Pb	1.95E-14	7.38E-15	2.00E-15	6.00E-13	3.25E+00

LLD's are from Reg. Guide 4.14



Client:

**AATA International Inc** 

Project:

UR Energy 301-809

Lab ID:

C08110642-005

Client Sample ID: HV-5

Report Date: 12/05/08 Collection Date: 08/29/08

DateReceived: 11/18/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	0.0011	mg/filter	В	0.0003		SW6020	11/21/08 16:21 / ts
Uranium, Activity	0.7	pCi/Filter		0.2		SW6020	11/21/08 16:21 / ts
RADIONUCLIDES - TOTAL							
Lead 210	48	pCi/Filter				E909.0M	11/20/08 11:05 / dm
Lead 210 precision (±)	25	pCi/Filter				E909.0M	11/20/08 11:05 / dm
Lead 210 MDC	41	pCi/Filter				E909.0M	11/20/08 11:05 / dm
Radium 226	-0.2	pCi/Filter	υ			E903.0	11/26/08 15:33 / trs
Radium 226 precision (±)	0.9	pCi/Filter				E903.0	11/26/08 15:33 / trs
Radium 226 MDC	1.6	pCi/Filter				E903.0	11/26/08 15:33 / trs
Thorium 230	0.28	pCi/Filter		0.20		E907.0	11/25/08 14:33 / dmf
Thorium 230 precision (±)	0.9	pCi/Filter				E907.0	11/25/08 14:33 / dmf

Report Definitions:

RL - Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

U - Not detected at minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

B - The analyte was detected in the method blank.



CLIENT: AATA International Inc.

REPORT DATE: December 5, 2008

**SAMPLE ID: HV-5** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08110642-005	<sup>nat</sup> U	2.21E-16	N/A	1.00E-16	9.00E-14	2.45E-01
6/5/08 - 8/29/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
3.17E+09	<sup>210</sup> Pb	1,51E-14	7.88E-15	2.00E-15	6.00E-13	2.52E+00



Client:

AATA International Inc

Project:

UR Energy 301-809

Lab ID:

C08110642-006

Client Sample ID: HV-B

Report Date: 12/05/08 Collection Date: 08/29/08

DateReceived: 11/18/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	0.0013	mg/filter	В	0.0003		SW6020	11/21/08 18:03 / ts
Uranium, Activity	0.9	pCi/Filter		0.2		SW6020	11/21/08 18:03 / ts
RADIONUCLIDES - TOTAL							•
Lead 210	7.9	pCi/Filter	υ			E909.0M	11/20/08 11:05 / dm
Lead 210 precision (±)	24	pCi/Filter				E909.0M	11/20/08 11:05 / dm
Lead 210 MDC	41	pCi/Filter				E909.0M	11/20/08 11:05 / dm
Radium 226	-0.3	pCi/Filter	U			E903.0	11/26/08 15:33 / trs
Radium 226 precision (±)	0.9	pCi/Filter				E903.0	11/26/08 15:33 / trs
Radium 226 MDC	1.6	pCi/Filter				E903.0	11/26/08 15:33 / trs
Thorium 230	-0.6	pCi/Filter	υ	0.20		E907.0	11/25/08 14:33 / dmf
Thorium 230 precision (±)	0.9	pCi/Filter				E907.0	11/25/08 14:33 / dmf

ND - Not detected at the reporting limit.

B - The analyte was detected in the method blank.



CLIENT: AATA International Inc.

REPORT DATE: December 5, 2008

SAMPLE ID: HV-B

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08110642-006	nat U	2.73E-16	N/A	1.00E-16	9.00E-14	3.03E-01
6/5/08 - 8/29/08	<sup>230</sup> Th	< 1.00E-16	N/A	1,00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
3.30E+09	<sup>210</sup> Pb	2.39E-15	7.27E-15	2.00E-15	6.00E-13	3.99E-01



# QA/QC Summary Report

Client: AATA International Inc

Report Date: 12/05/08

Project: UR Energy 301-809

Work Order: C08110642

Analyte	Result Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0							Batch:	R111656
Sample ID: C08110642-003AMS Radium 226	Sample Matrix Spike 136 pCi/Filter		89	Run: BERT 70	THOLD 770-1 130	_081120A	. 11/26	6/08 15:33
Sample ID: C08110642-003AMSD Radium 226	Sample Matrix Spike Duplicate 155 pCi/Filter		99	Run: BERT	THOLD 770-1 130	_081120A 13	11/26 23.9	6/08 15:33
Sample ID: MB-20606 Radium 226	Method Blank -1.0 pCi/Filter			Run: BER1	THOLD 770-1	_081120A	11/26	i/08 15:33 U
Sample ID: LCS-20606 Radium 226	Laboratory Control Sample 14.5 pCi/Filter		98		THOLD 770-1 130	_081120A	11/26	6/08 17:09
Method: E907.0							Bat	ch: 20606
Sample ID: C08110642-001AMS Thorium 230	Sample Matrix Spike 52 pCi/Filter	0.20	108	Run: EGG- 70	-ORTEC_081 130	120A	11/25	/08 14:33
Sample ID: C08110642-001AMSD Thorium 230	Sample Matrix Spike Duplicate 47 pCi/Filter	0.20	93	Run: EGG- 70	-ORTEC_081 130	120A 11	11/25 53.5	6/08 14:33
Sample ID: LCS-20606 Thorium 230	Laboratory Control Sample 27 pCi/Filter	0.20	109	Run: EGG- 70	-ORTEC_081 130	120A	11/25	/08 14:33
Sample ID: MB-20606 Thorium 230	Method Blank 0.2 pCi/Filter			Run: EGG-	ORTEC_081	120A	11/25	/08 14:33 U
Method: E909.0M		<del>, , , , , , , , , , , , , , , , , , , </del>					Batch:	R111690
Sample ID: C08110642-006AMS Lead 210	Sample Matrix Spike 677 pCi/Filter		115	Run: PACK	(ARD 3100TF 130	R_081120B	11/20	/08 11:05
Sample ID: C08110642-006AMSD Lead 210	Sample Matrix Spike Duplicate 612 pCi/Filter		104	Run: PACH 70	(ARD 3100TF 130	R_081120B 10	11/20 30	/08 11:05
Sample ID: MB-R111690 Lead 210	Method Blank 20 pCi/Filter			Run: PACK	(ARD 3100TF	R_081120B	11/20	/08 11;05 U
Sample ID: LCS-R111690 Lead 210	Laboratory Control Sample 534 pCi/Filter		89	Run: PACK	(ARD 3100TF 130	R_081120B	11/20	/08 11:05



# **QA/QC Summary Report**

Client: AATA International Incoinct: UR Energy 301-809

Report Date: 12/05/08
Work Order: C08110642

Analyte		Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	E909.0M								Batch: I	R111857
Sample ID:	C08110331-002AMS	Sample Matri	x Spike			Run: PAC	KARD 3100TR_	_081124A	11/24/	08 10:30
Lead 210			pCi/g-dry		146	70	130			S
	onse is outside of the acceptance  f. The batch is approved.	e range for this ar	nalysis. Since the LC	S and the R	PD for the	MS MSD pair	are acceptable,	the respons	e is considered	to be
Sample ID:	C08110331-002AMSD	Sample Matri	x Spike Duplicate			Run: PACH	KARD 3100TR	_081124A	11/24/	08 10:30
Lead 210		130	pCi/g-dry		126	70	130	15	30	
Sample ID:	MB-R111857	Method Blank	(			Run: PACK	ARD 3100TR	_081124A	11/24/	08 10:30
Lead 210		-0.3	pCi/L							U
Sample ID:	LCS-R111857	Laboratory C	ontrol Sample			Run: PAC	KARD 3100TR	_081124A	11/24/	08 10:30
Lead 210		68	pCi/L		118	70	130			
Method:	SW6020								Batc	h: 20606
Sample ID:	MB-20606	Method Blani	•			Run: ICPM	S2-C_081121/	4	11/21/	08 15:14
Uranium		0.002	mg/filter	6E-05						
Sample ID:	LCS1-20606	Laboratory C	ontrol Sample			Run: ICPM	S2-C_081121/	٩ .	11/21/	08 15:21
Uranium		0.0981	mg/filter	0.00030	96	75	125			
ample ID:	C08110642-006AMS	Sample Matr	ix Spike			Run: ICPM	S2-C_081121/	Ą	11/21/	08 18:10
ranium		0.0498	mg/filter	0.00030	97	75	125			
Sample ID:	C08110642-006AMSD	Sample Matri	ix Spike Duplicate			Run: ICPM	IS2-C_081121/	Ą	11/21/	08 18:17
Uranium		0.0497	mg/filter	0.00030	97	75	125	0.3	20	
Sample ID:	C08110642-006AMS	Sample Matri	ix Spike			Run: ICPN	IS4-C_081122/	A	11/22/	08 07:05
Uranium		0.0524	mg/filter	0.00030	102	75	125			
Sample ID:	C08110642-006AMSD	Sample Matr	ix Spike Duplicate			Run: ICPM	IS4-C_081122/	4	11/22/	08 07:09
Uranium		0.0525	mg/filter	0.00030	103	75	125	0.3	20	



CLIENT:

**AATA International Inc** 

Date: 05-Dec-08

Project:

UR Energy 301-809

CASE NARRATIVE

Sample Delivery Group: C08110642

#### ORIGINAL SAMPLE SUBMITTAL(S)

All original sample submittals have been returned with the data package.

#### SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)

Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

#### **GROSS ALPHA ANALYSIS**

Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

#### RADON IN AIR ANALYSIS

The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

#### SOIL/SOLID SAMPLES

All samples reported on an as received basis unless otherwise indicated.

#### ATRAZINE, SIMAZINE AND PCB ANALYSIS USING EPA 505

Data for Atrazine and Simazine are reported from EPA 525.2, not from EPA 505. Data reported by ELI using EPA method 505 reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

#### SUBCONTRACTING ANALYSIS

Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

#### **BRANCH LABORATORY LOCATIONS**

eli-b - Energy Laboratories, Inc. - Billings, MT

eli-g - Energy Laboratories, Inc. - Gillette, WY

eli-h - Energy Laboratories, Inc. - Helena, MT

eli-r - Energy Laboratories, Inc. - Rapid City, SD

eli-t - Energy Laboratories, Inc. - College Station, TX

#### CERTFICATIONS:

USEPA: WY00002: FL-DOH NELAC: E87641: California: 02118CA

Oregon: WY200001; Utah: 3072350515; Virginia: 00057; Washington: C1903

#### ISO 17025 DISCLAIMER:

The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER, WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.

THIS IS THE FINAL PAGE OF THE LABORATORY ANALYTICAL REPORT



## ANALYTICAL SUMMARY REPORT

ecember 30, 2008

AATA International Inc 300 E Boardwalk Dr STE 4A Fort Collins, CO 80525

Workorder No.: C08120278

Quote ID: C2783 - UR Energy Lost Creek

Project Name:

**URE LC 301** 

Energy Laboratories, Inc. received the following 6 samples for AATA International Inc on 12/8/2008 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C08120278-00	01 HV-1	12/02/08 00:00	12/08/08	Filter	Composite of two or more samples Metals, Total Digestion, Total Metals Lead 210 Radium 226 Thorium, Isotopic
C08120278-00	02 HV-2	12/02/08 00:00	12/08/08	Filter	Same As Above
C08120278-00	03 HV-3	12/02/08 00:00	12/08/08	Filter	Same As Above
C08120278-00	04 HV-4	12/02/08 00:00	12/08/08	Filter	Same As Above
C08120278-00	05 HV-5	12/02/08 00:00	12/08/08	Filter	Same As Above
C08120278-00	06 HV-B	12/02/08 00:00	12/08/08	Filter	Same As Above

As appropriate, any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these tests results, please call.

Report Approved By:

RIFIE AMPOIDI



Client:

**AATA International Inc** 

Project:

**URE LC 301** 

Lab ID:

C08120278-001

Client Sample ID: HV-1

Report Date: 12/30/08

Collection Date: 12/02/08

DateReceived: 12/08/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS			,				
Uranium	ND	mg/filter		0.0003		SW6020	12/16/08 01:14 / sml
Uranium, Activity	ND	pCi/Filter	•	0.2		SW6020	12/16/08 01:14 / sml
RADIONUCLIDES - TOTAL							
Lead 210	69	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Lead 210 precision (±)	23	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Lead 210 MDC	37	pCi/Filter				E909.0M	12/18/08 09:00./ dm
Radium 226	-0.3	pCi/Fitter	U			E903.0	12/23/08 21:38 / trs
Radium 226 precision (±)	0.8	pCi/Filter				E903.0	12/23/08 21:38 / trs
Radium 226 MDC	1.4	pCi/Filter				E903.0	12/23/08 21:38 / trs
Thorium 230	-0.4	pCi/Filter	U	0.20		E907.0	12/12/08 15:00 / dmf
Thorium 230 precision (±)	0,19	pCi/Filter				E907.0	12/12/08 15:00 / dmf

Report Definitions: RL - Analyte reporting limit.

QCL . Quality control limit.

MDC #Minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



CLIENT: AATA International Inc.

REPORT DATE: December 30, 2008

SAMPLE ID: HV-1

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08120278-001	nat U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
8/29/08 - 12/2/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
4.07E+09	<sup>210</sup> Pb	1.69E-14	5.64E-15	2.00E-15	6.00E-13	2.82E+00



Client:

AATA International Inc.

Project:

**URE LC 301** 

Lab ID:

C08120278-002

Client Sample ID: HV-2

Report Date: 12/30/08

Collection Date: 12/02/08 DateReceived: 12/08/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	ND	mg/filter		0.0003		SW6020	12/16/08 01:18 / sml
Uranium, Activity	ND	pCi/Filter		0.2		SW6020	12/16/08 01;18 / sml
RADIONUCLIDES - TOTAL							•
Lead 210	66	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Lead 210 precision (±)	23	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Lead 210 MDC	37	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Radium 226	-0.8	pCi/Filter	U			E903.0	12/23/08 21:38 / trs
Radium 226 precision (±)	0.7	pCi/Filter				E903.0	12/23/08 21:38 / trs
Radium 226 MDC	1.4	pCi/Filter				E903.0	12/23/08 21:38 / trs
Thorium 230	-0.5	pCi/Filter	U	0.20		E907.0	12/12/08 15:00 / dmf
Thorium 230 precision (±)	0.19	pCi/Filter				E907.0	12/12/08 15:00 / dmf

Report Definitions:

RL - Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



**CLIENT: AATA International Inc.** 

REPORT DATE: December 30, 2008

**SAMPLE ID: HV-2** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate µCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08120278-002	nat U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
8/29/08 - 12/2/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
4.08E+09	<sup>210</sup> Pb	1.62E-14	5.64E-15	2.00E-15	6.00E-13	2.70E+00



Client:

**AATA International Inc** 

Project:

**URE LC 301** 

Lab ID:

C08120278-003

Client Sample ID: HV-3

Report Date: 12/30/08

Collection Date: 12/02/08

DateReceived: 12/08/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/	Method	Analysis Date / By
TRACE METALS							
Uranium	ND	mg/filter		0.0003		SW6020	12/16/08 01:22 / sml
Uranium, Activity	ND	pCi/Filter		0.2		SW6020	12/16/08 01:22 / sml
RADIONUCLIDES - TOTAL							
Lead 210	77	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Lead 210 precision (±)	23	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Lead 210 MDC	37	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Radium 226	-0.8	pCi/Filter	U			E903.0	12/23/08 21:38 / trs
Radium 226 precision (±)	0.6	pCi/Filter				E903.0	12/23/08 21:38 / trs
Radium 226 MDC	1.4	pCi/Filter				E903.0	12/23/08 21:38 / trs
Thorium 230	-1.4	pCi/Filter	U	0.20		E907.0	12/12/08 15:00 / dmf
Thorium 230 precision (±)	0.19	pCi/Filter				E907 0	12/12/08 15:00 / dmf

Report Definitions:

RL - Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



CLIENT: AATA International Inc.

REPORT DATE: December 30, 2008

**SAMPLE ID: HV-3** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08120278-003	nat U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1,11E-01
8/29/08 - 12/2/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
4.04E+09	<sup>210</sup> Pb	1.91E-14	5.69E-15	2.00E-15	6.00E-13	3.18E+00



Client:

**AATA International Inc** 

Project:

**URE LC 301** 

Lab ID:

C08120278-004

Client Sample ID: HV-4

Report Date: 12/30/08

Collection Date: 12/02/08

DateReceived: 12/08/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	0.0003	mg/filter		0.0003		SW6020	12/16/08 01:26 / sml
Uranium, Activity	0.2	pCi/Filter		0.2		SW6020	12/16/08 01:26 / sml
RADIONUCLIDES - TOTAL							
Lead 210	70	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Lead 210 precision (±)	23	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Lead 210 MDC	37	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Radium 226	-0.8	pCi/Filter	U			E903.0	12/23/08 21:38 / trs
Radium 226 precision (±)	0.7	pCi/Filter				E903.0	12/23/08 21:38 / trs
Radium 226 MDC	1.4	pCi/Filter				E903.0	12/23/08 21:38 / trs
Thorium 230	-0.8	pCi/Filter	U	0.20		E907.0	12/12/08 15:00 / dmf
Thorium 230 precision (±)	0.1	pCi/Filter				E907.0	12/12/08 15:00 / dmf

Report Definitions:

RL - Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



CLIENT: AATA International Inc.

REPORT DATE: December 30, 2008

**SAMPLE ID: HV-4** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.Đ. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08120278-004	nai U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
8/29/08 - 12/2/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
4.08E+09	<sup>210</sup> Pb	1.72E-14	5.64E-15	2.00E-15	6.00E-13	2.86E+00



Client:

**AATA International Inc** 

Project:

**URE LC 301** 

Lab ID:

C08120278-005

Client Sample ID: HV-5

Report Date: 12/30/08

Collection Date: 12/02/08 DateReceived: 12/08/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS	*						
Uranium	0.0003	mg/filter		0.0003		SW6020	12/16/08 01:46 / sml
Uranium, Activity	0.2	pCi/Filter		0.2		SW6020	12/16/08 01:46 / sml
RADIONUCLIDES - TOTAL							
Lead 210	89	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Lead 210 precision (±)	23	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Lead 210 MDC	37	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Radium 226	-0.7	pCi/Filter	U			E903.0	12/23/08 21:38 / trs
Radium 226 precision (±)	0.7	pCi/Filter				E903.0	12/23/08 21:38 / trs
Radium 226 MDC	1.4	pCi/Filter				E903.0	12/23/08 21:38 / trs
Thorium 230	-0.7	pCi/Filter	U	0.20		E907.0	12/12/08 15:00 / dmf
Thorium 230 precision (±)	0.19	pCi/Filter				E907.0	12/12/08 15:00 / dmf

Report Definitions:

RL - Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



CLIENT: AATA International Inc.

REPORT DATE: December 30, 2008

**SAMPLE ID: HV-5** 

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08120278-005	<sup>nat</sup> U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1.11E-01
8/29/08 - 12/2/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	< 1.00E-16	N/A	1.00E-16	9.00E-13	< 1.11E-02
3.85E+09	<sup>210</sup> Pb	2.31E-14	5,98E-15	2.00E-15	6.00E-13	3.86E+00



Client:

**AATA International Inc** 

Project:

URE LC 301

Lab ID:

C08120278-006

Client Sample ID: HV-B

Report Date: 12/30/08

Collection Date: 12/02/08

DateReceived: 12/08/08

Matrix: Filter

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
TRACE METALS							
Uranium	ND	mg/filter		0.0003		SW6020	12/16/08 01:50 / sml
Uranium, Activity	ND	pCi/Filter		0.2		SW6020	12/16/08 01:50 / sml
RADIONUCLIDES - TOTAL			Ĺ				
Lead 210	-1	pCi/Filter	U			E909.0M	12/18/08 09:00 / dm
Lead 210 precision (±)	22	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Lead 210 MDC	37	pCi/Filter				E909.0M	12/18/08 09:00 / dm
Radium 226	0.5	pCi/Filter	U			E903.0	12/23/08 21:38 / trs
Radium 226 precision (±)	0.9	pCi/Filter				E903.0	12/23/08 21:38 / trs
Radium 226 MDC	1.4	pCi/Filter				E903.0	12/23/08 21:38 / trs
Thorium 230	-0.9	pCi/Filter	U	0.20		E907.0	12/12/08 15:00 / dmf
Thorium 230 precision (±)	0.1	pCi/Filter				E907.0	12/12/08 15:00 / dmf

Report Definitions: RL « Analyte reporting limit.

QCL - Quality control limit.

MDC - Minimum detectable concentration

MCL - Maximum contaminant level.

ND - Not detected at the reporting limit.

U - Not detected at minimum detectable concentration



CLIENT: AATA International Inc.

REPORT DATE: December 30, 2008

SAMPLE ID: HV-B

Quarter/Date Sampled Air Volume	Radionuclide	Concentration μCi/mL	Error Estimate μCi/mL	L.L.D. μCi/mL	Effluent Conc.* μCi/mL	% Effluent Concentration
C08120278-006	nat U	< 1.00E-16	N/A	1.00E-16	9.00E-14	< 1,11E-01
8/29/08 - 12/2/08	<sup>230</sup> Th	< 1.00E-16	N/A	1.00E-16	3.00E-14	< 3.33E-01
Air Volume in mLs	<sup>226</sup> Ra	1.23E-16	2.22E-16	1.00E-16	9.00E-13	1.37E-02
4.05E+09	<sup>210</sup> Pb	< 2.00E-15	N/A .	2.00E-15	6.00E-13	< 3.33E-01



## **QA/QC Summary Report**

Client: AATA International Inc

nternational Inc Report Date: 12/30/08

Project: URE LC 301 Work Order: C08120278

Method: E903.0									Qual
				··				Batch	: R112780
Sample ID: C08120259-002FDUP	Sample Dupli	cate			Run: BERT	HOLD 770-2_08	1216A	12/23	3/08 21:38
Radium 226	-0.013	pCi/L			70	130	280	845	U
Sample ID: C08120278-006AMS	Sample Matri	x Spike			Run: BERT	HOLD 770-2_08	1216A	12/2	3/08 23:22
Radium 226	104	pCi/Filter		73	70	130			
Sample ID: LCS-20824	Laboratory Co	ontrol Sample			Run: BERT	HOLD 770-2_08	1216A	12/2	3/08 23:22
Radium 226	12	pCi/L		90	70	130			
Sample ID: MB-20824	Method Blank	•		_	Run: BER1	"HOLD 770-2_08	1216A	12/2:	3/08 23:22
Radium 226	-0.9	pCi/L							. U
Method: E907.0					_		В	atch: RA-TH	-ISO-0711
Sample ID: C08120222-001AMS	Sample Matri	x Spike		*	Run: EGG-	ORTEC_081212	Α	12/12	2/08 15:00
Thorium 230	61.9	pCi/Filter	0.20	124	70	130			
Sample ID: C08120222-001AMSD	Sample Matri	x Spike Duplicate		. •	Run: EGG-	ORTEC_081212	Α	12/12	2/08 15:00
Thorium 230	56.6	pCi/Filter	0.20	110	70	130	9	30	
Sample ID: LCS-20767	Laboratory Co	ontrol Sample			Run: EGG-	ORTEC_081212	Α	12/12	2/08 15:00
Thorium 230	23.6	pCi/Filter	0.20	107	70	130			
Sample ID: MB-20767	Method Blank				Run: EGG-	ORTEC_081212	Α	12/12	2/08 15:00
Thorium 230	0.10	pCi/Filter							U
Method: E909.0M								Batch	R112811
Sample ID: C08120278-001AMS	Sample Matri	x Spike			Run: PACK	(ARD 3100TR_0	81218B	12/18	3/08 09:00
Lead 210	1290	pCi/Filter		111	70	130			
Sample ID: C08120278-001AMSD	Sample Matri	x Spike Duplicate			Run: PACK	(ARD 3100TR_0	81218B	12/18	3/08 09:00
Lead 210	1050	pCi/Filter		89	70	130	21	30	
Sample ID: MB-R112811	Method Blank	· <b>(</b>			Run: PACK	(ARD 3100TR_0	81218B	12/18	3/08 09:00
Lead 210	-1	pCi/L			,				U
Sample ID: LCS-R112811	Laboratory Co	ontrol Sample			Run: PACK	(ARD 3100TR_0	81218B	12/18	3/08 09:00
Lead 210	110	pCi/L		98	. 70	130			

Qualifiers:

RL - Analyte reporting limit.

U - Not detected at minimum detectable concentration

ND . Not detected at the reporting limit.



# QA/QC Summary Report

Client: AATA International Inc

Project: URE LC 301

Report Date: 12/30/08

Work Order: C08120278

Analyte		Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	SW6020								Bat	ch: 20797
Sample ID: Uranium	MB-20797	Method Blank 7E-05	mg/L			Run: ICPM	S4-C_081215A		12/16	6/08 00:54
Sample ID: Uranium	LCS1-20797	Laboratory Co 0.0996	ntrol Sample mg/L	0.00030	99	Run: ICPM 75	S4-C_081215A 125		12/16	6/08 00:58
Sample ID: Uranium	C08120278-006AMS	Sample Matrix Spike 0.0539 mg/filter 0.00030			Run: ICPMS4-C_081215A 108 75 125			12/16/08 01:54		
Sample ID: Uranium	C08120278-006AMSD	Sample Matrix 0.0543	Spike Duplic mg/filter	cate 0.00030	108	Run: ICPM 75	S4-C_081215A 125	0.6	12/16 20	6/08 01:58



CLIENT: Project:

**AATA International Inc** 

**URE LC 301** 

Sample Delivery Group: C08120278

Date: 30-Dec-08

**CASE NARRATIVE** 

#### ORIGINAL SAMPLE SUBMITTAL(S)

All original sample submittals have been returned with the data package.

#### SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)

Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

#### **GROSS ALPHA ANALYSIS**

Method 900.0 for gross alpha and gross beta is intended as a drinking water method for low TDS waters. Data provided by this method for non potable waters should be viewed as inconsistent.

#### RADON IN AIR ANALYSIS

The desired exposure time is 48 hours (2 days). The time delay in returning the canister to the laboratory for processing should be as short as possible to avoid excessive decay. Maximum recommended delay between end of exposure to beginning of counting should not exceed 8 days.

#### SOIL/SOLID SAMPLES

All samples reported on an as received basis unless otherwise indicated.

#### ATRAZINE, SIMAZINE AND PCB ANALYSIS USING EPA 505

Data for Atrazine and Simazine are reported from EPA 525.2, not from EPA 505. Data reported by ELI using EPA method 505 reflects the results for seven individual Aroclors. When the results for all seven are ND (not detected), the sample meets EPA compliance criteria for PCB monitoring.

#### SUBCONTRACTING ANALYSIS

Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

### **BRANCH LABORATORY LOCATIONS**

eli-b - Energy Laboratories, Inc. - Billings, MT

eli-g - Energy Laboratories, Inc. - Gillette, WY

eli-h - Energy Laboratories, Inc. \* Helena, MT

eli-r - Energy Laboratories, Inc. - Rapid City, SD

eli-t - Energy Laboratories, Inc. - College Station, TX

### **CERTFICATIONS:**

USEPA: WY00002; FL-DOH NELAC: E87641; California: 02118CA

Oregon: WY200001; Utah: 3072350515; Virginia: 00057; Washington: C1903

#### ISO 17025 DISCLAIMER:

The results of this Analytical Report relate only to the items submitted for analysis.

ENERGY LABORATORIES, INC. - CASPER,WY certifies that certain method selections contained in this report meet requirements as set forth by the above accrediting authorities. Some results requested by the client may not be covered under these certifications. All analysis data to be submitted for regulatory enforcement should be certified in the sample state of origin. Please verify ELI's certification coverage by visiting www.energylab.com

ELI appreciates the opportunity to provide you with this analytical service. For additional information and services visit our web page www.energylab.com.

THIS IS THE FINAL PAGE OF THE LABORATORY ANALYTICAL REPORT

## **Appendix APS-2**

Energy Laboratories Explanation for Q2 Qualified Uranium Results Baseline Radiological Air Particulate Sampling Lost Creek In Situ Uranium Project



December 10, 2008

Duncan Eccleston
AATA International Inc.
300 E Boardwalk Dr Ste 4A
Fort Collins, CO 80525

Subject: Explanation of contaminated Uranium Method Blank (MB) on High Volume air filter samples. Work Order - C08110642.

Dear Mr. Eccleston:

The following is an explanation of Energy Laboratories, Inc. (ELI) "best guess" of what might have occurred with the analysis of uranium on the air filters.

On November 18, 2008, six air filters were received at ELI requesting the analysis of NRC Reg. Guide, 4.14 radionuclides: U-nat, Th230, Ra226, and Pb210. On 11/20/08, the filters were digested to a final volume of 0.95 liters using EPA Method 3050. After filtration, a subsample of the filtrate was split into 50 ml conical tubes and given to the Metals Department for the analysis of uranium by EPA SW846 Method 6020.

All six samples including the batch QC (MB and LCS) were analyzed for uranium on 11/21/08. Since uranium was detected in the MB at 0.002 mg/L, the entire sample batch was re-analyzed on 11/22/08. A detect of 0.002 mg/L was again detected in the MB and all six samples were identified with a "B" qualifier indicating the MB contained contamination. In situations where additional sample is available the batch would have been re-digested and reanalyzed, but unfortunetly, in the case of air filters, it is not possible to re-digest as the filter is consumed in the original digest.

Therefore, since the filters cannot be re-digested. ELI is of the opinion that either the uranium MB itself got contaminated or the entire batch could have been exposed to uranium contamination during the digestion process. The former conjecture is based on the fact that all of the batch QC samples were within acceptable limits and replication of the duplicate analysis was also within specifications and the latter is explained by an apparent higher than historical field blank value in sample 006 (HV-B).

I hope this is of some value to you and ELI apologizes for the inconvenience this has caused.

Please feel free to contact me if you have any questions.

Sincerely

Steve Dobos

Client Services Manager