



March 9, 2012

Mr. Terry Stilman
On-Scene Coordinator (OSC)
U.S. Environmental Protection Agency (EPA), Region 4
61 Forsyth Street, SW, 11th Floor
Atlanta, Georgia 30303

**Subject: Final Removal Assessment Letter Report
Solana Road Radiation Site
Ponte Vedra, St. Johns County, Florida
EPA Contract No. EP-W-05-054
TDD No. TTEMI-05-003-0130**

Dear Mr. Stilman:

The Tetra Tech EM Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) is submitting this final removal assessment letter report for activities conducted at the Solana Road Radiation site located in Ponte Vedra, St. Johns County, Florida. This report summarizes field activities conducted at the site from November 7 to 9, 2011. The purposes of this removal assessment were to further characterize and identify radiation detected on and in the vicinity of the property located at 7 Solana Road, prepare a Google Earth application presenting elevated radiation areas within the study area, and collect soil samples to determine radionuclide isotopes present and exposure rates. This report includes four Enclosures and one Attachment. Enclosure 1 includes figures illustrating the site location, radiation screening results, exposure rates on and in the vicinity of the property located at 7 Solana Road, and soil sampling locations. Enclosure 2 contains analytical data tables. Enclosure 3 includes field logbook notes. Enclosure 4 is a compact disc (CD) containing the Google Earth application that provides the radiation screening values detected within the study area. Attachment 1 includes the laboratory analytical data package for the soil samples.

SITE BACKGROUND

Ponte Vedra, originally named "Mineral City," was owned by National Lead Company (National Lead) from 1914 until the mid-1920s. National Lead operated an extensive mineral sand mine that covered much of the local area. National Lead built a nine-hole golf course, inn, and polo field for its executives. By 1928, the post-war mineral market and the demand for titanium declined and production at the mine ceased. Subsequently, National Lead transformed the mining community into a resort community. The city was renamed "Ponte Vedra" in 1938. Today, Ponte Vedra is one of the premier golf communities in the nation. National Lead is still operating today, producing Dutch Boy® brand paints.

In May 2011, the Florida Department of Transportation (FDOT) conducted a radiation survey in the area and discovered an anomaly at 7 Solano Road, Ponte Vedra, Florida. FDOT referred the site to the Florida Department of Health (FDOH), which confirmed the presence of elevated thorium²³² and uranium²³⁸ decay chain radionuclides by gamma spectrometry. As a result, FDOH and the Florida Department of Environmental Protection contacted the EPA Emergency Response and Removal Branch for assistance. In June 2011, the EPA ERRB and the Environmental Response Team (ERT) assessed the area. ERT confirmed the presence of elevated thorium²³² and uranium²³⁸ decay chain radionuclides in two distinct areas on the property, which extend onto the adjacent property. Peak concentrations were detected at 1,170 micro-Roentgens per hour (μR/hr) at ground level, and 925 μR/hr at waist level. The EPA ERRB

and ERT concluded that further characterization was needed in order to determine the extent of the observed elevated radiation levels.

Radiation contamination at the site could be the result of activities associated with mining rutile, ilmenite, and zircon for titanium and steel construction during the First World War. Florida mineral sands often contain the mineral monazite, which is a thorium-bearing mineral. There is enough monazite in the local sands to support at least one commercial mine, which operated about 15 miles away until the 1970s. Monazite could have been an unwanted by-product of the initial titanium mining in the second decade of the 1900's, and the tailings could have been used as fill when the area was turned over to developers.

EPA defined the study area as the residential neighborhood around 7 Solana Road. The 0.5 acre residential property is located south of Iris Cove, at the intersection of Solana Road and Rutile Drive, and is currently vacant and unused; the area surrounding the site is predominantly residential (see Figure 1 of Enclosure 1). Access to the property is not restricted by fencing.

ASSESSMENT ACTIVITIES

On November 8, 2011, Tetra Tech START met with EPA personnel representing the ERRB, ERT, and the Radiological Emergency Response Team (RERT) to assess the extent of elevated radiation levels at and in the vicinity of 7 Solana Road. RERT and ERT used RERT's Mobile Radiation Directional Scanning System (MRDSS) with a detector system consisting of four sodium iodide (NaI) scintillation detectors, each arranged in a different direction (forward, backward, left, right) allowing the device to determine the source direction. ERT provided an additional removable system, which also contained four NaI detectors. This unit was located outside the van, focused downward, and was unobstructed by the vehicle's outer body panels. Each "event" is counted by the MRDSS and is displayed in counts per second (cps).

It is important to note that cps can only be used as a screening mechanism to identify areas with elevated levels of radiation and cannot be converted into a radiation exposure or exposure rate without a site-specific calibration study. In order to derive exposure rates for elevated cps readings, investigators physically exited the vehicle and used a THERMO Eberline E600 (E-600) with a SPA6 probe to collect point readings.

Prior to entering the study area (see Figure 1 in Enclosure 1) both scintillation systems were allowed to equilibrate and obtain a background reading. The background radiation level was determined to be approximately 3,000 cps on both scintillation systems. Exposure rates were determined to be 6.0 $\mu\text{R/hr}$ and calculated to be approximately 38 milli-Roentgen-equivalent-man per year (mrem/yr), which is consistent with exposure rates in northern Florida. Previous investigations calculated an exposure rate based on 18 hours per day for 350 days per year when converting from $\mu\text{R/hr}$ to mrem/yr. Therefore, this method was also implemented for this investigation. The site-specific threshold for determining whether further characterization may be warranted on a property is 100 mrem/yr over the background level, or 138 mrem/year, which is an annual exposure rate. This equates to an hourly exposure rate of approximately 22 $\mu\text{R/hr}$. The formula for this calculation is presented below.

$$100 \frac{\text{mrem}}{\text{year}} \times \frac{1 \text{ day}}{18 \text{ hr}} \times \frac{1 \text{ year}}{350 \text{ days}} \times \frac{1,000 \mu\text{R}}{1 \text{ mrem}} = \frac{16 \mu\text{R}}{\text{hr}} + \frac{6 \mu\text{R}}{\text{hr}} = \frac{22 \mu\text{R}}{\text{hr}}$$

(background)

The MRDSS drove on all roads, in both directions, within the study area collecting data on either side of the road. Three areas with elevated radiation levels were identified (see Figures 2 and 3 of Enclosure 1).

- Ponte Vedra Inn and Club – Both systems identified elevated cps on the north end of the Inn and Club off of Pablo Road. The area was further investigated to determine exposure rates with an E-600, which utilized a SPA6 probe. Calculated exposure rates were determined to be within the background range of 38 mrem/yr, or approximately 6 μ R/hr, which is below the site-specific threshold of 138 mrem/yr, or 22 μ R/hr. A nearby concrete parking garage may have been the cause of the initial elevated cps detected by the MRDSS.
- Ponte Vedra Boulevard – Both systems identified elevated cps on the western side of Ponte Vedra Boulevard in the vicinity of 414 and 416 Ponte Vedra Boulevard. The area from 412 to 418 Ponte Vedra Boulevard was further investigated to determine exposure rates with an E-600, which utilized a SPA6 probe. Calculated exposure rates observed in this area were acceptable and consistent with background levels at 38 mrem/yr, or approximately 6 μ R/hr. A calculated peak exposure rate of 28.4 mrem/yr, or 4.5 μ R/hr, was observed with the E-600 at 414 Ponte Vedra Boulevard, which is below the site-specific threshold of 138 mrem/yr.
- 7 Solana Road – Both scintillation systems detected elevated cps on and in the vicinity of 7 Solana Road. The areas along Solana Road and Rutile Drive within the study area were investigated further to determine exposure rates with an E-600, which utilized a SPA6 probe. Exposure rates are further discussed below.
 - Solana Road – Exposure rates were collected starting from the intersection of Ponte Vedra Boulevard and continuing west down Solana Road for approximately 800 feet. Exposure rates were collected in 50-foot intervals with four exposure rates collected at each interval (one north of Solana Road, one on the north lane of Solana Road, one on the south lane of Solana Road, and one south of Solana Road). Calculated exposure rates observed with the E-600 ranged from 38 mrem/yr to 759.2 mrem/yr. Peak exposure rates were observed directly in front of 7 Solana Road (see Figure 4 of Enclosure 1). Calculated exposure rates at both 5 and 7 Solana Road are above the site-specific threshold of 138 mrem/yr.
 - Rutile Drive – Exposure rates were collected starting from the intersection of Solana Road and Rutile Drive and continuing south down Rutile Drive for approximately 550 feet. Exposure rates were collected in 50-foot intervals with four exposure rates collected at each interval (one west of Rutile Drive, one on the west lane of Rutile Drive, one on the east lane of Rutile Drive, and one east of Rutile Drive). Calculated exposure rates observed with the E-600 ranged from 38 mrem/yr to 293 mrem/yr. Peak exposure rates were observed at 500 and 501 Rutile Drive, which are across the street from 7 Solana Road (see Figure 4 of Enclosure 1). Calculated exposure rates at both 500 and 501 Rutile Drive are above the site-specific threshold of 138 mrem/yr.

Additionally, a nearby elementary school was screened. No elevated readings were observed with either system.

SURFACE AND SUBSURFACE SOIL SAMPLING

During the EPA June 2011 assessment, two hot spots were identified at the 7 Solana Road property. On November 9, 2011, RERT collected surface and subsurface soil samples from each hot spot, as well as a background location on the 7 Solana Road property (see Figure 5 in Enclosure 1). Two soil cores were collected from each location; one 3-inch diameter core from 0 to 10 inches below ground surface (bgs) and one 3-inch diameter core from 0 to 30 inches bgs. It should be noted that some sampling depths have multiple samples. This was due to subsurface voids and soil cores not retaining the complete sampling interval. RERT collected the samples and submitted them to the EPA National Air and Radiation Environmental Laboratory (NAREL) in Montgomery, Alabama. These samples were analyzed for gross alpha and beta, gamma emitting nuclides, and isotopic uranium and thorium by alpha spectrometry. A quality assurance/quality control review of the data was completed by NAREL. A copy of the NAREL analytical data package for the soil samples is provided in Attachment 1.

Prior to sample collection, an E-600, which utilized a SPA6 probe, was used to collect exposure rates. Additionally, a SAM 935 was used to determine radionuclide isotopes present. The table below summarizes calculated exposure rates, radionuclide isotopes present at each sampling location, and parent radionuclides as determined in the field with an E-600 and SAM 935.

Sampling Location	E-600 with SPA6 probe (at 1 meter above ground surface)	SAM 935 Results	Parent Radionuclide
Location 1	2,299.5 mrem/yr	Many energy lines; unable to determine source	Unknown
Location 2	667.8 mrem/yr	Lead ²¹² and Bismuth ²¹⁴	Thorium ²³² and Uranium ²³⁸ , respectively
Location 3 (Background)	37.8 mrem/yr	Potassium ⁴⁰	NA

Notes:

mrem/yr

milli-Roentgen equivalent man per year

NA

Not Applicable. Potassium⁴⁰ is a naturally-occurring parent radionuclide.

Gamma spectrometry analytical results indicate that several radionuclides are present on the property located at 7 Solana Road. The two leading risk radionuclides are radium²²⁶ and radium²²⁸. The EPA preliminary remediation goal (PRG) for radium²²⁶ is 0.0121 picocuries per gram (pCi/g) and 0.0292 pCi/g for radium²²⁸. It should be noted that Florida levels of radium concentrations typically range from 0.5 to 2.5 pCi/g. Results from the background surface and subsurface soil samples collected within the study boundary were averaged and used as the site-specific background comparison criteria, 0.93 pCi/g for radium²²⁶ and 0.6 pCi/g for radium²²⁸.

- Radium²²⁶ – Surface and subsurface soil sample results from locations 1 and 2 ranged from 85.3 to 281 pCi/g, which are above the site-specific background comparison criteria of 0.93 pCi/g. Peak concentrations were observed in the 0- to 10-inch samples.
- Radium²²⁸ – Surface and subsurface soil sample results from locations 1 and 2 ranged from 112 to 643 pCi/g, which are above the site-specific background comparison criteria of 0.6 pCi/g. Peak concentrations were observed in the 0- to 10-inch samples.

CONCLUSION

In May 2011, FDOT discovered elevated radiation levels at 7 Solano Road, Ponte Vedra, Florida. Subsequently, EPA and ERT were contacted and performed an assessment of the area in June 2011. Records indicate that National Lead operated in the Ponte Vedra area from 1914 until the mid-1920s. Elevated levels of radiation are thought to be the result of activities associated with mining of rutile, ilmenite, and zircon for titanium and steel construction. Uranium and thorium are found in monazite, which is often associated with mineral sands bearing rutile, ilmenite, and zircon. During mining operations, the equipment, materials, buildings, and surrounding work areas may have become concentrated with sand tailings that contained high levels of monazite. The sand tailings may have been used by developers as fill during construction of the neighborhoods that now surround the area.

The November 2011 assessment activities indicate that elevated levels of radiation exist on and in the vicinity of the property located at 7 Solana Road. Within the study area, background exposure rates were determined to be approximately 6.0 $\mu\text{R/hr}$ or 22 mrem/yr. Exposure rates at and in the vicinity of the 7 Solana Road property were observed to be as much as 34 times background levels in the right-of-way and more than 104 times background levels on interior sections of the property. Exposure levels, collected from the right-of-way from the properties listed in the table below, exceeded the site-specific threshold of 138 mrem/yr or 22 $\mu\text{R/hr}$, warranting further investigation of these properties:

Address	Calculated Exposure Rate (mrem/yr)	Hourly Exposure Rate ($\mu\text{R/hr}$)
7 Solana Road	759.2	120.5
5 Solana Road	601.7	95.5
500 Rutile Drive	180.2	28.6
501 Rutile Drive	293.0	46.5

Notes:

mrem/yr milli-Roentgen equivalent man per year
 $\mu\text{R/hr}$ micro-Roentgens per hour

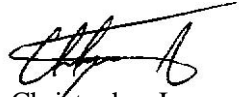
Surface and subsurface soil samples were collected from three locations on the 7 Solana Road property. Samples were submitted to the EPA NAREL in Montgomery, Alabama for radionuclide analysis. Analytical results reveal that the two leading risk radionuclides are radium²²⁶ and radium²²⁸ with peak concentrations reaching 281 pCi/g and 643 pCi/g, respectively, which are above the site-specific background comparison criteria of 0.93 pCi/g for radium²²⁶ and 0.6 pCi/g for radium²²⁸.

Tetra Tech START completed removal assessment activities on November 9, 2011 and demobilized from Ponte Vedra, Florida on the following day.

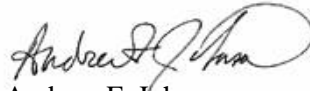
Mr. Stilman
March 9, 2012

If you have any questions or need additional copies of this final removal assessment letter report, please contact me at (678) 775-3081 or Sandra Harrigan at (678) 775-3088.

Sincerely,



Christopher Jones
START III Site Manager



Andrew F. Johnson
START III Program Manager

Attachments (4)

cc: Katrina Jones, EPA Project Officer
Angel Reed, START Document Control Coordinator

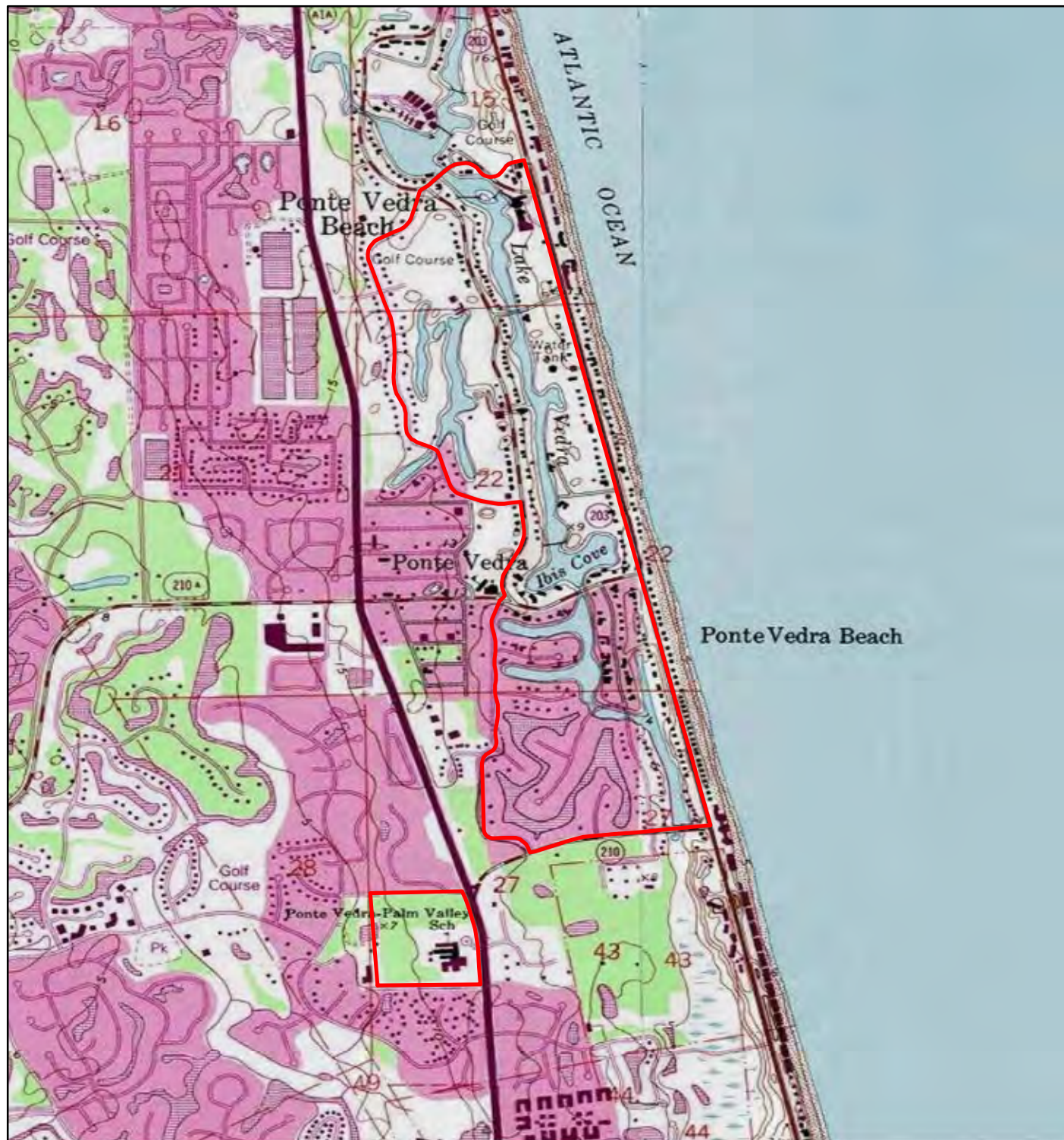
ENCLOSURE 1

FIGURES

(Five Pages)

FIGURE

- 1 SITE LOCATION MAP
- 2 RADIATION DETECTED USING INTERNAL DEVICE
- 3 RADIATION DETECTED USING EXTERNAL DEVICE
- 4 EXPOSURE RATES NEAR 7 SOLANA ROAD
- 5 SURFACE AND SUBSURFACE SAMPLING LOCATIONS



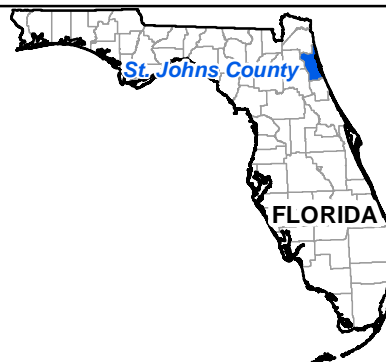
Legend

Approximate Site Boundary



0 1,000 2,000
Feet

Map Source:
USGS 7.5 Minute Topographic Quadrangle Maps:
Palm Valley, FL 1992 and Mickler Landing, FL 1992.



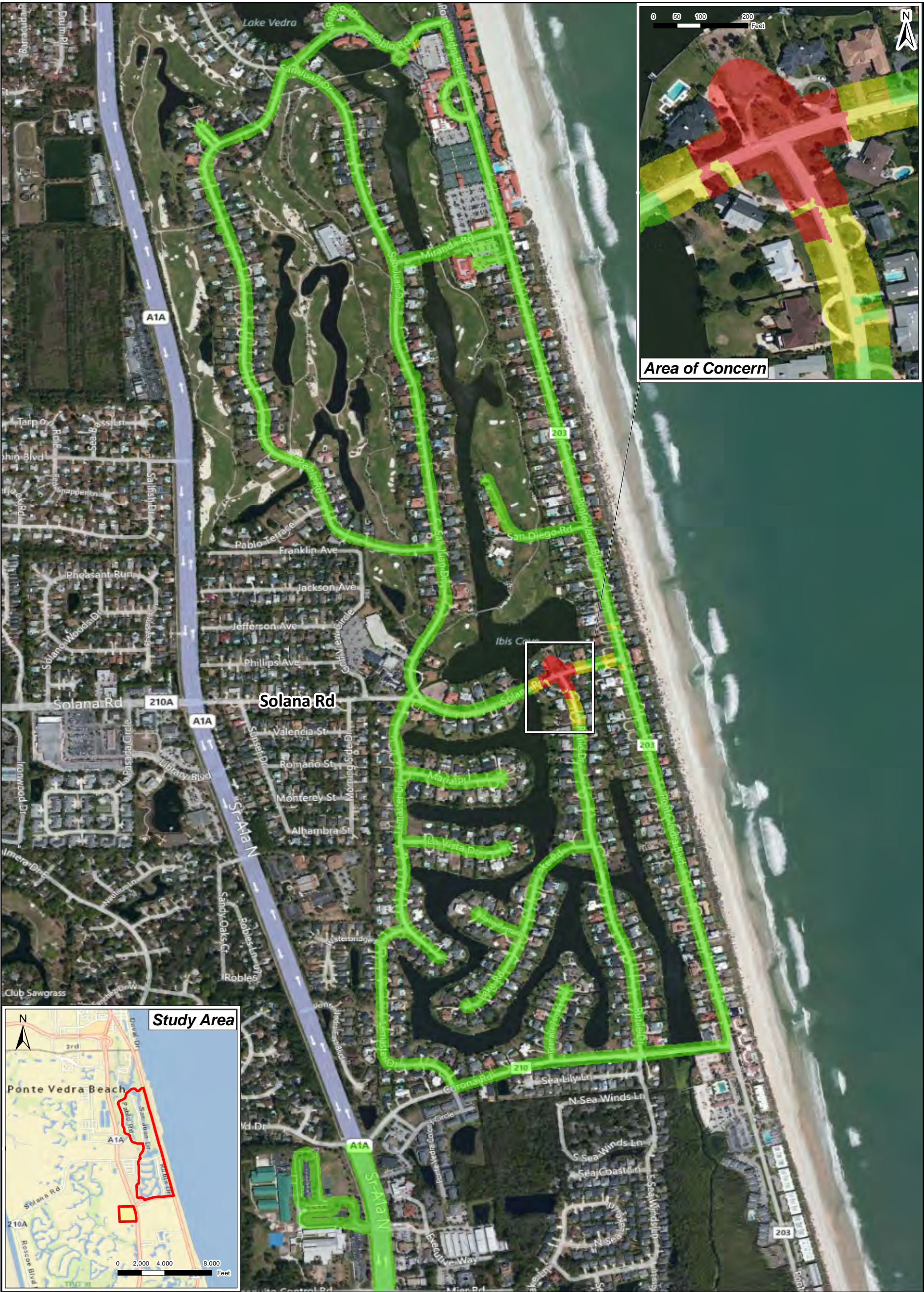
United States
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SOLANA ROAD RADIATION SITE
PONTE VEDRA BEACH,
ST. JOHNS COUNTY,
FLORIDA

TDD: TTEMI-05-003-0130

FIGURE 1 SITE LOCATION





Legend

Gamma Radiation Net Total (cps)

- 0 - 5,099
- 5,100 - 8,999
- 9,000 - 305,580

Notes

cps: Counts per second

The background reading for the RSX-1 device was determined to be approximately 3,000 cps.

The maximum reading detected by the RSX-1 device was 305,580 cps.

For visualization purposes, detected readings were converted to an area coverage extending 50 feet from the detected location to the parcel surveyed.



Map Source:
ESRI World Street Map, 2011;
Bing Maps Hybrid, 2011.

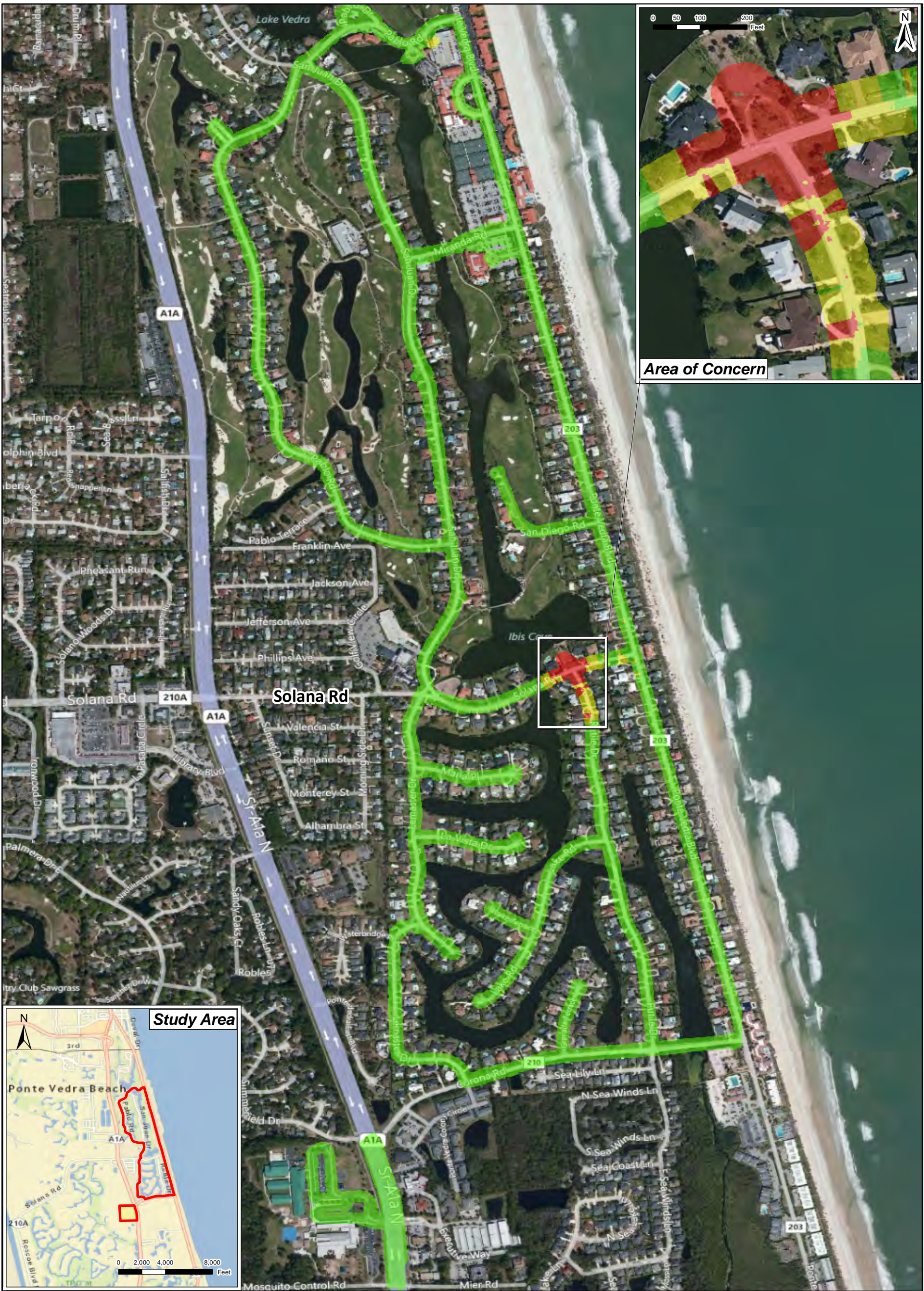


United States
Environmental Protection Agency

SOLANA ROAD RADIATION SITE
PONTE VEDRA BEACH,
ST. JOHNS COUNTY, FLORIDA
TDD: TTEMI-05-003-0130

FIGURE 2
RADIATION DETECTED USING
INTERNAL DEVICE, RSX-1





Legend

Gamma Radiation Net Total (cps)

- 0 - 5,493
- 5,494 - 8,999
- 9,000 - 664,993

Notes

cps: Counts per second

The background reading for the RSX-4 device was determined to be approximately 3,000 cps.

The maximum reading detected by the RSX-4 device was 664,993 cps.

For visualization purposes, detected readings were converted to an area coverage extending 50 feet from the detected location to the parcel surveyed.



0 420 840
Feet

Map Source:
ESRI World Street Map, 2011;
Bing Maps Hybrid, 2011.

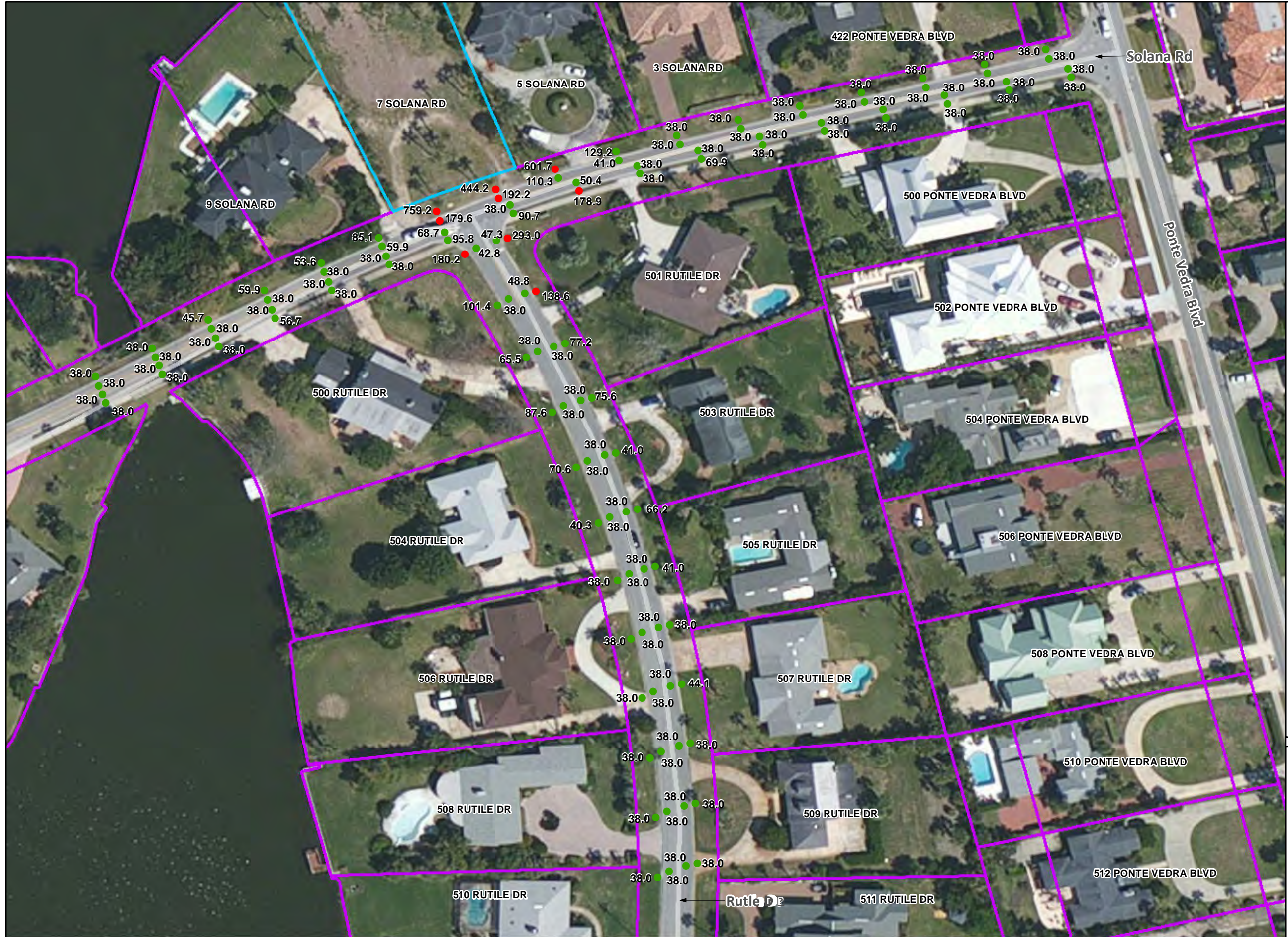


United States
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SOLANA ROAD RADIATION SITE
PONTE VEDRA BEACH,
ST. JOHNS COUNTY, FLORIDA
TDD: TTEMI-05-003-0130

FIGURE 3
RADIATION DETECTED USING
EXTERNAL DEVICE, RSX-4





Legend

Exposure Rates (mrem/yr)

- 38.0 - 137.9
- 138.0 - 759.2
- Street
- 7 Solana Road
- Parcel Boundary

Notes

mrem/yr: millirem per year

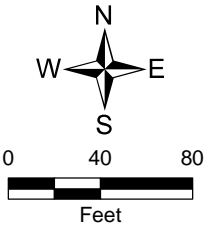
Exposure rates were collected using an E-600 device at approximately 50-foot intervals.

The maximum exposure rate detected by the E-600 device was 759.2 mrem/yr.

Exposure rates ranged from 38.0 mrem/yr to 759.2 mrem/yr on Solana Road.

Exposure rates ranged from 38.0 mrem/yr to 293.0 mrem/yr on Rutile Drive.

Exposure rates are recorded to nearest tenth.



Map Source:
HSIP Gold Streets, 2007; Bing Maps Aerial, 2011.

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SOLANA ROAD RADIATION SITE
PONTE VEDRA BEACH,
ST. JOHNS COUNTY, FLORIDA
TDD: TTEMI-05-003-0130

**FIGURE 4
EXPOSURE RATES NEAR
7 SOLANA ROAD**

 **TETRA TECH**

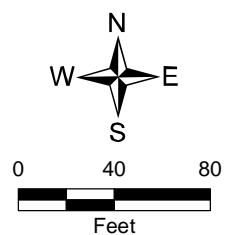
Date:
2/7/2012
Name:
stacy.ventresca



Legend

- Surface and Subsurface Sampling Locations
- Street
- 7 Solana Road
- Parcel Boundary

Map Source:
HSIP Gold Streets, 2007; Bing Maps Aerial, 2011.



United States
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SOLANA ROAD RADIATION SITE
PONTE VEDRA BEACH,
ST. JOHNS COUNTY, FLORIDA
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FIGURE 5 SURFACE AND SUBSURFACE SOIL SAMPLING LOCATIONS



ENCLOSURE 2

TABLE

(Five Pages)

TABLE

B-1 NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
(NAREL) LABORATORY ANALYTICAL RESULTS

Table 1
National Air and Radiation Environmental Laboratory (NAREL) Laboratory Analytical Results

Sample ID	Location	Matrix	Client ID	Sample Collection Time	Procedure	Analyte	Result	2 ^u	MDC	Unit
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	Ba140	ND		6.69E+00	PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	Bi212	1.59E+02	1.80E+01		PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	Bi214	7.41E+01	8.50E+00		PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	Co60	ND		2.07E-01	PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	Cs137	ND		2.25E-01	PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	I131	ND		6.26E+00	PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	K40	1.12E+01	1.50E+00		PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	Pa234m	8.70E+01	1.30E+01		PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	Pb211	2.15E+01	3.30E+00		PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	Pb212	1.37E+02	1.60E+01		PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	Pb214	7.86E+01	9.00E+00		PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	Ra226	9.10E+01	1.10E+01		PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	Ra228	1.47E+02	1.70E+01		PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	Rn219	3.09E+00	7.70E-01		PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	Rn220	9.50E+01	5.80E+01		PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	Tl208	4.56E+01	5.20E+00		PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GAM-01	U235	2.51E+00	3.10E-01		PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GR-03	Alpha	3.50E+02	7.30E+01	3.41E+00	PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL GR-03	Beta	5.78E+02	6.20E+01	1.83E+01	PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL TH-EICHR0M	Th227	6.30E+00	2.80E+00	1.18E+00	PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL TH-EICHR0M	Th228	1.77E+02	1.60E+01	9.69E-01	PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL TH-EICHR0M	Th230	6.75E+01	8.00E+00	8.46E-01	PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL TH-EICHR0M	Th232	1.71E+02	1.60E+01	1.22E+00	PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL TH-EICHR0M	Yield	7.68E+01	2.00E+00		PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL U-EICHR0M	U234	5.42E+01	7.00E+00	4.55E-01	PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL U-EICHR0M	U235	2.60E+00	1.20E+00	5.45E-01	PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL U-EICHR0M	U238	5.78E+01	7.40E+00	6.91E-01	PCI/GDRY
B1.13797J	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07460	11/9/2011 9:05	NAREL U-EICHR0M	Yield	1.06E+02	8.50E+00		PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	Ba140	ND		1.41E+01	PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	Bi212	6.74E+02	7.80E+01		PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	Bi214	2.21E+02	2.50E+01		PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	Co60	ND		3.58E-01	PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	Cs137	ND		4.36E-01	PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	I131	ND		1.43E+01	PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	K40	ND		3.39E+00	PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	Pa231	7.10E+00	4.10E+00		PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	Pa234m	2.83E+02	3.80E+01		PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	Pb212	6.24E+02	7.20E+01		PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	Pb214	2.51E+02	2.90E+01		PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	Ra226	2.81E+02	3.30E+01		PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	Ra228	6.43E+02	7.40E+01		PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	Rn219	7.70E+00	1.70E+00		PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	Rn220	6.30E+02	1.70E+02		PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	Th227	1.80E+01	2.80E+00		PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	Tl208	1.94E+02	2.20E+01		PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GAM-01	U235	8.60E+00	1.00E+00		PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GR-03	Alpha	2.53E+03	5.10E+02	3.08E+00	PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL GR-03	Beta	3.39E+03	3.50E+02	4.20E+01	PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL TH-EICHR0M	Th227	7.90E+00	6.50E+00	4.89E+00	PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL TH-EICHR0M	Th228	2.62E+02	3.20E+01	5.34E+00	PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL TH-EICHR0M	Th230	8.90E+01	1.60E+01	2.64E+00	PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL TH-EICHR0M	Th232	2.71E+02	3.20E+01	3.49E+00	PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL TH-EICHR0M	Yield	9.05E+01	2.20E+00		PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL U-EICHR0M	U234	9.80E+01	1.70E+01	2.20E+00	PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL U-EICHR0M	U235	3.40E+00	3.30E+00	3.48E+00	PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL U-EICHR0M	U238	8.30E+01	1.50E+01	2.91E+00	PCI/GDRY
B1.13798K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07461	11/9/2011 8:25	NAREL U-EICHR0M	Yield	1.03E+02	8.20E+00		PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GAM-01	Ba140	ND		7.09E-01	PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GAM-01	Bi212	2.29E+00	3.10E-01		PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GAM-01	Bi214	1.65E+00	1.90E-01		PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GAM-01	Co60	ND		1.75E-02	PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GAM-01	Cs137	ND		2.10E-02	PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GAM-01	I131	ND		8.14E-01	PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GAM-01	K40	9.20E-01	1.50E-01		PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GAM-01	Pa234m	2.14E+00	9.30E-01		PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GAM-01	Pb212	2.11E+00	2.40E-01		PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GAM-01	Pb214	1.71E+00	2.00E-01		PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GAM-01	Ra223	5.35E-01	8.30E-02		PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GAM-01	Ra226	2.77E+00	4.40E-01		PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GAM-01	Ra228	2.26E+00	2.60E-01		PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GAM-01	Tl208	7.03E-01	8.30E-02		PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GAM-01	U235	1.74E-01	2.80E-02		PCI/GDRY

Table 1
National Air and Radiation Environmental Laboratory (NAREL) Laboratory Analytical Results

Sample ID	Location	Matrix	Client ID	Sample Collection Time	Procedure	Analyte	Result	2*u	MDC	Unit
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GR-03	Alpha	1.74E+01	7.20E+00	3.71E+00	PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL GR-03	Beta	3.80E+01	6.50E+00	6.37E+00	PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL TH-EICHROM	Th227	9.00E-02	1.10E-01	1.34E-01	PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL TH-EICHROM	Th228	2.36E+00	4.10E-01	9.14E-02	PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL TH-EICHROM	Th230	1.93E+00	3.60E-01	9.14E-02	PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL TH-EICHROM	Th232	2.62E+00	4.40E-01	7.24E-02	PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL TH-EICHROM	Yield	8.92E+01	2.20E+00		***
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL U-EICHROM	U234	1.69E+00	3.10E-01	1.01E-01	PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL U-EICHROM	U235	2.10E-02	5.60E-02	1.04E-01	PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL U-EICHROM	U238	1.46E+00	2.80E-01	8.96E-02	PCI/GDRY
B1.13799L	Location 1 (20-30 inch)	SOIL	Flag 1: 10-20" SCF07461	11/9/2011 8:25	NAREL U-EICHROM	Yield	1.05E+02	7.90E+00		***
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Ba140	ND		1.26E+01	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Bi212	3.77E+02	4.30E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Bi214	1.27E+02	1.50E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Co60	ND		4.27E-01	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Cs137	ND		4.45E-01	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	I131	ND		1.15E+01	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	K40	2.58E+01	3.40E+00		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Pa234m	1.74E+02	2.80E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Pb212	3.55E+02	4.10E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Pb214	1.42E+02	1.60E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Ra226	1.37E+02	1.60E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Ra228	3.59E+02	4.10E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Rn219	5.50E+00	1.40E+00		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Rn220	3.80E+02	1.30E+02		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Tl208	1.13E+02	1.30E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	U235	6.94E+00	8.30E-01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Ba140	ND		1.33E+01	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Bi212	3.97E+02	4.60E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Bi214	1.30E+02	1.50E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Co60	ND		3.99E-01	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Cs137	ND		4.31E-01	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	I131	ND		1.24E+01	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	K40	2.79E+01	3.60E+00		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Pa234m	1.46E+02	2.20E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Pb212	3.50E+02	4.00E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Pb214	1.43E+02	1.60E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Ra226	1.54E+02	1.80E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Ra228	3.68E+02	4.20E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Rn219	5.10E+00	1.20E+00		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Rn220	4.60E+02	1.40E+02		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	Tl208	1.13E+02	1.30E+01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GAM-01	U235	5.62E+00	6.80E-01		PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GR-03	Alpha	4.28E+02	8.90E+01	3.22E+00	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL GR-03	Beta	6.21E+02	6.60E+01	1.89E+01	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL TH-EICHROM	Th227	3.30E+00	3.30E+00	4.04E+00	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL TH-EICHROM	Th228	1.70E+02	1.90E+01	2.64E+00	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL TH-EICHROM	Th230	6.50E+01	1.00E+01	1.73E+00	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL TH-EICHROM	Th232	1.66E+02	1.90E+01	1.73E+00	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL TH-EICHROM	Yield	8.89E+01	2.20E+00		***
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL U-EICHROM	U234	5.91E+01	9.00E+00	1.26E+00	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL U-EICHROM	U235	2.40E+00	1.80E+00	1.72E+00	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL U-EICHROM	U238	5.63E+01	8.70E+00	1.58E+00	PCI/GDRY
B1.13800K	Location 1 (0-10 inch)	SOIL	Flag 1: 0-10" SCF07462	11/9/2011 8:45	NAREL U-EICHROM	Yield	1.02E+02	7.70E+00		***
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GAM-01	Ba140	ND		7.21E+00	PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GAM-01	Bi212	2.03E+02	2.30E+01		PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GAM-01	Bi214	8.53E+01	9.80E+00		PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GAM-01	Co60	ND		1.88E-01	PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GAM-01	Cs137	ND		2.19E-01	PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GAM-01	I131	ND		7.83E+00	PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GAM-01	K40	ND		1.71E+00	PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GAM-01	Pa234m	1.17E+02	1.50E+01		PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GAM-01	Pb212	1.60E+02	1.80E+01		PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GAM-01	Pb214	8.90E+01	1.00E+01		PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GAM-01	Ra226	ND		3.98E+00	PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GAM-01	Ra228	1.83E+02	2.10E+01		PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GAM-01	Th234	3.81E+01	4.50E+00		PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GAM-01	Tl208	5.88E+01	6.80E+00		PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GAM-01	U235	9.90E+00	1.10E+00		PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GR-03	Alpha	7.60E+02	1.60E+02	3.44E+00	PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL GR-03	Beta	1.19E+03	1.20E+02	2.60E+01	PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL TH-EICHROM	Th227	1.03E+01	4.90E+00	2.99E+00	PCI/GDRY

Table 1
National Air and Radiation Environmental Laboratory (NAREL) Laboratory Analytical Results

Sample ID	Location	Matrix	Client ID	Sample Collection Time	Procedure	Analyte	Result	2* <u>u</u>	MDC	Unit
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL TH-EICHROM	Th228	1.73E+02	1.90E+01	2.19E+00	PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL TH-EICHROM	Th230	5.65E+01	9.00E+00	1.22E+00	PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL TH-EICHROM	Th232	1.68E+02	1.80E+01	1.85E+00	PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL TH-EICHROM	Yield	9.38E+01	2.30E+00		***
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL U-EICHROM	U234	6.60E+01	1.00E+01	2.04E+00	PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL U-EICHROM	U235	3.50E+00	2.30E+00	2.27E+00	PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL U-EICHROM	U238	5.85E+01	9.60E+00	2.17E+00	PCI/GDRY
B1.13801L	Location 2 (0-20 inch)	SOIL	Flag 2: 0-20" SCF07463	11/9/2011 9:35	NAREL U-EICHROM	Yield	1.09E+02	8.60E+00		***
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	Ba140	ND		3.73E-01	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	Bi212	3.80E-01	1.10E-01		PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	Bi214	3.09E-01	3.90E-02		PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	Co60	ND		1.17E-02	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	Cs137	4.10E-03	3.60E-03		PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	I131	ND		3.81E-01	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	K40	1.93E+00	2.40E-01		PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	Pa234m	6.20E-01	7.40E-01		PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	Pb212	3.47E-01	4.40E-02		PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	Pb214	3.33E-01	4.10E-02		PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	Ra223	1.16E-01	3.50E-02		PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	Ra226	6.90E-01	1.70E-01		PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	Ra228	3.57E-01	5.00E-02		PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	Th234	2.09E-01	6.90E-02		PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	Ti208	1.05E-01	1.60E-02		PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GAM-01	U235	4.30E-02	1.10E-02		PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GR-03	Alpha	2.20E+00	4.10E+00	3.25E+00	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL GR-03	Beta	3.80E+00	3.20E+00	4.82E+00	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL TH-EICHROM	Th227	0.00E+00	4.60E-02	9.39E-02	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL TH-EICHROM	Th228	2.10E-01	1.10E-01	1.07E-01	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL TH-EICHROM	Th230	2.90E-01	1.30E-01	9.13E-02	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL TH-EICHROM	Th232	1.01E-01	8.00E-02	9.12E-02	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL TH-EICHROM	Yield	9.25E+01	2.30E+00		***
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL TH-EICHROM	Th227	-7.00E-03	4.60E-02	1.18E-01	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL TH-EICHROM	Th228	3.00E-01	1.20E-01	8.68E-02	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL TH-EICHROM	Th230	2.30E-01	1.10E-01	4.83E-02	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL TH-EICHROM	Th232	1.81E-01	9.70E-02	7.31E-02	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL TH-EICHROM	Yield	9.24E+01	2.30E+00		***
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL U-EICHROM	U234	2.10E-01	1.00E-01	7.22E-02	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL U-EICHROM	U235	1.30E-02	3.80E-02	5.70E-02	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL U-EICHROM	U238	2.80E-01	1.20E-01	7.22E-02	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL U-EICHROM	Yield	1.01E+02	8.20E+00		***
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL U-EICHROM	U234	1.69E-01	8.90E-02	4.59E-02	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL U-EICHROM	U235	2.50E-02	4.50E-02	5.49E-02	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL U-EICHROM	U238	2.50E-01	1.10E-01	8.25E-02	PCI/GDRY
B1.13802M	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07464	11/9/2011 10:15	NAREL U-EICHROM	Yield	1.05E+02	8.40E+00		***
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GAM-01	Ba140	ND		6.39E-01	PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GAM-01	Bi212	6.90E-01	1.70E-01		PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GAM-01	Bi214	5.54E-01	6.90E-02		PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GAM-01	Co60	ND		2.18E-02	PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GAM-01	Cs137	ND		2.09E-02	PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GAM-01	I131	ND		6.59E-01	PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GAM-01	K40	1.69E+00	2.40E-01		PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GAM-01	Pb212	6.34E-01	7.70E-02		PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GAM-01	Pb214	5.90E-01	7.20E-02		PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GAM-01	Ra223	1.77E-01	7.00E-02		PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GAM-01	Ra226	1.04E+00	2.60E-01		PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GAM-01	Ra228	6.15E-01	8.00E-02		PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GAM-01	Th234	5.10E-01	1.40E-01		PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GAM-01	Ti208	2.08E-01	2.80E-02		PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GAM-01	U235	6.50E-02	1.60E-02		PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GR-03	Alpha	3.70E+00	4.60E+00	3.71E+00	PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL GR-03	Beta	8.30E+00	3.60E+00	4.97E+00	PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL TH-EICHROM	Th227	1.40E-02	6.30E-02	1.22E-01	PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL TH-EICHROM	Th228	5.90E-01	1.80E-01	7.52E-02	PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL TH-EICHROM	Th230	4.80E-01	1.60E-01	6.57E-02	PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL TH-EICHROM	Th232	4.80E-01	1.60E-01	4.95E-02	PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL TH-EICHROM	Yield	9.23E+01	2.30E+00		***
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL U-EICHROM	U234	5.20E-01	1.60E-01	6.91E-02	PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL U-EICHROM	U235	1.70E-02	4.60E-02	8.28E-02	PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL U-EICHROM	U238	2.00E-01	1.00E-01	8.20E-02	PCI/GDRY
B1.13803N	Background (10-20 inch)	SOIL	Flag 3: 10-20" SCF07464	11/9/2011 10:15	NAREL U-EICHROM	Yield	1.05E+02	8.40E+00		***
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GAM-01	Ba140	ND		5.22E-01	PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GAM-01	Bi212	8.80E-01	1.50E-01		PCI/GDRY

Table 1
National Air and Radiation Environmental Laboratory (NAREL) Laboratory Analytical Results

Sample ID	Location	Matrix	Client ID	Sample Collection Time	Procedure	Analyte	Result	2°u	MDC	Unit
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GAM-01	Bi214	5.52E-01	6.70E-02		PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GAM-01	Co60	ND		1.56E-02	PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GAM-01	Cs137	ND		1.49E-02	PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GAM-01	I131	ND		5.46E-01	PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GAM-01	K40	1.78E+00	2.40E-01		PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GAM-01	Pb212	8.28E-01	9.80E-02		PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GAM-01	Pb214	6.13E-01	7.30E-02		PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GAM-01	Ra223	2.21E-01	4.50E-02		PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GAM-01	Ra226	1.07E+00	2.20E-01		PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GAM-01	Ra228	7.95E-01	9.70E-02		PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GAM-01	Tl208	2.58E-01	3.20E-02		PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GAM-01	U235	6.70E-02	1.40E-02		PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GR-03	Alpha	9.00E-01	3.70E+00	3.11E+00	PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL GR-03	Beta	8.70E+00	3.50E+00	4.84E+00	PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL TH-EICHROM	Th227	-7.00E-03	4.60E-02	1.20E-01	PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL TH-EICHROM	Th228	3.00E-01	1.20E-01	7.43E-02	PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL TH-EICHROM	Th230	2.70E-01	1.20E-01	8.18E-02	PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL TH-EICHROM	Th232	3.80E-01	1.40E-01	8.17E-02	PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL TH-EICHROM	Yield	9.38E+01	2.30E+00		***
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL U-EICHROM	U234	2.60E-01	1.10E-01	6.29E-02	PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL U-EICHROM	U235	3.40E-02	4.70E-02	4.97E-02	PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL U-EICHROM	U238	2.40E-01	1.00E-01	4.15E-02	PCI/GDRY
B1.13804P	Background (0-10 inch)	SOIL	Flag 3: 0-10" SCF07465	11/9/2011 10:30	NAREL U-EICHROM	Yield	1.06E+02	8.30E+00		***
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Ba140	ND		6.44E+00	PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Bi212	2.02E+02	2.30E+01		PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Bi214	8.48E+01	9.70E+00		PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Co60	ND		1.79E-01	PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Cs137	ND		2.06E-01	PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	I131	ND		6.79E+00	PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	K40	ND		1.71E+00	PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Pa234m	9.90E+01	1.40E+01		PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Pb211	2.84E+01	3.90E+00		PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Pb212	1.75E+02	2.00E+01		PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Pb214	9.30E+01	1.10E+01		PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Ra223	3.78E+01	4.40E+00		PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Ra226	9.30E+01	1.10E+01		PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Ra228	1.89E+02	2.20E+01		PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Rn219	3.44E+00	6.90E-01		PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Rn220	1.67E+02	5.50E+01		PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Th228	1.72E+02	3.50E+01		PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Th234	5.58E+01	6.70E+00		PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	Tl208	5.82E+01	6.70E+00		PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GAM-01	U235	3.48E+00	4.20E-01		PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GR-03	Alpha	8.20E+02	1.70E+02	3.32E+00	PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL GR-03	Beta	1.19E+03	1.20E+02	2.58E+01	PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL TH-EICHROM	Th227	6.80E+00	4.10E+00	2.44E+00	PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL TH-EICHROM	Th228	1.29E+02	1.60E+01	1.74E+00	PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL TH-EICHROM	Th230	4.22E+01	7.80E+00	1.31E+00	PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL TH-EICHROM	Th232	1.29E+02	1.60E+01	1.31E+00	PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL TH-EICHROM	Yield	9.14E+01	2.20E+00		***
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL U-EICHROM	U234	4.07E+01	7.70E+00	1.73E+00	PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL U-EICHROM	U235	3.80E+00	2.30E+00	1.37E+00	PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL U-EICHROM	U238	3.82E+01	7.30E+00	1.14E+00	PCI/GDRY
B1.13805Q	Location 2 (20-30 inch)	SOIL	Flag 2: 20-30" SCF07466	11/9/2011 9:55	NAREL U-EICHROM	Yield	1.02E+02	8.20E+00		***
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GAM-01	Ba140	ND		5.71E+00	PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GAM-01	Bi212	1.25E+02	1.40E+01		PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GAM-01	Bi214	5.91E+01	6.80E+00		PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GAM-01	Co60	ND		1.43E-01	PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GAM-01	Cs137	ND		1.63E-01	PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GAM-01	I131	ND		6.37E+00	PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GAM-01	K40	ND		1.31E+00	PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GAM-01	Pa234m	7.90E+01	1.10E+01		PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GAM-01	Pb212	9.70E+01	1.10E+01		PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GAM-01	Pb214	6.22E+01	7.10E+00		PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GAM-01	Ra226	1.12E+02	1.30E+01		PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GAM-01	Ra228	1.12E+02	1.30E+01		PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GAM-01	Th234	2.85E+01	3.30E+00		PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GAM-01	Tl208	3.50E+01	4.00E+00		PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GAM-01	U235	6.82E+00	7.90E-01		PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GR-03	Alpha	3.54E+02	7.40E+01	3.12E+00	PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GR-03	Beta	6.10E+02	6.50E+01	1.80E+01	PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GR-03	Alpha	4.07E+02	8.50E+01	3.50E+00	PCI/GDRY

Table 1
National Air and Radiation Environmental Laboratory (NAREL) Laboratory Analytical Results

Sample ID	Location	Matrix	Client ID	Sample Collection Time	Procedure	Analyte	Result	2*u	MDC	Unit
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL GR-03	Beta	6.42E+02	6.80E+01	1.88E+01	PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL TH-EICHROM	Th227	6.00E+00	2.40E+00	1.21E+00	PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL TH-EICHROM	Th228	1.18E+02	1.10E+01	8.19E-01	PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL TH-EICHROM	Th230	4.07E+01	5.20E+00	8.83E-01	PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL TH-EICHROM	Th232	1.10E+02	1.10E+01	8.18E-01	PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL TH-EICHROM	Yield	9.31E+01	2.30E+00		***
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL U-EICHROM	U234	4.13E+01	5.70E+00	6.82E-01	PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL U-EICHROM	U235	1.41E+00	9.20E-01	8.17E-01	PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL U-EICHROM	U238	3.95E+01	5.50E+00	5.96E-01	PCI/GDRY
B1.13806R	Location 2 (0-10 inch)	SOIL	Flag 2: 0-10" SCF07467	11/9/2011 9:45	NAREL U-EICHROM	Yield	9.64E+01	7.80E+00		***
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Ba140	ND		6.36E+00	PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Bi212	3.03E+02	3.50E+01		PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Bi214	1.22E+02	1.40E+01		PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Co60	ND		1.93E-01	PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Cs137	ND		2.17E-01	PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	I131	ND		6.65E+00	PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	K40	ND		1.82E+00	PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Pa231	3.10E+00	1.60E+00		PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Pa234m	1.82E+02	2.40E+01		PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Pb212	2.74E+02	3.10E+01		PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Pb214	1.39E+02	1.60E+01		PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Ra223	5.51E+01	6.30E+00		PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Ra226	1.35E+02	1.60E+01		PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Ra228	2.84E+02	3.30E+01		PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Rn219	4.84E+00	8.10E-01		PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Rn220	2.59E+02	5.80E+01		PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Th228	2.81E+02	4.10E+01		PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Th234	5.90E+01	6.80E+00		PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	Ti208	8.31E+01	9.50E+00		PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GAM-01	U235	6.47E+00	7.60E-01		PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GR-03	Alpha	1.01E+03	2.10E+02	3.11E+00	PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL GR-03	Beta	1.33E+03	1.40E+02	2.69E+01	PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL TH-EICHROM	Th227	1.06E+01	5.10E+00	3.82E+00	PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL TH-EICHROM	Th228	1.87E+02	2.00E+01	2.72E+00	PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL TH-EICHROM	Th230	7.10E+01	1.00E+01	1.23E+00	PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL TH-EICHROM	Th232	1.63E+02	1.80E+01	2.05E+00	PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL TH-EICHROM	Yield	9.33E+01	2.30E+00		***
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL U-EICHROM	U234	5.91E+01	9.40E+00	1.76E+00	PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL U-EICHROM	U235	6.50E+00	3.00E+00	1.91E+00	PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL U-EICHROM	U238	6.05E+01	9.60E+00	1.90E+00	PCI/GDRY
B1.13807T	Location 2 (10-20 inch)	SOIL	Flag 2: 10-20" SCF07467	11/9/2011 9:45	NAREL U-EICHROM	Yield	1.04E+02	8.20E+00		***
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	Ba140	ND		4.35E-01	PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	Bi212	5.90E-01	1.20E-01		PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	Bi214	4.90E-01	5.90E-02		PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	Co60	ND		1.26E-02	PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	Cs137	ND		1.31E-02	PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	I131	ND		4.53E-01	PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	K40	1.69E+00	2.20E-01		PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	Pa234m	4.90E-01	7.10E-01		PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	Pb212	6.10E-01	7.30E-02		PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	Pb214	5.35E-01	6.40E-02		PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	Ra223	1.69E-01	4.20E-02		PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	Ra226	9.20E-01	1.90E-01		PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	Ra228	6.20E-01	7.80E-02		PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	Th234	2.93E-01	8.40E-02		PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	Ti208	1.82E-01	2.30E-02		PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GAM-01	U235	5.80E-02	1.20E-02		PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GR-03	Alpha	2.30E+00	4.00E+00	3.18E+00	PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL GR-03	Beta	8.20E+00	3.30E+00	4.45E+00	PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL TH-EICHROM	Th227	5.90E-02	9.20E-02	1.43E-01	PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL TH-EICHROM	Th228	5.90E-01	1.70E-01	8.82E-02	PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL TH-EICHROM	Th230	5.40E-01	1.60E-01	6.10E-02	PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL TH-EICHROM	Th232	6.00E-01	1.70E-01	6.09E-02	PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL TH-EICHROM	Yield	9.46E+01	2.30E+00		***
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL U-EICHROM	U234	3.60E-01	1.30E-01	4.46E-02	PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL U-EICHROM	U235	7.00E-02	6.70E-02	7.07E-02	PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL U-EICHROM	U238	3.00E-01	1.20E-01	5.91E-02	PCI/GDRY
B1.13808U	Background (20-30 inch)	SOIL	Flag 3: 20-30" SCF07468	11/9/2011 10:45	NAREL U-EICHROM	Yield	9.75E+01	7.90E+00		***

Notes:

Analytical data table provided by the National Air and Radiation Environmental Laboratory (NAREL)

ENCLOSURE 3

FIELD LOGBOOK NOTES

(13 Pages)

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No. 371

Solana Rd Radiation Site

TTEMI-05-003-0130

Logbook 1

"Rite in the Rain"
ALL-WEATHER WRITING PAPER



Name Tetra Tech

Address 1955 Evergreen Blvd

Duluth Ga 30096

Phone 678-775-3088

Project Solana Rd Radiation Site

TEMI-05-003-0130

CONTENTS

PAGE

REFERENCE

DATE

11/8/11

Solana Rd

CJ

0730 START Jones arrives @ Hilton Garden Inn to meet w/ crew.

DSC Stilman, RERT Dave Kappelman
RERT Christopher Royce RERT Stephen Taylor and RERT Spencer Hamil
onsite.

- Detector units → 4 Sodium Iodide (NAI)

detector chambers are mounted inside van. Each chamber is oriented in a different direction.

• Works by exciting electrons w/in crystal (detector). Manufactured by RSI (Radiation Solutions Inc.) — Model - RSX-1

• Reads in counts per second (CPS)

RAD - CJ

0905 Instruments have been calibrated depart hotel for site.

0913 Make right on Solana Rd.

0916 Pass 7 Solana Rd, alarm goes off.

0918 Back to beach ground (approx 510 Rutile).

0922 Make Right on Lake terrace.

0924 Make Right on Rutile Lake Rd

Scale: 1 square =

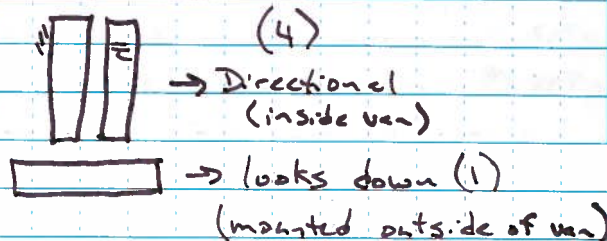
[Signature]

11/8/11

Solana Rd

CJ

Diagram of Setup



0924 Car on Right at ⁵⁴⁶ Lake Rd ~~500~~ Rutile

" " 551 " "

" " 549 " "

" " 535 " "

" " 531 " "

0928 Make right on Rutile

0928 cross bridge, concrete, slightly elevated.

0932 Head N on Rutile.

0934 same bridge as (0928)

0935 Vehicle @ 517 Rutile

0935 " " 515 " "

0936 Starts increasing @ 517

0938 @ Rutile to Solana, alarm goes off

0940 Make @ on Solana Rd

Scale: 1 square =

[Signature]

11/8/11 Solana Rd CJ

0941 (R) on Ponte Vedra Blvd

0945 (R) on Corona Rd

0947 Tuttle and Corona, back to background

0948 (R) on Granada Rd.

" Vehicle @ 555 Granada Rd

" " " 553 " "

0951 (R) on Lemaster

0953 (L) on Water bridge

0954 (R) on Water bridge ct.

0954 (R) on Water bridge

0956 (L) on LeMaster

0956 (R) on Poinciana

0958 (R) on La Vista

0959 Vehicle @ 16 La Vista

1000 " " 23 " "

1001 (R) on LeMaster Dr

1002 (R) on Mark Pl

1004 (R) on LeMaster

1005 (L) on San Juan Dr

1011 (R) on Miranda Rd

1011 Cross Wooden bridge, readings drop

1012 @ country club readings increase to 900 cps

Scale: 1 square=

11/8/11 Solana Rd CJ

1013 (R) on Ponte Vedra Blvd, then -

(R) into country club c

1017 Back onto Ponte Vedra Blvd

1021 (R) onto San Diego Rd

1026 (R) onto Ponte Vedra Blvd

1026 Begins to increase @ 412, peaks @ 414 Ponte Vedra Blvd.

1028 (R) on Solana Rd

1029 Stop @ 7 Solana Rd, peaks @ - 14,000 cpm.

1032 Continue on path.

1035 Stop data recording.

1048 Resume recording (currently outside of study area).

1052 Back on Solana Rd.

1054 (L) on Pablo Rd

1056 (L) on Pablo Terrace

1058 Vehicle @ 346 Pablo Terrace

1058 (L) on Pablo Rd.

1059 Vehicle @ 321 Pablo Rd

1100 " " 311 " "

1102 " " 233 " "

1102 " " 229 " "

1103 (L) on Pablo ct

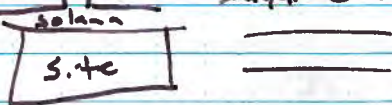
Scale: 1 square=

- 11/8/11 Solana Rd CJ
- 1104 (L) Pablo Rd. ———
- 1105 (L) on Pablo Dr ———
- 1107 Back on Pablo Rd, continue E/NE.
- 1109 Increases to 1,000 cpm (2x)
@ driving range (Ponte Vedra Fair
and club). Possibly due to concrete
- 1112 (R) on Ponte Vedra Blvd. ———
- 1115 (R) on Miranda Rd ———
- 1116 (L) San Juan Dr. ———
- 1118 Vehicle @ 330 San Juan Dr.
- 1121 (R) on Solana Rd, Leave study
area. ———
- 1125 Scan school (M.K. Rawlings
Elementary). ———
• Readings are background to
slightly below background. ———
- 1135 Stop data recording, @ hotel. —
- 1140 to 1240 Break for lunch. —
- 1240 Boot up system. ———
- 1250 Enter study area. ———
- 1259 (L) on Ponte Vedra Blvd —
- 1304 @ Solana to Ponte Vedra Blvd, —
approx 2x background. ———

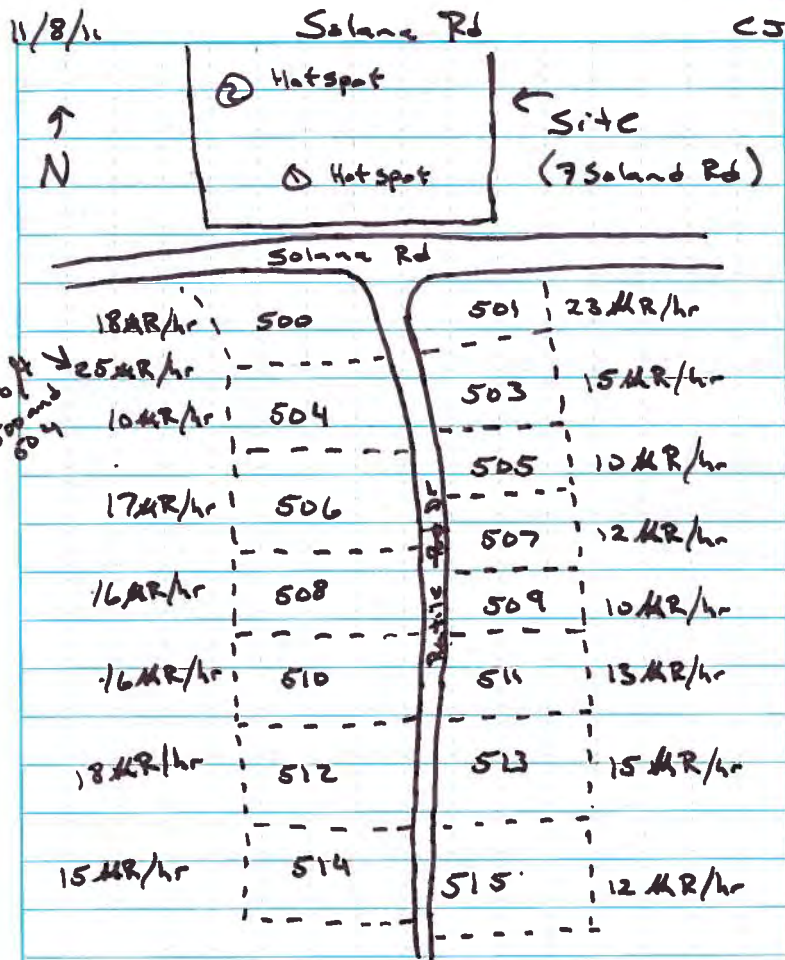
- 11/8/11 Solana Rd CJ
- 1314 (L) on Pablo Dr Rd ———
- 1316 (R) on Pablo Dr Rd ———
- 1317 (R) on Pablo Dr Rd ———
- 1320 Vehicle at 222 Pablo Rd —
- 1320 " " 226 " " (2 cars)
- 1326 (L) on San Juan Dr. follow to
N end then turn around ———
- 1336 Stop - recording ———
- 1350 Resume data collection ———
- 1354 (R) on Le Master (from Solana) Dr.
- 1354 (L) on Maria Pl ———
- 1357 (L) on Le Master Dr. ———
- 1359 (L) on La Vista Dr. ———
- 1401 (L) on Le Master Dr. ———
- 1402 (L) on Poinciana Way ———
- 1404 (L) on Le Master Dr. ———
- 1406 (L) on Corona ———
- 1410 (L) on Ponte Vedra Blvd ———
- 1418 (R) on Lake Rd ———
- 1419 (R) on Lake Terrace ———
- 1420 (R) on Lake Rd ———
- 1427 exit scanner van to record
readings w/ Victorcen V451P
SN: 3111 ———

Address	reading	reading	Address
514	15 MR/hr	25 MR/hr	515
512	18 MR/hr	23 MR/hr	513
510	16 MR/hr	13 MR/hr	511
508	16 MR/hr	10 MR/hr	509
506	17 MR/hr	12 MR/hr	507
504	10 MR/hr	10 MR/hr	505
b/504 + 500	25 MR/hr	10 MR/hr	503
500	18 MR/hr	23 MR/hr	501

* Redrawn on p. 9



5 Solana Rd (SW corner) \approx 90-120 MR/hr
 7 Solana Rd (SW portion) \approx 250 MR/hr
 " (NW portion) \approx 820 MR/hr
 9 Solana Rd (NE portion) \approx 400 MR/hr
 7 Solana Rd - after hot spot, readings decrease to background toward N portion of property.
 1550 End of (EJ) Head to hotel to update logbook and photolog.
 1700 End of day



11/8/11

Solana Rd

CS

Photolog

- | # | Date | Photographer | Subject |
|---------|--------------|--------------|--|
| 1000680 | Nov. 8, 2011 | CS | Contents of Scanner Van. |
| 1000681 | Nov. 8, 2011 | CS | Sodium Iodide radiation detector inside scanner van. |
| 1000682 | Nov. 8, 2011 | CS | EPA collecting Rad data on Route Dr |
| 1000683 | Nov. 8, 2011 | CS | EPA collecting Rad data on 7 Solana Rd. |

Scale: 1 square=

11/9/11

Solana Rd

CS

0800 START Jones meets w/ EPA/ERT/RERT at hotel then travels to site.

0810 Arrive at site and set up equipment.

Location 1 - 30.2283358° N
81.376766° W

Reading @ 1 meter w/ E-600 is 365 μ R/hr. (dose rate)

3D inch sample collected @ 0825
Sample ID - SCF-07461

SAM 935 results - many energy lines
instrument unable to determine source.

10 inch sample collected @ 0845

Location 2 30.228181° N
81.376578° W

SAM 935 results - Radium daughter products (Lead-212, Bi-214)

Background Location
30.228674° N
81.376729° W

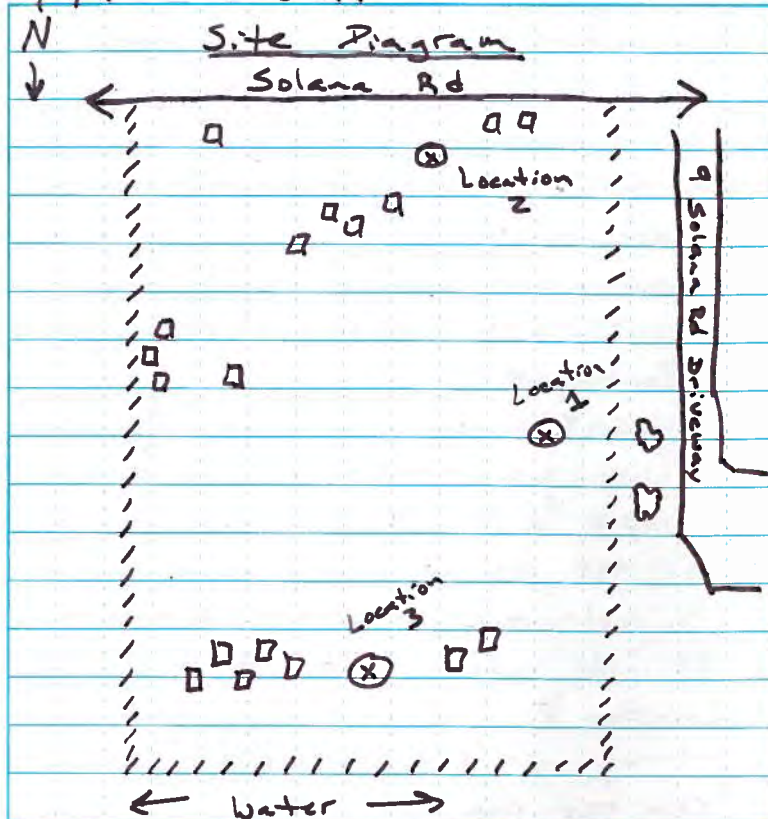
SAM 935 Results - K-40
Dose rate of 6 μ R/hr

Scale: 1 square=

11/9/11

Solana Rd

CS



Scale: 1 square=

11/9/11

Solana Rd

CS

Location 2 samples

Exposure rate of 106 $\mu\text{R/hr}$

30 inch sample collected @ 0935

Sample ID - SCF-07463

10 inch sample collected @ 0905

Sample ID - SCF-07460

- Location 1 (10 in) Sample ID - SCF-07462

- Location 2 (30 in) Sample ID - SCF-07467

Sample time - 0945

- Background (location 3)

30 in. Sample ID - SCF-07464

Sample time - 1015

10 in. Sample ID - SCF-07465

Sample time - 1030

30 in (bottom) - SCF-07468

Sample time - 1015

1120 to 1220 Break for lunch

1220 Calibrate rad instruments

Outside of hot zone.

- Instruments to be used during yard scan of elevated areas.

① Model - EBERLINE EL600

SN: 667

Probe: SPAG

SN: 500

Scale: 1 square=

11/9/11

Solana Rd

CJ

② Model: EBERLINE E600

SN: 353

Probe: SPAL

SN: 493

1250 Begin to walk Solana Rd w/
E-6001335 Begin to walk Rutile Dr w/
E-6001405 Scanning complete in area -
near 7 Solana Rd1415 Walk from 412 Ponte Vedra Blvd
to 418 Ponte Vedra Blvd.

- No elevated readings (w/ E-600)
above background

- Peak reading observed @ 414 -
Ponte Vedra Blvd @ 4.5 $\mu\text{R/hr}$

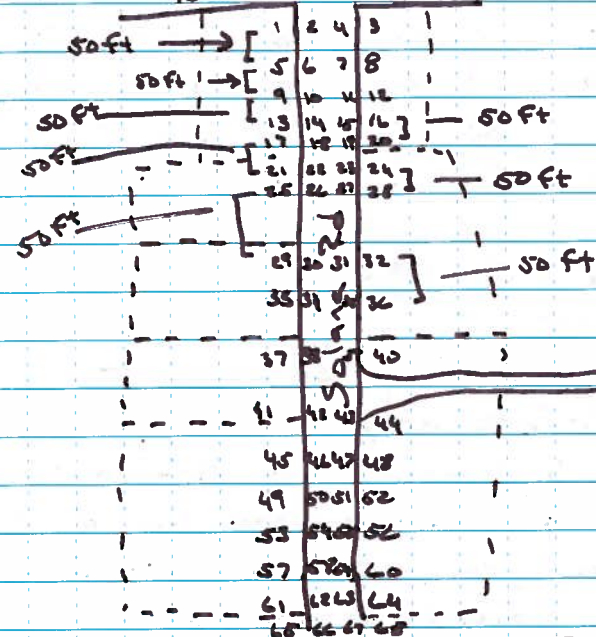
1430 Check other elevated (observed
w/ scanner van) area. Located
@ Publa Rd and Ponte Vedra Inn
and clubhouse (near driving range
and parking garage). Instrument
is still E-600. No elevated
readings observed above 3.0 $\mu\text{R/hr}$

Scale: 1 square=

11/9/11

Solana Rd

CJ

Solana Rd E-600 locations
← N Ponte Vedra Blvd

① 3.5	⑩ 4.0	⑲ 2.1	⑳ 11.1
② 2.5	⑪ 2.6	⑳ 2.3	㉑ 20.5
③ 2.0	⑫ 3.8	㉑ 4.5	㉒ 6.5
④ 2.4	⑬ 4.0	㉒ 3.25	㉓ 4.2
⑤ 6.0	⑭ 4.0	㉓ 2.2	㉔ 4.6
⑥ 3.5	⑮ 2.0	㉔ 4.9	㉕ 95.5
⑦ 3.6	⑯ 2.4	㉕ 4.5	㉖ 17.5
⑧ 3.8	⑰ 3.0	㉖ 3.5	㉗ 8.0
⑨ 5.5	⑱ 2.75	㉗ 1.8	㉘ 28.4
㉙ 70.5	㉚ 5.2		
㉛ 30.5	㉜ 14.4		

Scale: 1 square=

11/9/11

Solana Rd

CJ

41 120.5	49 8.5	57 7.25	65 3.0
42 28.5	50 5.0	58 4.5	62 2.75
43 10.9	51 3.5	59 2.5	63 2.3
44 10.2	52 5.1	60 3.2	64 1.6
45 13.5	53 9.5	61 3.5	—
46 9.5	54 6.0	62 2.75	—
47 5.8	55 3.0	63 1.5	—
48 4.8	56 9.0	64 2.3	—

* Diagram on p. 15 *

• Values are MM/hr

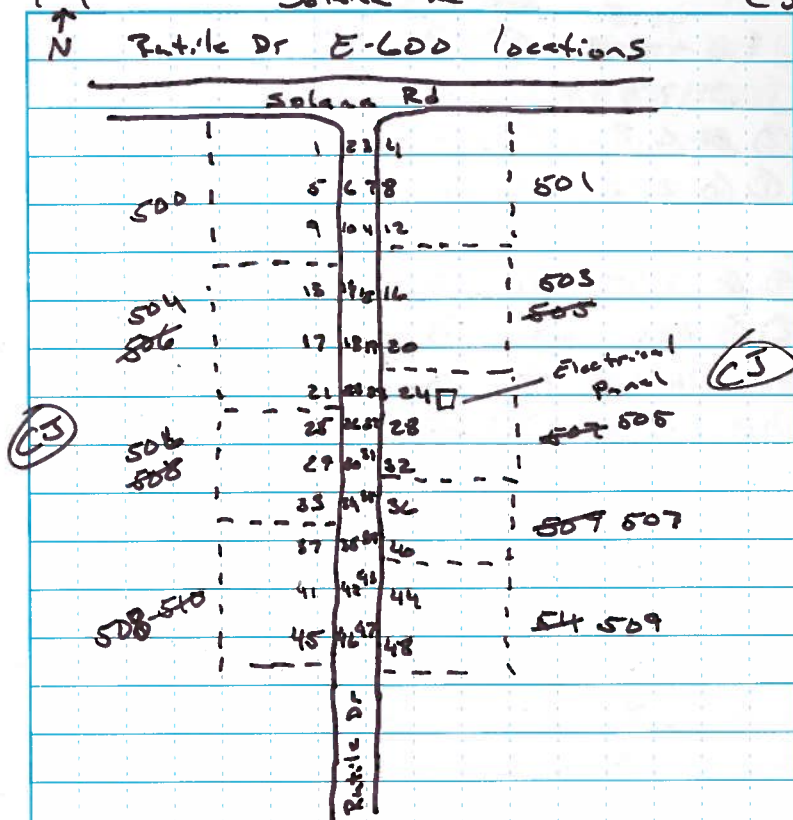
• N₁ to S₁ locations are spaced in grass to rd to other side of rd then grass. E₁ to W₁ locations are spaced approx 50 ft apart.

Scale: 1 square=

11/9/11

Solana Rd

CJ



* Results on p. 18 *

- #'s on this page correspond w/ results on following page.
- N₁ to S₁ locations are spaced approx 50 ft apart. E₁ to W₁ locations are in rd and in grass (grass, rd, rd, grass).

Scale: 1 square=

11/9/11

Solana Rd

CJ

① 1 46.5	②⑧ 28 28 6.5	_____
③ 2 7.5	②⑦ 27 26 3.25	_____
② 1 6.8	②⑥ 26 27 2.8	_____
① 4 28.6	②⑤ 25 28 3.6	_____
⑧ 4 22.0	③② 29 29 4.5	_____
⑦ 4 7.75	③① 31 30 3.0	_____
⑥ 2 5.4	③⑦ 37 37 3.0	_____
⑤ 4 16.1	②⑨ 29 28 3.2	_____
⑩ 5 12.25	④③⑤ 39 39 7.0	_____
⑪ 4 5.0	③⑤④ 35 35 4.0	_____
⑩ 4 3.8	④④⑤ 34 34 5.9	_____
⑨ 4 10.4	③③⑤ 33 33 4.4	_____
⑦ 4 12.0	④⑦ 37 37 5.0	_____
⑤ 4 4.5	③⑨ 39 38 3.0	_____
④ 4 3.8	③⑧ 38 29 2.9	_____
③ 4 13.9	③⑦ 37 40 4.0	_____
②⑦ 27 6.5	④④ 44 44 3.0	_____
②⑥ 26 4.0	④③ 43 42 2.5	_____
①⑧ 18 3.8	④② 42 43 1.8	_____
①⑦ 17 11.2	④① 41 44 3.8	_____
②④ 24 10.5	④⑧ 48 40 1.8	_____
②③ 23 4.5	④⑦ 47 46 2.5	_____
②② 22 4.1	④⑥ 46 47 2.2	_____
②① 21 4.4	④⑤ 45 48 1.7	_____

Scale: 1 square =

CJ

11/9/11

Solana Rd

CJ

1440 Depart study area for hotel
to extract data from RERT/ERT.
1445 @ hotel, load supplies into
EPA vehicle

1500 RERT/ERT begin to process
and extract data.

• Spencer has corrected GPS
data but Dave does not have
corrected data.

1915 RERT/ERT has completed —
data processing and START Jones
has obtained the scanner van —
files. End of Day.

Scale: 1 square =

11/9/11

Solana Rd

CJ

Photo log

#	Date	Photographer	Subject
1000684	Nov. 9, 2011	CJ	EPA RERT/

ERT setting up to collect soil
samples. _____

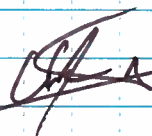
1000685 Nov. 9, 2011 CJ Device used
to collect soil core. _____

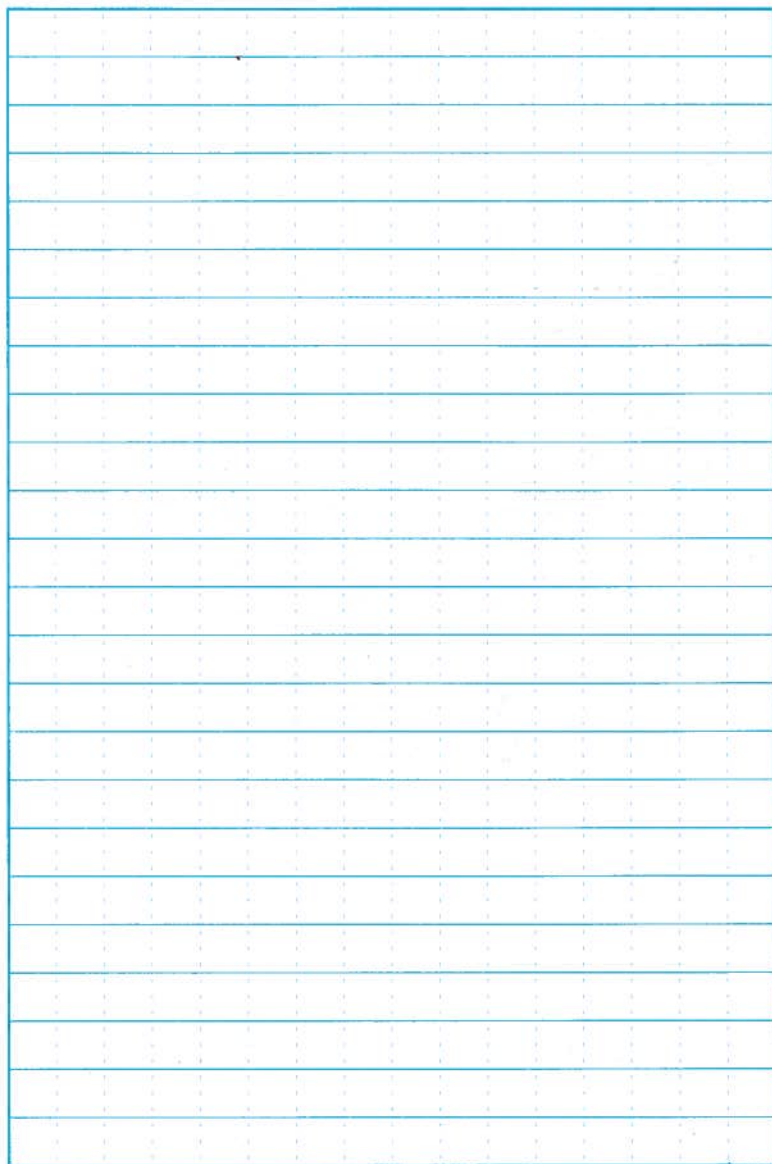
1000686 Nov. 9, 2011 CJ 30 in soil
core sampler. _____

1000687 Nov. 9, 2011 CJ SAM 935
obtaining an exposure rate at
Location 1. _____

1000688 Nov. 9, 2011 CJ EPA RERT/
ERT collecting soil sample from
Location 2. _____

1000689 Nov. 9, 2011 CJ EPA RERT/
ERT collecting soil sample from
Location 3 (Background). _____





Scale: 1 square=_____

"Rite in the Rain"®

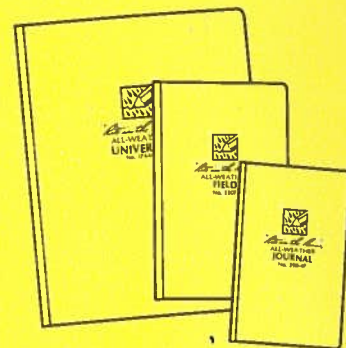
ALL-WEATHER WRITING PAPER



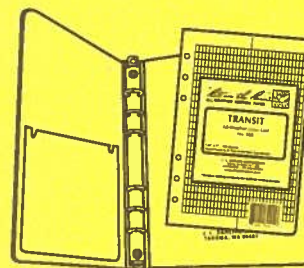
"Outdoor writing products...
...for outdoor writing people."



Copier & Ink-Jet Paper



Bound Books



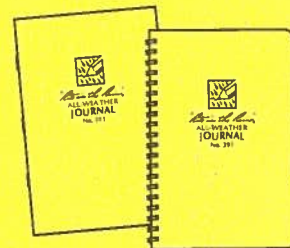
Loose Leaf / Ring Binders



Memo Books



All-Weather Pens



Notebooks

www.RiteintheRain.com

ENCLOSURE 4

GOOGLE EARTH APPLIATION OF STUDY AERA

(will be provided on CD with final report)

ATTACHMENT 1

LABORATORY ANALYTICAL DATA PACKAGE

(94 Pages)

Data Package Checklist

(Initials do not signify approval)

Reviewer	Initials	Date
CERLS ASC	_____	_____
CERLS QA Officer	_____	_____
NAREL QA Manager	_____	_____
CERLS Director	_____	_____

Project: PONTE VEDRA

SDG Number: 1100241

Date due: _____

Analysis: NAREL GAM-01

Type of Package:

☐ Data Summary Package

☐ Complete Package

Y	N	N/A	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All samples in the SDG are reported
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All results are the ones intended
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Printed results match the raw data
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Error report forms are attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SDG Form is attached, front and back
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Analyst's checklist is attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Original prep batch forms are attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All supporting data sheets are attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All raw data sheets appear to be correct
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All handwritten notes are initialed and dated
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Package is arranged correctly
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Package appears to be complete

Were holding times met? ☐ Yes ☐ No ☐ N/A

Were all QC results acceptable? ☐ Yes ☐ No

Are there any exceptions to report? ☐ Yes ☐ No

Prepared by: _____

QAO Review

Y	N	N/A	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All QC failures are noted
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Raw data look reasonable
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All exceptions have been noted

Comments: _____

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

REPORT OF SAMPLE DELIVERY GROUP #1100241

Project: Region 4 - Ponte Vedra, Florida
Analysis method: Gamma Spectrometry
Report ID: 1100241-GAMMA-CORR
Report type: Corrected
Date reported: 02/10/2012
Total pages in report: 22

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B1.13797J	Flag 2: 0-10" SCF07460	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13798K	Flag 1: 0-10" SCF07461	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13799L	Flag 1: 10-20" SCF07461	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13800K	Flag 1: 0-10" SCF07462	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13801L	Flag 2: 0-20" SCF07463	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13802M	Flag 3: 0-10" SCF07464	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13803N	Flag 3: 10-20" SCF07464	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13804P	Flag 3: 0-10" SCF07465	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13805Q	Flag 2: 20-30" SCF07466	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13806R	Flag 2: 0-10" SCF07467	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13807T	Flag 2: 10-20" SCF07467	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13808U	Flag 3: 20-30" SCF07468	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011

EXCEPTIONS

1. **Packaging and shipping**—No problems were observed.
2. **Documentation**— After the client received the data packages, the client sample IDs were changed at the request of the client. This data package has the corrected client sample IDs.
3. **Sample preparation**— No problems were encountered. Precautions were taken to minimize cross contamination due to elevated screening results during sample receipt.
4. **Analysis**— Although NAREL has no mechanism to create an air tight vessel, samples were sealed for 21 days to allow for ingrowth of Rn-222 and progeny as requested by the client.
5. **Holding times**—No holding times were specified.

QUALITY CONTROL

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

CERTIFICATION

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

Mary F. Wisdom
Quality Assurance Manager, NAREL

Date

John G. Griggs, Ph.D.
Director, Center for Environmental Radioanalytical
Laboratory Science

Date

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample (blank spike)
MS	Matrix spike
MSD	Matrix spike duplicate
RBK	Method blank

QUALITY INDICATORS

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

EVALUATION OF QC ANALYSES

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

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

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

The Z score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference. When the precision of paired MS/MSD analyses is evaluated, the native sample activity is subtracted from each measured value and the net concentrations are then converted to total activities before the Z score is computed.

Each standard uncertainty used to compute a Z score includes an additional fixed term to represent sources of measurement error other than counting error. This additional term is not used in the evaluation of reagent blanks.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation.

GENERAL INFORMATION (CONTINUED)

GAMMA ANALYSIS

The reporting format lists the gamma emitters in alphabetical order. The activity and 2-sigma uncertainty for radionuclides measured by gamma spectroscopy are reported only if the nuclide is detected. Nuclides that are not detected do not appear in the report, with the exception of Ba-140, Co-60, Cs-137, I-131, K-40, Ra-226 and Ra-228. If one of these seven nuclides is undetected, NAREL reports it as "Not Detected" or "ND", and provides a sample-specific estimate of the MDC.

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

NAREL's gamma spectroscopy software corrects activities and MDCs for decay between collection and analysis, but only up to a limit of ten half-lives. So, if the decay time for a sample is more than ten half-lives of a radionuclide, that nuclide will almost always be undetected and the reported MDC will be meaningless. This is usually a problem only for short-lived radionuclides, such as I-131 and Ba-140, when there is a long delay between collection and analysis.

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SDG #1100241

ANALYSIS SUMMARY

Analysis Procedure: NAREL GAM-01
Title: Gamma Spectrometry

NAREL Sample #	QC Type	Preparation Procedure	Date Completed	Assay Batch #	QC Batch #
B1.13797J	DUP	N/A	12/23/2011	0015571K	0008302M
B1.13798K		N/A	12/23/2011	0015571K	0008302M
B1.13799L		N/A	12/24/2011	0015571K	0008302M
B1.13800K		N/A	12/23/2011	0015571K	0008302M
B1.13800K		N/A	12/24/2011	0015571K	0008302M
B1.13801L		N/A	12/23/2011	0015571K	0008302M
B1.13802M		N/A	12/23/2011	0015571K	0008302M
B1.13803N		N/A	12/24/2011	0015571K	0008302M
B1.13804P		N/A	12/24/2011	0015571K	0008302M
B1.13805Q		N/A	12/24/2011	0015571K	0008302M
B1.13806R		N/A	12/24/2011	0015571K	0008302M
B1.13807T		N/A	12/24/2011	0015571K	0008302M
B1.13808U		N/A	12/24/2011	0015571K	0008302M
LCS-00626567N *	LCS	N/A	12/23/2011	0015571K	0008302M
RBK-00626568P *	RBK	N/A	12/24/2011	0015571K	0008302M

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

PREPARATION METHOD(S) USED

Procedure ID	Title

**U.S.ENVIRONMENTAL PROTECTION AGENCY
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SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13797J	QC batch #:	0008302M
Matrix:	SOIL	Assay batch #:	0015571K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.410e+02 GDRY	Analysis procedure:	NAREL GAM-01
Dry/wet weight:	96.46 %	Analyst:	RCL
Ash/dry weight:	98.83 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/22/2011 12:08	1000.0	GE01	RCL

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Ba140	ND		6.7e+00	PCI/GDRY	11/09/2011 09:05
Bi212	1.59e+02	1.8e+01		PCI/GDRY	11/09/2011 09:05
Bi214 *	7.41e+01	8.5e+00		PCI/GDRY	11/09/2011 09:05
Co60	ND		2.1e-01	PCI/GDRY	11/09/2011 09:05
Cs137	ND		2.3e-01	PCI/GDRY	11/09/2011 09:05
I131	ND		6.3e+00	PCI/GDRY	11/09/2011 09:05
K40	1.12e+01	1.5e+00		PCI/GDRY	11/09/2011 09:05
Pa234m *	8.73e+01	1.3e+01		PCI/GDRY	11/09/2011 09:05
Pb211	2.15e+01	3.3e+00		PCI/GDRY	11/09/2011 09:05
Pb212	1.37e+02	1.6e+01		PCI/GDRY	11/09/2011 09:05
Pb214 *	7.86e+01	9.0e+00		PCI/GDRY	11/09/2011 09:05
Ra226 *	9.14e+01	1.1e+01		PCI/GDRY	11/09/2011 09:05
Ra228	1.47e+02	1.7e+01		PCI/GDRY	11/09/2011 09:05
Rn219	3.09e+00	7.7e-01		PCI/GDRY	11/09/2011 09:05
Rn220	9.53e+01	5.8e+01		PCI/GDRY	11/09/2011 09:05
Tl208	4.56e+01	5.2e+00		PCI/GDRY	11/09/2011 09:05
U235 *	2.51e+00	3.1e-01		PCI/GDRY	11/09/2011 09:05

* An asterisk indicates a result that may be significantly under or overestimated

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SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13798K	QC batch #:	0008302M
Matrix:	SOIL	Assay batch #:	0015571K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.480e+02 GDRY	Analysis procedure:	NAREL GAM-01
Dry/wet weight:	94.78 %	Analyst:	RCL
Ash/dry weight:	92.77 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/22/2011 12:09	1000.0	GE02	RCL

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Ba140	ND		1.4e+01	PCI/GDRY	11/09/2011 08:25
Bi212	6.74e+02	7.8e+01		PCI/GDRY	11/09/2011 08:25
Bi214 *	2.21e+02	2.5e+01		PCI/GDRY	11/09/2011 08:25
Co60	ND		3.6e-01	PCI/GDRY	11/09/2011 08:25
Cs137	ND		4.4e-01	PCI/GDRY	11/09/2011 08:25
I131	ND		1.4e+01	PCI/GDRY	11/09/2011 08:25
K40	ND		3.4e+00	PCI/GDRY	11/09/2011 08:25
Pa231	7.07e+00	4.1e+00		PCI/GDRY	11/09/2011 08:25
Pa234m *	2.83e+02	3.8e+01		PCI/GDRY	11/09/2011 08:25
Pb212	6.24e+02	7.2e+01		PCI/GDRY	11/09/2011 08:25
Pb214 *	2.51e+02	2.9e+01		PCI/GDRY	11/09/2011 08:25
Ra226 *	2.81e+02	3.3e+01		PCI/GDRY	11/09/2011 08:25
Ra228	6.43e+02	7.4e+01		PCI/GDRY	11/09/2011 08:25
Rn219	7.74e+00	1.7e+00		PCI/GDRY	11/09/2011 08:25
Rn220	6.32e+02	1.7e+02		PCI/GDRY	11/09/2011 08:25
Th227	1.80e+01	2.8e+00		PCI/GDRY	11/09/2011 08:25
Tl208	1.94e+02	2.2e+01		PCI/GDRY	11/09/2011 08:25
U235 *	8.60e+00	1.0e+00		PCI/GDRY	11/09/2011 08:25

* An asterisk indicates a result that may be significantly under or overestimated

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SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13799L	QC batch #:	0008302M
Matrix:	SOIL	Assay batch #:	0015571K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	6.310e+02 GDRY	Analysis procedure:	NAREL GAM-01
Dry/wet weight:	97.09 %	Analyst:	RCL
Ash/dry weight:	98.75 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/23/2011 11:43	1000.0	GE02	RCL

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Ba140	ND		7.1e-01	PCI/GDRY	11/09/2011 08:25
Bi212	2.29e+00	3.1e-01		PCI/GDRY	11/09/2011 08:25
Bi214 *	1.65e+00	1.9e-01		PCI/GDRY	11/09/2011 08:25
Co60	ND		1.8e-02	PCI/GDRY	11/09/2011 08:25
Cs137	ND		2.1e-02	PCI/GDRY	11/09/2011 08:25
I131	ND		8.1e-01	PCI/GDRY	11/09/2011 08:25
K40	9.16e-01	1.5e-01		PCI/GDRY	11/09/2011 08:25
Pa234m *	2.14e+00	9.3e-01		PCI/GDRY	11/09/2011 08:25
Pb212	2.11e+00	2.4e-01		PCI/GDRY	11/09/2011 08:25
Pb214 *	1.71e+00	2.0e-01		PCI/GDRY	11/09/2011 08:25
Ra223 *	5.35e-01	8.3e-02		PCI/GDRY	11/09/2011 08:25
Ra226 *	2.77e+00	4.4e-01		PCI/GDRY	11/09/2011 08:25
Ra228	2.26e+00	2.6e-01		PCI/GDRY	11/09/2011 08:25
Tl208	7.03e-01	8.3e-02		PCI/GDRY	11/09/2011 08:25
U235 *	1.74e-01	2.8e-02		PCI/GDRY	11/09/2011 08:25

* An asterisk indicates a result that may be significantly under or overestimated

**U.S.ENVIRONMENTAL PROTECTION AGENCY
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SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13800K	QC batch #:	0008302M
Matrix:	SOIL	Assay batch #:	0015571K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	9.940e+01 GDRY	Analysis procedure:	NAREL GAM-01
Dry/wet weight:	94.77 %	Analyst:	RCL
Ash/dry weight:	97.68 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/22/2011 12:10	1000.0	GE08	RCL

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Ba140	ND		1.3e+01	PCI/GDRY	11/09/2011 08:45
Bi212	3.77e+02	4.3e+01		PCI/GDRY	11/09/2011 08:45
Bi214 *	1.27e+02	1.5e+01		PCI/GDRY	11/09/2011 08:45
Co60	ND		4.3e-01	PCI/GDRY	11/09/2011 08:45
Cs137	ND		4.5e-01	PCI/GDRY	11/09/2011 08:45
I131	ND		1.2e+01	PCI/GDRY	11/09/2011 08:45
K40	2.58e+01	3.4e+00		PCI/GDRY	11/09/2011 08:45
Pa234m *	1.74e+02	2.8e+01		PCI/GDRY	11/09/2011 08:45
Pb212	3.55e+02	4.1e+01		PCI/GDRY	11/09/2011 08:45
Pb214 *	1.42e+02	1.6e+01		PCI/GDRY	11/09/2011 08:45
Ra226 *	1.37e+02	1.6e+01		PCI/GDRY	11/09/2011 08:45
Ra228	3.59e+02	4.1e+01		PCI/GDRY	11/09/2011 08:45
Rn219	5.53e+00	1.4e+00		PCI/GDRY	11/09/2011 08:45
Rn220	3.81e+02	1.3e+02		PCI/GDRY	11/09/2011 08:45
Tl208	1.13e+02	1.3e+01		PCI/GDRY	11/09/2011 08:45
U235 *	6.94e+00	8.3e-01		PCI/GDRY	11/09/2011 08:45

* An asterisk indicates a result that may be significantly under or overestimated

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SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13800K	QC batch #:	0008302M
Matrix:	SOIL	Assay batch #:	0015571K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	9.940e+01 GDRY	Analysis procedure:	NAREL GAM-01
Dry/wet weight:	94.77 %	Analyst:	RCL
Ash/dry weight:	97.68 %	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/23/2011 11:43	1000.0	GE01	RCL

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Ba140	ND		1.3e+01	PCI/GDRY	11/09/2011 08:45
Bi212	3.97e+02	4.6e+01		PCI/GDRY	11/09/2011 08:45
Bi214 *	1.30e+02	1.5e+01		PCI/GDRY	11/09/2011 08:45
Co60	ND		4.0e-01	PCI/GDRY	11/09/2011 08:45
Cs137	ND		4.3e-01	PCI/GDRY	11/09/2011 08:45
I131	ND		1.2e+01	PCI/GDRY	11/09/2011 08:45
K40	2.79e+01	3.6e+00		PCI/GDRY	11/09/2011 08:45
Pa234m *	1.46e+02	2.2e+01		PCI/GDRY	11/09/2011 08:45
Pb212	3.50e+02	4.0e+01		PCI/GDRY	11/09/2011 08:45
Pb214 *	1.43e+02	1.6e+01		PCI/GDRY	11/09/2011 08:45
Ra226 *	1.54e+02	1.8e+01		PCI/GDRY	11/09/2011 08:45
Ra228	3.68e+02	4.2e+01		PCI/GDRY	11/09/2011 08:45
Rn219	5.06e+00	1.2e+00		PCI/GDRY	11/09/2011 08:45
Rn220	4.58e+02	1.4e+02		PCI/GDRY	11/09/2011 08:45
Tl208	1.13e+02	1.3e+01		PCI/GDRY	11/09/2011 08:45
U235 *	5.62e+00	6.8e-01		PCI/GDRY	11/09/2011 08:45

* An asterisk indicates a result that may be significantly under or overestimated

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SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13801L	QC batch #:	0008302M
Matrix:	SOIL	Assay batch #:	0015571K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.960e+02 GDRY	Analysis procedure:	NAREL GAM-01
Dry/wet weight:	95.30 %	Analyst:	RCL
Ash/dry weight:	99.36 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/22/2011 12:10	1000.0	GE15	RCL

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Ba140	ND		7.2e+00	PCI/GDRY	11/09/2011 09:35
Bi212	2.03e+02	2.3e+01		PCI/GDRY	11/09/2011 09:35
Bi214 *	8.53e+01	9.8e+00		PCI/GDRY	11/09/2011 09:35
Co60	ND		1.9e-01	PCI/GDRY	11/09/2011 09:35
Cs137	ND		2.2e-01	PCI/GDRY	11/09/2011 09:35
I131	ND		7.8e+00	PCI/GDRY	11/09/2011 09:35
K40	ND		1.7e+00	PCI/GDRY	11/09/2011 09:35
Pa234m *	1.17e+02	1.5e+01		PCI/GDRY	11/09/2011 09:35
Pb212	1.60e+02	1.8e+01		PCI/GDRY	11/09/2011 09:35
Pb214 *	8.85e+01	1.0e+01		PCI/GDRY	11/09/2011 09:35
Ra226	ND		4.0e+00	PCI/GDRY	11/09/2011 09:35
Ra228	1.83e+02	2.1e+01		PCI/GDRY	11/09/2011 09:35
Th234 *	3.81e+01	4.5e+00		PCI/GDRY	11/09/2011 09:35
Tl208	5.88e+01	6.8e+00		PCI/GDRY	11/09/2011 09:35
U235 *	9.89e+00	1.1e+00		PCI/GDRY	11/09/2011 09:35

* An asterisk indicates a result that may be significantly under or overestimated

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SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13802M	QC batch #:	0008302M
Matrix:	SOIL	Assay batch #:	0015571K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	5.420e+02 GDRY	Analysis procedure:	NAREL GAM-01
Dry/wet weight:	93.05 %	Analyst:	RCL
Ash/dry weight:	97.61 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/22/2011 12:11	1000.0	GE18	RCL

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Ba140	ND		3.7e-01	PCI/GDRY	11/09/2011 10:15
Bi212	3.80e-01	1.1e-01		PCI/GDRY	11/09/2011 10:15
Bi214 *	3.09e-01	3.9e-02		PCI/GDRY	11/09/2011 10:15
Co60	ND		1.2e-02	PCI/GDRY	11/09/2011 10:15
Cs137	4.11e-03	3.6e-03		PCI/GDRY	11/09/2011 10:15
I131	ND		3.8e-01	PCI/GDRY	11/09/2011 10:15
K40	1.93e+00	2.4e-01		PCI/GDRY	11/09/2011 10:15
Pa234m *	6.20e-01	7.4e-01		PCI/GDRY	11/09/2011 10:15
Pb212	3.47e-01	4.4e-02		PCI/GDRY	11/09/2011 10:15
Pb214 *	3.33e-01	4.1e-02		PCI/GDRY	11/09/2011 10:15
Ra223 *	1.16e-01	3.5e-02		PCI/GDRY	11/09/2011 10:15
Ra226 *	6.89e-01	1.7e-01		PCI/GDRY	11/09/2011 10:15
Ra228	3.57e-01	5.0e-02		PCI/GDRY	11/09/2011 10:15
Th234 *	2.09e-01	6.9e-02		PCI/GDRY	11/09/2011 10:15
Tl208	1.05e-01	1.6e-02		PCI/GDRY	11/09/2011 10:15
U235 *	4.33e-02	1.1e-02		PCI/GDRY	11/09/2011 10:15

* An asterisk indicates a result that may be significantly under or overestimated

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SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13803N	QC batch #:	0008302M
Matrix:	SOIL	Assay batch #:	0015571K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	5.360e+02 GDRY	Analysis procedure:	NAREL GAM-01
Dry/wet weight:	91.46 %	Analyst:	RCL
Ash/dry weight:	99.51 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/23/2011 11:43	1000.0	GE08	RCL

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Ba140	ND		6.4e-01	PCI/GDRY	11/09/2011 10:15
Bi212	6.88e-01	1.7e-01		PCI/GDRY	11/09/2011 10:15
Bi214 *	5.54e-01	6.9e-02		PCI/GDRY	11/09/2011 10:15
Co60	ND		2.2e-02	PCI/GDRY	11/09/2011 10:15
Cs137	ND		2.1e-02	PCI/GDRY	11/09/2011 10:15
I131	ND		6.6e-01	PCI/GDRY	11/09/2011 10:15
K40	1.69e+00	2.4e-01		PCI/GDRY	11/09/2011 10:15
Pb212	6.34e-01	7.7e-02		PCI/GDRY	11/09/2011 10:15
Pb214 *	5.90e-01	7.2e-02		PCI/GDRY	11/09/2011 10:15
Ra223 *	1.77e-01	7.0e-02		PCI/GDRY	11/09/2011 10:15
Ra226 *	1.04e+00	2.6e-01		PCI/GDRY	11/09/2011 10:15
Ra228	6.15e-01	8.0e-02		PCI/GDRY	11/09/2011 10:15
Th234 *	5.14e-01	1.4e-01		PCI/GDRY	11/09/2011 10:15
Tl208	2.08e-01	2.8e-02		PCI/GDRY	11/09/2011 10:15
U235 *	6.50e-02	1.6e-02		PCI/GDRY	11/09/2011 10:15

* An asterisk indicates a result that may be significantly under or overestimated

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SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13804P	QC batch #:	0008302M
Matrix:	SOIL	Assay batch #:	0015571K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	5.300e+02 GDRY	Analysis procedure:	NAREL GAM-01
Dry/wet weight:	93.80 %	Analyst:	RCL
Ash/dry weight:	93.69 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/23/2011 11:43	1000.0	GE06	RCL

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Ba140	ND		5.2e-01	PCI/GDRY	11/09/2011 10:30
Bi212	8.83e-01	1.5e-01		PCI/GDRY	11/09/2011 10:30
Bi214 *	5.52e-01	6.7e-02		PCI/GDRY	11/09/2011 10:30
Co60	ND		1.6e-02	PCI/GDRY	11/09/2011 10:30
Cs137	ND		1.5e-02	PCI/GDRY	11/09/2011 10:30
I131	ND		5.5e-01	PCI/GDRY	11/09/2011 10:30
K40	1.78e+00	2.4e-01		PCI/GDRY	11/09/2011 10:30
Pb212	8.28e-01	9.8e-02		PCI/GDRY	11/09/2011 10:30
Pb214 *	6.13e-01	7.3e-02		PCI/GDRY	11/09/2011 10:30
Ra223 *	2.21e-01	4.5e-02		PCI/GDRY	11/09/2011 10:30
Ra226 *	1.07e+00	2.2e-01		PCI/GDRY	11/09/2011 10:30
Ra228	7.95e-01	9.7e-02		PCI/GDRY	11/09/2011 10:30
Tl208	2.58e-01	3.2e-02		PCI/GDRY	11/09/2011 10:30
U235 *	6.73e-02	1.4e-02		PCI/GDRY	11/09/2011 10:30

* An asterisk indicates a result that may be significantly under or overestimated

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13805Q	QC batch #:	0008302M
Matrix:	SOIL	Assay batch #:	0015571K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.230e+02 GDRY	Analysis procedure:	NAREL GAM-01
Dry/wet weight:	96.39 %	Analyst:	RCL
Ash/dry weight:	95.40 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/23/2011 11:43	1000.0	GE07	RCL

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Ba140	ND		6.4e+00	PCI/GDRY	11/09/2011 09:55
Bi212	2.02e+02	2.3e+01		PCI/GDRY	11/09/2011 09:55
Bi214 *	8.48e+01	9.7e+00		PCI/GDRY	11/09/2011 09:55
Co60	ND		1.8e-01	PCI/GDRY	11/09/2011 09:55
Cs137	ND		2.1e-01	PCI/GDRY	11/09/2011 09:55
I131	ND		6.8e+00	PCI/GDRY	11/09/2011 09:55
K40	ND		1.7e+00	PCI/GDRY	11/09/2011 09:55
Pa234m *	9.93e+01	1.4e+01		PCI/GDRY	11/09/2011 09:55
Pb211	2.84e+01	3.9e+00		PCI/GDRY	11/09/2011 09:55
Pb212	1.75e+02	2.0e+01		PCI/GDRY	11/09/2011 09:55
Pb214 *	9.26e+01	1.1e+01		PCI/GDRY	11/09/2011 09:55
Ra223 *	3.78e+01	4.4e+00		PCI/GDRY	11/09/2011 09:55
Ra226 *	9.33e+01	1.1e+01		PCI/GDRY	11/09/2011 09:55
Ra228	1.89e+02	2.2e+01		PCI/GDRY	11/09/2011 09:55
Rn219	3.44e+00	6.9e-01		PCI/GDRY	11/09/2011 09:55
Rn220	1.67e+02	5.5e+01		PCI/GDRY	11/09/2011 09:55
Th228	1.72e+02	3.5e+01		PCI/GDRY	11/09/2011 09:55
Th234 *	5.58e+01	6.7e+00		PCI/GDRY	11/09/2011 09:55
Tl208	5.82e+01	6.7e+00		PCI/GDRY	11/09/2011 09:55
U235 *	3.48e+00	4.2e-01		PCI/GDRY	11/09/2011 09:55

* An asterisk indicates a result that may be significantly under or overestimated

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13806R	QC batch #:	0008302M
Matrix:	SOIL	Assay batch #:	0015571K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.190e+02 GDRY	Analysis procedure:	NAREL GAM-01
Dry/wet weight:	96.59 %	Analyst:	RCL
Ash/dry weight:	93.91 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/23/2011 11:43	1000.0	GE15	RCL

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Ba140	ND		5.7e+00	PCI/GDRY	11/09/2011 09:45
Bi212	1.25e+02	1.4e+01		PCI/GDRY	11/09/2011 09:45
Bi214 *	5.91e+01	6.8e+00		PCI/GDRY	11/09/2011 09:45
Co60	ND		1.4e-01	PCI/GDRY	11/09/2011 09:45
Cs137	ND		1.6e-01	PCI/GDRY	11/09/2011 09:45
I131	ND		6.4e+00	PCI/GDRY	11/09/2011 09:45
K40	ND		1.3e+00	PCI/GDRY	11/09/2011 09:45
Pa234m *	7.88e+01	1.1e+01		PCI/GDRY	11/09/2011 09:45
Pb212	9.71e+01	1.1e+01		PCI/GDRY	11/09/2011 09:45
Pb214 *	6.22e+01	7.1e+00		PCI/GDRY	11/09/2011 09:45
Ra226 *	1.12e+02	1.3e+01		PCI/GDRY	11/09/2011 09:45
Ra228	1.12e+02	1.3e+01		PCI/GDRY	11/09/2011 09:45
Th234 *	2.85e+01	3.3e+00		PCI/GDRY	11/09/2011 09:45
Tl208	3.50e+01	4.0e+00		PCI/GDRY	11/09/2011 09:45
U235 *	6.82e+00	7.9e-01		PCI/GDRY	11/09/2011 09:45

* An asterisk indicates a result that may be significantly under or overestimated

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13807T	QC batch #:	0008302M
Matrix:	SOIL	Assay batch #:	0015571K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.360e+02 GDRY	Analysis procedure:	NAREL GAM-01
Dry/wet weight:	96.14 %	Analyst:	RCL
Ash/dry weight:	94.61 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/23/2011 11:43	1000.0	GE16	RCL

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Ba140	ND		6.4e+00	PCI/GDRY	11/09/2011 09:45
Bi212	3.03e+02	3.5e+01		PCI/GDRY	11/09/2011 09:45
Bi214 *	1.22e+02	1.4e+01		PCI/GDRY	11/09/2011 09:45
Co60	ND		1.9e-01	PCI/GDRY	11/09/2011 09:45
Cs137	ND		2.2e-01	PCI/GDRY	11/09/2011 09:45
I131	ND		6.7e+00	PCI/GDRY	11/09/2011 09:45
K40	ND		1.8e+00	PCI/GDRY	11/09/2011 09:45
Pa231	3.09e+00	1.6e+00		PCI/GDRY	11/09/2011 09:45
Pa234m *	1.82e+02	2.4e+01		PCI/GDRY	11/09/2011 09:45
Pb212	2.74e+02	3.1e+01		PCI/GDRY	11/09/2011 09:45
Pb214 *	1.39e+02	1.6e+01		PCI/GDRY	11/09/2011 09:45
Ra223 *	5.51e+01	6.3e+00		PCI/GDRY	11/09/2011 09:45
Ra226 *	1.35e+02	1.6e+01		PCI/GDRY	11/09/2011 09:45
Ra228	2.84e+02	3.3e+01		PCI/GDRY	11/09/2011 09:45
Rn219	4.84e+00	8.1e-01		PCI/GDRY	11/09/2011 09:45
Rn220	2.59e+02	5.8e+01		PCI/GDRY	11/09/2011 09:45
Th228	2.81e+02	4.1e+01		PCI/GDRY	11/09/2011 09:45
Th234 *	5.90e+01	6.8e+00		PCI/GDRY	11/09/2011 09:45
Tl208	8.31e+01	9.5e+00		PCI/GDRY	11/09/2011 09:45
U235 *	6.47e+00	7.6e-01		PCI/GDRY	11/09/2011 09:45

* An asterisk indicates a result that may be significantly under or overestimated

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13808U	QC batch #:	0008302M
Matrix:	SOIL	Assay batch #:	0015571K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	5.430e+02 GDRY	Analysis procedure:	NAREL GAM-01
Dry/wet weight:	91.38 %	Analyst:	RCL
Ash/dry weight:	92.67 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/23/2011 11:43	1000.0	GE18	RCL

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Ba140	ND		4.4e-01	PCI/GDRY	11/09/2011 10:45
Bi212	5.86e-01	1.2e-01		PCI/GDRY	11/09/2011 10:45
Bi214 *	4.90e-01	5.9e-02		PCI/GDRY	11/09/2011 10:45
Co60	ND		1.3e-02	PCI/GDRY	11/09/2011 10:45
Cs137	ND		1.3e-02	PCI/GDRY	11/09/2011 10:45
I131	ND		4.5e-01	PCI/GDRY	11/09/2011 10:45
K40	1.69e+00	2.2e-01		PCI/GDRY	11/09/2011 10:45
Pa234m *	4.88e-01	7.1e-01		PCI/GDRY	11/09/2011 10:45
Pb212	6.10e-01	7.3e-02		PCI/GDRY	11/09/2011 10:45
Pb214 *	5.35e-01	6.4e-02		PCI/GDRY	11/09/2011 10:45
Ra223 *	1.69e-01	4.2e-02		PCI/GDRY	11/09/2011 10:45
Ra226 *	9.16e-01	1.9e-01		PCI/GDRY	11/09/2011 10:45
Ra228	6.20e-01	7.8e-02		PCI/GDRY	11/09/2011 10:45
Th234 *	2.93e-01	8.4e-02		PCI/GDRY	11/09/2011 10:45
Tl208	1.82e-01	2.3e-02		PCI/GDRY	11/09/2011 10:45
U235 *	5.75e-02	1.2e-02		PCI/GDRY	11/09/2011 10:45

* An asterisk indicates a result that may be significantly under or overestimated

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	LCS-00626567N	QC batch #:	0008302M
Matrix:	N/A	Assay batch #:	0015571K
Sample type:	N/A	Prep procedure:	N/A
Amount analyzed:	1.000e+00 SAMP	Analysis procedure:	NAREL GAM-01
Dry/wet weight:	N/A	Analyst:	RCL
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/22/2011 12:10	1000.0	GE16	RCL

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Ba140	ND		2.3e+04	PCI	12/15/2010 11:00
Bi207	3.99e+03	4.6e+02		PCI	12/15/2010 11:00
Co60	ND		7.4e+00	PCI	12/15/2010 11:00
Cs137	ND		7.3e+00	PCI	12/15/2010 11:00
Eu155	9.13e+02	1.1e+02		PCI	12/15/2010 11:00
I131	ND		8.3e+03	PCI	12/15/2010 11:00
K40	ND		6.4e+01	PCI	12/15/2010 11:00
Ra226	ND		1.2e+02	PCI	12/15/2010 11:00
Ra228	ND		4.2e+01	PCI	12/15/2010 11:00

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	RBK-00626568P	QC batch #:	0008302M
Matrix:	N/A	Assay batch #:	0015571K
Sample type:	N/A	Prep procedure:	N/A
Amount analyzed:	1.000e+00 SAMP	Analysis procedure:	NAREL GAM-01
Dry/wet weight:	N/A	Analyst:	RCL
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/23/2011 11:43	1000.0	GE09	RCL

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Ba140	ND		1.2e+01	PCI	12/21/2011 12:00
Co60	ND		4.1e+00	PCI	12/21/2011 12:00
Cs137	ND		3.5e+00	PCI	12/21/2011 12:00
I131	ND		3.4e+00	PCI	12/21/2011 12:00
K40	ND		3.9e+01	PCI	12/21/2011 12:00
Ra226	ND		4.7e+01	PCI	12/21/2011 12:00
Ra228	ND		2.3e+01	PCI	12/21/2011 12:00

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG 1100241

QC BATCH SUMMARY

QC batch #: 0008302M
Preparation procedure: N/A
Analysis procedure: NAREL GAM-01

NAREL Sample #	QC Type	Yield (%)	$\pm 2 \sigma$ Uncertainty (%)	Analyst
B1.13797J	DUP	N/A		RCL
B1.13798K		N/A		RCL
B1.13799L		N/A		RCL
B1.13800K		N/A		RCL
B1.13800K		N/A		RCL
B1.13801L		N/A		RCL
B1.13802M		N/A		RCL
B1.13803N		N/A		RCL
B1.13804P		N/A		RCL
B1.13805Q		N/A		RCL
B1.13806R		N/A		RCL
B1.13807T		N/A		RCL
B1.13808U		N/A		RCL
LCS-00626567N *	LCS	N/A		RCL
RBK-00626568P *	RBK	N/A		RCL

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

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG 1100241

ASSAY BATCH SUMMARY

SAMPLES ANALYZED

NAREL Sample #	QC Type	Aliquot Size	Completion Date	Assay Batch
B1.13797J	DUP	2.41e+02 GDRY	12/23/2011	0015571K
B1.13798K		1.48e+02 GDRY	12/23/2011	0015571K
B1.13799L		6.31e+02 GDRY	12/24/2011	0015571K
B1.13800K		9.94e+01 GDRY	12/23/2011	0015571K
B1.13800K		9.94e+01 GDRY	12/24/2011	0015571K
B1.13801L		1.96e+02 GDRY	12/23/2011	0015571K
B1.13802M		5.42e+02 GDRY	12/23/2011	0015571K
B1.13803N		5.36e+02 GDRY	12/24/2011	0015571K
B1.13804P		5.30e+02 GDRY	12/24/2011	0015571K
B1.13805Q		2.23e+02 GDRY	12/24/2011	0015571K
B1.13806R		2.19e+02 GDRY	12/24/2011	0015571K
B1.13807T		1.36e+02 GDRY	12/24/2011	0015571K
B1.13808U		5.43e+02 GDRY	12/24/2011	0015571K
LCS-00626567N *	LCS	1.00e+00 SAMP	12/23/2011	0015571K
RBK-00626568P *	RBK	1.00e+00 SAMP	12/24/2011	0015571K

Samples marked with an asterisk (*) are not in SDG #1100241 but were analyzed with it for QC purposes

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

DETECTOR REPORT

The following were used for samples in the SDG

GE01	12/22/2011 12:08	00624565C	B1.13797J
GE01	12/23/2011 11:43	00626566M	B1.13800K
GE02	12/22/2011 12:09	00624569G	B1.13798K
GE02	12/23/2011 11:43	00624573C	B1.13799L
GE06	12/23/2011 11:43	00624593G	B1.13804P
GE07	12/23/2011 11:43	00624597L	B1.13805Q
GE08	12/22/2011 12:10	00624577G	B1.13800K
GE08	12/23/2011 11:43	00624589L	B1.13803N
GE15	12/22/2011 12:10	00624581C	B1.13801L
GE15	12/23/2011 11:43	00624601N	B1.13806R
GE16	12/23/2011 11:43	00624605T	B1.13807T
GE18	12/22/2011 12:11	00624585G	B1.13802M
GE18	12/23/2011 11:43	00624609X	B1.13808U

The following were used for other samples in the QC batches

GE09	12/23/2011 11:43	00626568P
GE16	12/22/2011 12:10	00626567N

Data Package Checklist

(Initials do not signify approval)

Reviewer	Initials	Date
CERLS ASC	_____	_____
CERLS QA Officer	_____	_____
NAREL QA Manager	_____	_____
CERLS Director	_____	_____

Project: PONTE VEDRA

SDG Number: 1100241

Date due: _____

Analysis: NAREL GR-03

Type of Package:

☐ Data Summary Package

☐ Complete Package

Y	N	N/A	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All samples in the SDG are reported
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All results are the ones intended
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Printed results match the raw data
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Error report forms are attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SDG Form is attached, front and back
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Analyst's checklist is attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Original prep batch forms are attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All supporting data sheets are attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All raw data sheets appear to be correct
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All handwritten notes are initialed and dated
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Package is arranged correctly
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Package appears to be complete

Were holding times met? ☐ Yes ☐ No ☐ N/A

Were all QC results acceptable? ☐ Yes ☐ No

Are there any exceptions to report? ☐ Yes ☐ No

Prepared by: _____

QAO Review

Y	N	N/A	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All QC failures are noted
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Raw data look reasonable
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All exceptions have been noted

Comments: _____

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
540 S. MORRIS AVE., MONTGOMERY, AL 36115
ALPBET ANALYSES**

REPORT OF SAMPLE DELIVERY GROUP #1100241

Project: Region 4 - Ponte Vedra, Florida
Analysis method: Gross Alpha and Beta on Solid Samples
Report ID: 1100241-ALPBET-CORR
Report type: Corrected
Date reported: 02/10/2012
Total pages in report: 24

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B1.13797J	Flag 2: 0-10" SCF07460	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13798K	Flag 1: 0-10" SCF07461	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13799L	Flag 1: 10-20" SCF07461	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13800K	Flag 1: 0-10" SCF07462	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13801L	Flag 2: 0-20" SCF07463	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13802M	Flag 3: 0-10" SCF07464	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13803N	Flag 3: 10-20" SCF07464	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13804P	Flag 3: 0-10" SCF07465	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13805Q	Flag 2: 20-30" SCF07466	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13806R	Flag 2: 0-10" SCF07467	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13807T	Flag 2: 10-20" SCF07467	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13808U	Flag 3: 20-30" SCF07468	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011

EXCEPTIONS

1. **Packaging and shipping**—No problems were observed.
2. **Documentation**—After the client received the data packages, the client sample IDs were changed at the request of the client. This data package has the corrected client sample IDs. When this package was originally reported, the wrong QC batch report and method blank control charts were included in the package. The correct report and charts are included in this data package.
3. **Sample preparation**— No problems were encountered. Precautions were taken to minimize cross contamination due to elevated screening results during sample receipt.
4. **Analysis**— No problems were encountered.
5. **Holding times**—No holding times were specified.

QUALITY CONTROL

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

CERTIFICATION

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

Mary F. Wisdom
Quality Assurance Manager, NAREL

Date

John G. Griggs, Ph.D.
Director, Center for Environmental Radioanalytical
Laboratory Science

Date

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample (blank spike)
MS	Matrix spike
MSD	Matrix spike duplicate
RBK	Method blank

QUALITY INDICATORS

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

EVALUATION OF QC ANALYSES

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

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

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

The Z score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference. When the precision of paired MS/MSD analyses is evaluated, the native sample activity is subtracted from each measured value and the net concentrations are then converted to total activities before the Z score is computed.

Each standard uncertainty used to compute a Z score includes an additional fixed term to represent sources of measurement error other than counting error. This additional term is not used in the evaluation of reagent blanks.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation.

GENERAL INFORMATION (CONTINUED)

GROSS ALPHA AND BETA ANALYSIS

In comparison to the methods employed to determine radionuclide-specific activities, the method employed by NAREL to determine gross alpha and beta activity has the potential for greater analytical bias. This is especially true for solid samples. It should be noted that this potential analytical uncertainty is not included in the two-sigma counting uncertainty term. Therefore, gross alpha and beta results should be used as gross approximations of the alpha and beta activity present.

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

ANALYSIS SUMMARY

Analysis Procedure: NAREL GR-03
Title: Gross Alpha and Beta on Solid Samples

NAREL Sample #	QC Type	Preparation Procedure	Date Completed	Assay Batch #	QC Batch #
B1.13797J	DUP	N/A	12/12/2011	0015538J	0008265A
B1.13798K		N/A	12/12/2011	0015538J	0008265A
B1.13799L		N/A	12/12/2011	0015538J	0008265A
B1.13800K		N/A	12/12/2011	0015538J	0008265A
B1.13801L		N/A	12/12/2011	0015538J	0008265A
B1.13802M		N/A	12/12/2011	0015538J	0008265A
B1.13803N		N/A	12/12/2011	0015538J	0008265A
B1.13804P		N/A	12/12/2011	0015538J	0008265A
B1.13805Q		N/A	12/12/2011	0015538J	0008265A
B1.13806R		N/A	12/12/2011	0015538J	0008265A
B1.13806R		N/A	12/12/2011	0015538J	0008265A
B1.13807T		N/A	12/12/2011	0015538J	0008265A
B1.13808U		N/A	12/12/2011	0015538J	0008265A
LCS-00625773N *	LCS	N/A	12/12/2011	0015538J	0008265A
RBK-00625774P *	RBK	N/A	12/12/2011	0015538J	0008265A

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

PREPARATION METHOD(S) USED

Procedure ID	Title

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13797J	QC batch #:	0008265A
Matrix:	SOIL	Assay batch #:	0015538J
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.047e-01 GASH	Analysis procedure:	NAREL GR-03
Dry/wet weight:	96.46 %	Analyst:	CHD
Ash/dry weight:	98.83 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/12/2011 16:43	100.0	GQ2A	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Alpha	3.50e+02	7.3e+01	3.4e+00	PCI/GDRY	12/12/2011 16:43 CST
Beta	5.78e+02	6.2e+01	1.8e+01	PCI/GDRY	12/12/2011 16:43 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13798K	QC batch #:	0008265A
Matrix:	SOIL	Assay batch #:	0015538J
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.038e-01 GASH	Analysis procedure:	NAREL GR-03
Dry/wet weight:	94.78 %	Analyst:	CHD
Ash/dry weight:	92.77 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/12/2011 16:43	100.0	GQ2B	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Alpha	2.53e+03	5.1e+02	3.1e+00	PCI/GDRY	12/12/2011 16:43 CST
Beta	3.39e+03	3.5e+02	4.2e+01	PCI/GDRY	12/12/2011 16:43 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13799L	QC batch #:	0008265A
Matrix:	SOIL	Assay batch #:	0015538J
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.032e-01 GASH	Analysis procedure:	NAREL GR-03
Dry/wet weight:	97.09 %	Analyst:	CHD
Ash/dry weight:	98.75 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/12/2011 16:43	100.0	GQ2C	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Alpha	1.74e+01	7.2e+00	3.7e+00	PCI/GDRY	12/12/2011 16:43 CST
Beta	3.80e+01	6.5e+00	6.4e+00	PCI/GDRY	12/12/2011 16:43 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13800K	QC batch #:	0008265A
Matrix:	SOIL	Assay batch #:	0015538J
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.041e-01 GASH	Analysis procedure:	NAREL GR-03
Dry/wet weight:	94.77 %	Analyst:	CHD
Ash/dry weight:	97.68 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/12/2011 16:43	100.0	GQ2D	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Alpha	4.28e+02	8.9e+01	3.2e+00	PCI/GDRY	12/12/2011 16:43 CST
Beta	6.21e+02	6.6e+01	1.9e+01	PCI/GDRY	12/12/2011 16:43 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13801L	QC batch #:	0008265A
Matrix:	SOIL	Assay batch #:	0015538J
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.042e-01 GASH	Analysis procedure:	NAREL GR-03
Dry/wet weight:	95.30 %	Analyst:	CHD
Ash/dry weight:	99.36 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/12/2011 18:24	100.0	GQ2A	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Alpha	7.63e+02	1.6e+02	3.4e+00	PCI/GDRY	12/12/2011 18:24 CST
Beta	1.19e+03	1.2e+02	2.6e+01	PCI/GDRY	12/12/2011 18:24 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13802M	QC batch #:	0008265A
Matrix:	SOIL	Assay batch #:	0015538J
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.033e-01 GASH	Analysis procedure:	NAREL GR-03
Dry/wet weight:	93.05 %	Analyst:	CHD
Ash/dry weight:	97.61 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/12/2011 18:24	100.0	GQ2B	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Alpha	2.21e+00	4.1e+00	3.2e+00	PCI/GDRY	12/12/2011 18:24 CST
Beta	3.84e+00	3.2e+00	4.8e+00	PCI/GDRY	12/12/2011 18:24 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13803N	QC batch #:	0008265A
Matrix:	SOIL	Assay batch #:	0015538J
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.043e-01 GASH	Analysis procedure:	NAREL GR-03
Dry/wet weight:	91.46 %	Analyst:	CHD
Ash/dry weight:	99.51 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/12/2011 18:24	100.0	GQ2C	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Alpha	3.67e+00	4.6e+00	3.7e+00	PCI/GDRY	12/12/2011 18:24 CST
Beta	8.35e+00	3.6e+00	5.0e+00	PCI/GDRY	12/12/2011 18:24 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13804P	QC batch #:	0008265A
Matrix:	SOIL	Assay batch #:	0015538J
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.032e-01 GASH	Analysis procedure:	NAREL GR-03
Dry/wet weight:	93.80 %	Analyst:	CHD
Ash/dry weight:	93.69 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/12/2011 18:24	100.0	GQ2D	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Alpha	9.10e-01	3.7e+00	3.1e+00	PCI/GDRY	12/12/2011 18:24 CST
Beta	8.68e+00	3.5e+00	4.8e+00	PCI/GDRY	12/12/2011 18:24 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13805Q	QC batch #:	0008265A
Matrix:	SOIL	Assay batch #:	0015538J
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.034e-01 GASH	Analysis procedure:	NAREL GR-03
Dry/wet weight:	96.39 %	Analyst:	CHD
Ash/dry weight:	95.40 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/12/2011 20:04	100.0	GQ2A	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Alpha	8.17e+02	1.7e+02	3.3e+00	PCI/GDRY	12/12/2011 20:04 CST
Beta	1.19e+03	1.2e+02	2.6e+01	PCI/GDRY	12/12/2011 20:04 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13806R	QC batch #:	0008265A
Matrix:	SOIL	Assay batch #:	0015538J
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.034e-01 GASH	Analysis procedure:	NAREL GR-03
Dry/wet weight:	96.59 %	Analyst:	CHD
Ash/dry weight:	93.91 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/12/2011 20:04	100.0	GQ2B	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Alpha	3.54e+02	7.4e+01	3.1e+00	PCI/GDRY	12/12/2011 20:04 CST
Beta	6.10e+02	6.5e+01	1.8e+01	PCI/GDRY	12/12/2011 20:04 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13806R	QC batch #:	0008265A
Matrix:	SOIL	Assay batch #:	0015538J
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.041e-01 GASH	Analysis procedure:	NAREL GR-03
Dry/wet weight:	96.59 %	Analyst:	CHD
Ash/dry weight:	93.91 %	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/12/2011 20:04	100.0	GQ2C	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Alpha	4.07e+02	8.5e+01	3.5e+00	PCI/GDRY	12/12/2011 20:04 CST
Beta	6.42e+02	6.8e+01	1.9e+01	PCI/GDRY	12/12/2011 20:04 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13807T	QC batch #:	0008265A
Matrix:	SOIL	Assay batch #:	0015538J
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.045e-01 GASH	Analysis procedure:	NAREL GR-03
Dry/wet weight:	96.14 %	Analyst:	CHD
Ash/dry weight:	94.61 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/12/2011 20:04	100.0	GQ2D	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Alpha	1.01e+03	2.1e+02	3.1e+00	PCI/GDRY	12/12/2011 20:04 CST
Beta	1.33e+03	1.4e+02	2.7e+01	PCI/GDRY	12/12/2011 20:04 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13808U	QC batch #:	0008265A
Matrix:	SOIL	Assay batch #:	0015538J
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.052e-01 GASH	Analysis procedure:	NAREL GR-03
Dry/wet weight:	91.38 %	Analyst:	CHD
Ash/dry weight:	92.67 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/12/2011 21:44	100.0	GQ2A	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Alpha	2.33e+00	4.0e+00	3.2e+00	PCI/GDRY	12/12/2011 21:44 CST
Beta	8.20e+00	3.3e+00	4.4e+00	PCI/GDRY	12/12/2011 21:44 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	LCS-00625773N	QC batch #:	0008265A
Matrix:	N/A	Assay batch #:	0015538J
Sample type:	N/A	Prep procedure:	N/A
Amount analyzed:	1.000e+00 SAMP	Analysis procedure:	NAREL GR-03
Dry/wet weight:	N/A	Analyst:	CHD
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/12/2011 21:44	100.0	GQ2B	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Alpha	1.52e+01	3.3e+00	2.8e-01	PCI	12/12/2011 21:44 CST
Beta	1.60e+01	1.9e+00	1.1e+00	PCI	12/12/2011 21:44 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	RBK-00625774P	QC batch #:	0008265A
Matrix:	N/A	Assay batch #:	0015538J
Sample type:	N/A	Prep procedure:	N/A
Amount analyzed:	1.000e+00 SAMP	Analysis procedure:	NAREL GR-03
Dry/wet weight:	N/A	Analyst:	CHD
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
12/12/2011 21:44	100.0	GQ2C	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Alpha	4.07e-02	3.2e-01	2.9e-01	PCI	12/12/2011 21:44 CST
Beta	-1.80e-02	2.6e-01	4.2e-01	PCI	12/12/2011 21:44 CST

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG 1100241

QC BATCH SUMMARY

QC batch #: 0008265A
Preparation procedure: N/A
Analysis procedure: NAREL GR-03

NAREL Sample #	QC Type	Yield (%)	$\pm 2 \sigma$ Uncertainty (%)	Analyst
B1.13797J	DUP	N/A		CHD
B1.13798K		N/A		CHD
B1.13799L		N/A		CHD
B1.13800K		N/A		CHD
B1.13801L		N/A		CHD
B1.13802M		N/A		CHD
B1.13803N		N/A		CHD
B1.13804P		N/A		CHD
B1.13805Q		N/A		CHD
B1.13806R		N/A		CHD
B1.13806R		N/A		CHD
B1.13807T		N/A		CHD
B1.13808U		N/A		CHD
LCS-00625773N *	LCS	N/A		CHD
RBK-00625774P *	RBK	N/A		CHD

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

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG 1100241

ASSAY BATCH SUMMARY

SAMPLES ANALYZED

NAREL Sample #	QC Type	Aliquot Size	Completion Date	Assay Batch
B1.13797J	DUP	1.05e-01 GASH	12/12/2011	0015538J
B1.13798K		1.04e-01 GASH	12/12/2011	0015538J
B1.13799L		1.03e-01 GASH	12/12/2011	0015538J
B1.13800K		1.04e-01 GASH	12/12/2011	0015538J
B1.13801L		1.04e-01 GASH	12/12/2011	0015538J
B1.13802M		1.03e-01 GASH	12/12/2011	0015538J
B1.13803N		1.04e-01 GASH	12/12/2011	0015538J
B1.13804P		1.03e-01 GASH	12/12/2011	0015538J
B1.13805Q		1.03e-01 GASH	12/12/2011	0015538J
B1.13806R		1.03e-01 GASH	12/12/2011	0015538J
B1.13806R		1.04e-01 GASH	12/12/2011	0015538J
B1.13807T		1.05e-01 GASH	12/12/2011	0015538J
B1.13808U		1.05e-01 GASH	12/12/2011	0015538J
LCS-00625773N *	LCS	1.00e+00 SAMP	12/12/2011	0015538J
RBK-00625774P *	RBK	1.00e+00 SAMP	12/12/2011	0015538J

Samples marked with an asterisk (*) are not in SDG #1100241 but were analyzed with it for QC purposes

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

DETECTOR REPORT

The following were used for samples in the SDG

GQ2A	12/12/2011 16:43	00624566D	B1.13797J
GQ2A	12/12/2011 18:24	00624582D	B1.13801L
GQ2A	12/12/2011 20:04	00624598M	B1.13805Q
GQ2A	12/12/2011 21:44	00624610P	B1.13808U
GQ2B	12/12/2011 16:43	00624570Z	B1.13798K
GQ2B	12/12/2011 18:24	00624586H	B1.13802M
GQ2B	12/12/2011 20:04	00624602P	B1.13806R
GQ2C	12/12/2011 16:43	00624574D	B1.13799L
GQ2C	12/12/2011 18:24	00624590D	B1.13803N
GQ2C	12/12/2011 20:04	00625772M	B1.13806R
GQ2D	12/12/2011 16:43	00624578H	B1.13800K
GQ2D	12/12/2011 18:24	00624594H	B1.13804P
GQ2D	12/12/2011 20:04	00624606U	B1.13807T

The following were used for other samples in the QC batches

GQ2B	12/12/2011 21:44	00625773N
GQ2C	12/12/2011 21:44	00625774P

Data Package Checklist

(Initials do not signify approval)

Reviewer	Initials	Date
CERLS ASC	_____	_____
CERLS QA Officer	_____	_____
NAREL QA Manager	_____	_____
CERLS Director	_____	_____

Project: PONTE VEDRA

SDG Number: 1100241

Date due: _____

Analysis: NAREL U-EICHROM

Type of Package:

☐ Data Summary Package

☐ Complete Package

Y	N	N/A	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All samples in the SDG are reported
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All results are the ones intended
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Printed results match the raw data
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Error report forms are attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SDG Form is attached, front and back
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Analyst's checklist is attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Original prep batch forms are attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All supporting data sheets are attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All raw data sheets appear to be correct
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All handwritten notes are initialed and dated
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Package is arranged correctly
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Package appears to be complete

Were holding times met? ☐ Yes ☐ No ☐ N/A

Were all QC results acceptable? ☐ Yes ☐ No

Are there any exceptions to report? ☐ Yes ☐ No

Prepared by: _____

QAO Review

Y	N	N/A	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All QC failures are noted
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Raw data look reasonable
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All exceptions have been noted

Comments: _____

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY
540 S. MORRIS AVE., MONTGOMERY, AL 36115
U ANALYSES**

REPORT OF SAMPLE DELIVERY GROUP #1100241

Project: Region 4 - Ponte Vedra, Florida
Analysis method: Actinides (Uranium) by Extraction Chromatography
Report ID: 1100241-U-CORR
Report type: Corrected
Date reported: 02/10/2012
Total pages in report: 24

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B1.13797J	Flag 2: 0-10" SCF07460	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13798K	Flag 1: 0-10" SCF07461	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13799L	Flag 1: 10-20" SCF07461	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13800K	Flag 1: 0-10" SCF07462	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13801L	Flag 2: 0-20" SCF07463	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13802M	Flag 3: 0-10" SCF07464	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13803N	Flag 3: 10-20" SCF07464	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13804P	Flag 3: 0-10" SCF07465	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13805Q	Flag 2: 20-30" SCF07466	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13806R	Flag 2: 0-10" SCF07467	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13807T	Flag 2: 10-20" SCF07467	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13808U	Flag 3: 20-30" SCF07468	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011

EXCEPTIONS

1. **Packaging and shipping**—No problems were observed.
2. **Documentation**— After the client received the data packages, the client sample IDs were changed at the request of the client. This data package has the corrected client sample IDs.
3. **Sample preparation**— No problems were encountered. Precautions were taken to minimize cross contamination due to elevated screening results during sample receipt.
4. **Analysis**— See note in #2 below.
5. **Holding times**—No holding times were specified.

QUALITY CONTROL

1. **QC samples**—All QC analysis results met NAREL acceptance criteria.
2. **Yields**—All chemical yields were within acceptance limits except the yield for B1.13801 which was above NAREL's upper acceptance limit. The QA manager approved the yield.
5. **Holding times**—No holding times were specified.

QUALITY CONTROL

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

CERTIFICATION

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

Mary F. Wisdom Quality Assurance Manager, NAREL	Date
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John G. Griggs, Ph.D. Director, Center for Environmental Radioanalytical Laboratory Science	Date
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GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample (blank spike)
MS	Matrix spike
MSD	Matrix spike duplicate
RBK	Method blank

QUALITY INDICATORS

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

EVALUATION OF QC ANALYSES

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

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

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

The Z score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference. When the precision of paired MS/MSD analyses is evaluated, the native sample activity is subtracted from each measured value and the net concentrations are then converted to total activities before the Z score is computed.

Each standard uncertainty used to compute a Z score includes an additional fixed term to represent sources of measurement error other than counting error. This additional term is not used in the evaluation of reagent blanks.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation.

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

ANALYSIS SUMMARY

Analysis Procedure: NAREL U-EICHROM
Title: Actinides (Uranium) by Extraction Chromatography

NAREL Sample #	QC Type	Preparation Procedure	Date Completed	Assay Batch #	QC Batch #
B1.13797J	DUP	N/A	01/25/2012	0015644K	0008375F
B1.13798K		N/A	01/25/2012	0015644K	0008375F
B1.13799L		N/A	01/25/2012	0015644K	0008375F
B1.13800K		N/A	01/25/2012	0015644K	0008375F
B1.13801L		N/A	01/27/2012	0015650H	0008375F
B1.13802M		N/A	01/25/2012	0015644K	0008375F
B1.13802M		N/A	01/25/2012	0015644K	0008375F
B1.13803N		N/A	01/27/2012	0015650H	0008375F
B1.13804P		N/A	01/27/2012	0015650H	0008375F
B1.13805Q		N/A	01/27/2012	0015650H	0008375F
B1.13806R		N/A	01/27/2012	0015650H	0008375F
B1.13807T		N/A	01/27/2012	0015650H	0008375F
B1.13808U		N/A	01/27/2012	0015650H	0008375F
LCS-00628464Q *	LCS	N/A	01/27/2012	0015650H	0008375F
RBK-00628463P *	RBK	N/A	01/25/2012	0015644K	0008375F

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

PREPARATION METHOD(S) USED

Procedure ID	Title

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13797J	QC batch #:	0008375F
Matrix:	SOIL	Assay batch #:	0015644K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.510e-02 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	96.46 %	Analyst:	PMT
Ash/dry weight:	98.83 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/24/2012 15:12	1000.0	AS47	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
U234	5.42e+01	7.0e+00	4.6e-01	PCI/GDRY	01/24/2012 15:12 CST
U235	2.64e+00	1.2e+00	5.5e-01	PCI/GDRY	01/24/2012 15:12 CST
U238	5.78e+01	7.4e+00	6.9e-01	PCI/GDRY	01/24/2012 15:12 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13798K	QC batch #:	0008375F
Matrix:	SOIL	Assay batch #:	0015644K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	5.000e-03 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	94.78 %	Analyst:	PMT
Ash/dry weight:	92.77 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/24/2012 15:12	1000.0	AS48	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
U234	9.78e+01	1.7e+01	2.2e+00	PCI/GDRY	01/24/2012 15:12 CST
U235	3.44e+00	3.3e+00	3.5e+00	PCI/GDRY	01/24/2012 15:12 CST
U238	8.29e+01	1.5e+01	2.9e+00	PCI/GDRY	01/24/2012 15:12 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13799L	QC batch #:	0008375F
Matrix:	SOIL	Assay batch #:	0015644K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.527e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	97.09 %	Analyst:	PMT
Ash/dry weight:	98.75 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/24/2012 15:12	1000.0	AS73	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
U234	1.69e+00	3.1e-01	1.0e-01	PCI/GDRY	01/24/2012 15:12 CST
U235	2.08e-02	5.6e-02	1.0e-01	PCI/GDRY	01/24/2012 15:12 CST
U238	1.46e+00	2.8e-01	9.0e-02	PCI/GDRY	01/24/2012 15:12 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13800K	QC batch #:	0008375F
Matrix:	SOIL	Assay batch #:	0015644K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.010e-02 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	94.77 %	Analyst:	PMT
Ash/dry weight:	97.68 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/24/2012 15:12	1000.0	AS74	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
U234	5.91e+01	9.0e+00	1.3e+00	PCI/GDRY	01/24/2012 15:12 CST
U235	2.45e+00	1.8e+00	1.7e+00	PCI/GDRY	01/24/2012 15:12 CST
U238	5.63e+01	8.7e+00	1.6e+00	PCI/GDRY	01/24/2012 15:12 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13801L	QC batch #:	0008375F
Matrix:	SOIL	Assay batch #:	0015650H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.000e-02 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	95.30 %	Analyst:	PMT
Ash/dry weight:	99.36 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:18	1000.0	AS33	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
U234 *	6.65e+01	1.0e+01	2.0e+00	PCI/GDRY	01/26/2012 16:18 CST
U235 *	3.45e+00	2.3e+00	2.3e+00	PCI/GDRY	01/26/2012 16:18 CST
U238 *	5.85e+01	9.6e+00	2.2e+00	PCI/GDRY	01/26/2012 16:18 CST

* An asterisk indicates a result that may be significantly under or overestimated

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13802M	QC batch #:	0008375F
Matrix:	SOIL	Assay batch #:	0015644K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.534e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	93.05 %	Analyst:	PMT
Ash/dry weight:	97.61 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/24/2012 15:12	1000.0	AS82	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
U234	2.12e-01	1.0e-01	7.2e-02	PCI/GDRY	01/24/2012 15:12 CST
U235	1.31e-02	3.8e-02	5.7e-02	PCI/GDRY	01/24/2012 15:12 CST
U238	2.78e-01	1.2e-01	7.2e-02	PCI/GDRY	01/24/2012 15:12 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13802M	QC batch #:	0008375F
Matrix:	SOIL	Assay batch #:	0015644K
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.521e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	93.05 %	Analyst:	PMT
Ash/dry weight:	97.61 %	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/24/2012 15:12	1000.0	AS83	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
U234	1.69e-01	8.9e-02	4.6e-02	PCI/GDRY	01/24/2012 15:12 CST
U235	2.53e-02	4.5e-02	5.5e-02	PCI/GDRY	01/24/2012 15:12 CST
U238	2.50e-01	1.1e-01	8.2e-02	PCI/GDRY	01/24/2012 15:12 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13803N	QC batch #:	0008375F
Matrix:	SOIL	Assay batch #:	0015650H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.544e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	91.46 %	Analyst:	PMT
Ash/dry weight:	99.51 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:18	1000.0	AS35	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
U234	5.18e-01	1.6e-01	6.9e-02	PCI/GDRY	01/26/2012 16:18 CST
U235	1.68e-02	4.6e-02	8.3e-02	PCI/GDRY	01/26/2012 16:18 CST
U238	1.96e-01	1.0e-01	8.2e-02	PCI/GDRY	01/26/2012 16:18 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13804P	QC batch #:	0008375F
Matrix:	SOIL	Assay batch #:	0015650H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.513e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	93.80 %	Analyst:	PMT
Ash/dry weight:	93.69 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:18	1000.0	AS36	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
U234	2.61e-01	1.1e-01	6.3e-02	PCI/GDRY	01/26/2012 16:18 CST
U235	3.43e-02	4.7e-02	5.0e-02	PCI/GDRY	01/26/2012 16:18 CST
U238	2.39e-01	1.0e-01	4.1e-02	PCI/GDRY	01/26/2012 16:18 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13805Q	QC batch #:	0008375F
Matrix:	SOIL	Assay batch #:	0015650H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.010e-02 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	96.39 %	Analyst:	PMT
Ash/dry weight:	95.40 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:18	1000.0	AS37	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
U234	4.07e+01	7.7e+00	1.7e+00	PCI/GDRY	01/26/2012 16:18 CST
U235	3.79e+00	2.3e+00	1.4e+00	PCI/GDRY	01/26/2012 16:18 CST
U238	3.82e+01	7.3e+00	1.1e+00	PCI/GDRY	01/26/2012 16:18 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13806R	QC batch #:	0008375F
Matrix:	SOIL	Assay batch #:	0015650H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.510e-02 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	96.59 %	Analyst:	PMT
Ash/dry weight:	93.91 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:18	1000.0	AS39	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
U234	4.13e+01	5.7e+00	6.8e-01	PCI/GDRY	01/26/2012 16:18 CST
U235	1.41e+00	9.2e-01	8.2e-01	PCI/GDRY	01/26/2012 16:18 CST
U238	3.95e+01	5.5e+00	6.0e-01	PCI/GDRY	01/26/2012 16:18 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13807T	QC batch #:	0008375F
Matrix:	SOIL	Assay batch #:	0015650H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.010e-02 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	96.14 %	Analyst:	PMT
Ash/dry weight:	94.61 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:18	1000.0	AS40	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
U234	5.91e+01	9.4e+00	1.8e+00	PCI/GDRY	01/26/2012 16:18 CST
U235	6.50e+00	3.0e+00	1.9e+00	PCI/GDRY	01/26/2012 16:18 CST
U238	6.05e+01	9.6e+00	1.9e+00	PCI/GDRY	01/26/2012 16:18 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13808U	QC batch #:	0008375F
Matrix:	SOIL	Assay batch #:	0015650H
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.597e-01 GASH	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	91.38 %	Analyst:	PMT
Ash/dry weight:	92.67 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:18	1000.0	AS43	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
U234	3.60e-01	1.3e-01	4.5e-02	PCI/GDRY	01/26/2012 16:18 CST
U235	6.97e-02	6.7e-02	7.1e-02	PCI/GDRY	01/26/2012 16:18 CST
U238	3.05e-01	1.2e-01	5.9e-02	PCI/GDRY	01/26/2012 16:18 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	LCS-00628464Q	QC batch #:	0008375F
Matrix:	N/A	Assay batch #:	0015650H
Sample type:	N/A	Prep procedure:	N/A
Amount analyzed:	1.000e+00 SAMP	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	N/A	Analyst:	PMT
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:18	1000.0	AS44	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
U234	1.89e+00	2.1e-01	1.3e-02	PCI	01/26/2012 16:18 CST
U235	1.14e-01	4.2e-02	1.5e-02	PCI	01/26/2012 16:18 CST
U238	1.99e+00	2.1e-01	1.7e-02	PCI	01/26/2012 16:18 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	RBK-00628463P	QC batch #:	0008375F
Matrix:	N/A	Assay batch #:	0015644K
Sample type:	N/A	Prep procedure:	N/A
Amount analyzed:	1.000e+00 SAMP	Analysis procedure:	NAREL U-EICHROM
Dry/wet weight:	N/A	Analyst:	PMT
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/24/2012 15:12	1000.0	AS88	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
U234	4.25e-02	2.2e-02	1.1e-02	PCI	01/24/2012 15:12 CST
U235	9.54e-03	1.3e-02	1.4e-02	PCI	01/24/2012 15:12 CST
U238	9.73e-03	1.2e-02	1.5e-02	PCI	01/24/2012 15:12 CST

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG 1100241

QC BATCH SUMMARY

QC batch #: 0008375F
Preparation procedure: N/A
Analysis procedure: NAREL U-EICHROM

NAREL Sample #	QC Type	Yield (%)	$\pm 2 \sigma$ Uncertainty (%)	Analyst
B1.13797J	DUP	106.22 %	8.46 %	PMT
B1.13798K		102.67 %	8.23 %	PMT
B1.13799L		105.03 %	7.92 %	PMT
B1.13800K		101.68 %	7.69 %	PMT
B1.13801L		108.73 %	8.63 %	PMT
B1.13802M		100.73 %	8.18 %	PMT
B1.13802M		104.91 %	8.41 %	PMT
B1.13803N		105.12 %	8.40 %	PMT
B1.13804P		106.10 %	8.35 %	PMT
B1.13805Q		101.87 %	8.21 %	PMT
B1.13806R		96.43 %	7.76 %	PMT
B1.13807T		104.36 %	8.25 %	PMT
B1.13808U		97.50 %	7.93 %	PMT
LCS-00628464Q *	LCS	98.54 %	8.04 %	PMT
RBK-00628463P *	RBK	106.20 %	8.45 %	PMT

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

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG 1100241

ASSAY BATCH SUMMARY

SAMPLES ANALYZED

NAREL Sample #	QC Type	Aliquot Size	Completion Date	Assay Batch
B1.13797J	DUP	2.51e-02 GASH	01/25/2012	0015644K
B1.13798K		5.00e-03 GASH	01/25/2012	0015644K
B1.13799L		2.53e-01 GASH	01/25/2012	0015644K
B1.13800K		1.01e-02 GASH	01/25/2012	0015644K
B1.13801L		1.00e-02 GASH	01/27/2012	0015650H
B1.13802M		2.53e-01 GASH	01/25/2012	0015644K
B1.13802M		2.52e-01 GASH	01/25/2012	0015644K
B1.13803N		2.54e-01 GASH	01/27/2012	0015650H
B1.13804P		2.51e-01 GASH	01/27/2012	0015650H
B1.13805Q		1.01e-02 GASH	01/27/2012	0015650H
B1.13806R		2.51e-02 GASH	01/27/2012	0015650H
B1.13807T		1.01e-02 GASH	01/27/2012	0015650H
B1.13808U		2.60e-01 GASH	01/27/2012	0015650H
LCS-00628464Q *	LCS	1.00e+00 SAMP	01/27/2012	0015650H
RBK-00628463P *	RBK	1.00e+00 SAMP	01/25/2012	0015644K

Samples marked with an asterisk (*) are not in SDG #1100241 but were analyzed with it for QC purposes

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

DETECTOR REPORT

The following were used for samples in the SDG

AS33	01/26/2012 16:18	00624583E	B1.13801L
AS35	01/26/2012 16:18	00624591E	B1.13803N
AS36	01/26/2012 16:18	00624595J	B1.13804P
AS37	01/26/2012 16:18	00624599N	B1.13805Q
AS39	01/26/2012 16:18	00624603Q	B1.13806R
AS40	01/26/2012 16:18	00624607V	B1.13807T
AS43	01/26/2012 16:18	00624611Q	B1.13808U
AS47	01/24/2012 15:12	00624567E	B1.13797J
AS48	01/24/2012 15:12	00624571A	B1.13798K
AS73	01/24/2012 15:12	00624575E	B1.13799L
AS74	01/24/2012 15:12	00624579J	B1.13800K
AS82	01/24/2012 15:12	00624587J	B1.13802M
AS83	01/24/2012 15:12	00628462N	B1.13802M

The following were used for other samples in the QC batches

AS44	01/26/2012 16:18	00628464Q
AS88	01/24/2012 15:12	00628463P

Data Package Checklist

(Initials do not signify approval)

Reviewer	Initials	Date
CERLS ASC	_____	_____
CERLS QA Officer	_____	_____
NAREL QA Manager	_____	_____
CERLS Director	_____	_____

Project: PONTE VEDRA

SDG Number: 1100241

Date due: _____

Analysis: NAREL TH-EICHROM

Type of Package:

☐ Data Summary Package

☐ Complete Package

Y	N	N/A	Comments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All samples in the SDG are reported
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All results are the ones intended
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Printed results match the raw data
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Error report forms are attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SDG Form is attached, front and back
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Analyst's checklist is attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Original prep batch forms are attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All supporting data sheets are attached
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All raw data sheets appear to be correct
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All handwritten notes are initialed and dated
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Package is arranged correctly
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Package appears to be complete

Were holding times met? ☐ Yes ☐ No ☐ N/A

Were all QC results acceptable? ☐ Yes ☐ No

Are there any exceptions to report? ☐ Yes ☐ No

Prepared by: _____

QAO Review

Y	N	N/A	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All QC failures are noted
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Raw data look reasonable
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All exceptions have been noted

Comments: _____

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

REPORT OF SAMPLE DELIVERY GROUP #1100241

Project: Region 4 - Ponte Vedra, Florida
Analysis method: Actinides (Thorium) by Extraction Chromatography
Report ID: 1100241-TH-CORR
Report type: Original
Date reported: 02/16/2012
Total pages in report: 25

SAMPLES

NAREL Sample #	Client Sample ID	Location	Matrix	Date Collected	Date Received
B1.13797J	Flag 2: 0-10" SCF07460	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13798K	Flag 1: 0-10" SCF07461	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13799L	Flag 1: 10-20" SCF07461	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13800K	Flag 1: 0-10" SCF07462	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13801L	Flag 2: 0-20" SCF07463	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13802M	Flag 3: 0-10" SCF07464	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13803N	Flag 3: 10-20" SCF07464	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13804P	Flag 3: 0-10" SCF07465	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13805Q	Flag 2: 20-30" SCF07466	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13806R	Flag 2: 0-10" SCF07467	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13807T	Flag 2: 10-20" SCF07467	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011
B1.13808U	Flag 3: 20-30" SCF07468	FL:PONTE VEDRA	SOIL	11/09/2011	11/16/2011

EXCEPTIONS

1. **Packaging and shipping**—No problems were observed.
2. **Documentation**— After the client received the data packages, the client sample IDs were changed at the request of the client. This data package has the corrected client sample IDs.
3. **Sample preparation**— No problems were encountered. Precautions were taken to minimize cross contamination due to elevated screening results during sample receipt.
4. **Analysis**— No problems were encountered.
5. **Holding times**—No holding times were specified.

QUALITY CONTROL

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

CERTIFICATION

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

Mary F. Wisdom
Quality Assurance Manager, NAREL

Date

John G. Griggs, Ph.D.
Director, Center for Environmental Radioanalytical
Laboratory Science

Date

GENERAL INFORMATION

SAMPLE TYPES

BLD	Blind sample
FBK	Field blank
SAM	Normal sample

ANALYSIS QC TYPES

ANA	Normal analysis
DUP	Laboratory duplicate
LCS	Laboratory control sample (blank spike)
MS	Matrix spike
MSD	Matrix spike duplicate
RBK	Method blank

QUALITY INDICATORS

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

EVALUATION OF QC ANALYSES

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

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

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

The Z score for a duplicate analysis is computed by dividing the difference between the two measured values by the combined standard uncertainty of the difference. When the precision of paired MS/MSD analyses is evaluated, the native sample activity is subtracted from each measured value and the net concentrations are then converted to total activities before the Z score is computed.

Each standard uncertainty used to compute a Z score includes an additional fixed term to represent sources of measurement error other than counting error. This additional term is not used in the evaluation of reagent blanks.

NAREL reports the "relative percent difference," or RPD, between duplicate results and the "percent recovery," or %R, for spiked analyses, but does not use these values for evaluation.

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

ANALYSIS SUMMARY

Analysis Procedure: NAREL TH-EICHROM
Title: Actinides (Thorium) by Extraction Chromatography

NAREL Sample #	QC Type	Preparation Procedure	Date Completed	Assay Batch #	QC Batch #
B1.13797J	DUP	N/A	01/25/2012	0015640F	0008374E
B1.13798K		N/A	01/25/2012	0015640F	0008374E
B1.13799L		N/A	01/25/2012	0015640F	0008374E
B1.13800K		N/A	01/25/2012	0015640F	0008374E
B1.13801L		N/A	01/27/2012	0015649Q	0008374E
B1.13802M		N/A	01/25/2012	0015640F	0008374E
B1.13802M		N/A	01/25/2012	0015640F	0008374E
B1.13803N		N/A	01/27/2012	0015649Q	0008374E
B1.13804P		N/A	01/27/2012	0015649Q	0008374E
B1.13805Q		N/A	01/27/2012	0015649Q	0008374E
B1.13806R		N/A	01/27/2012	0015649Q	0008374E
B1.13807T		N/A	01/27/2012	0015649Q	0008374E
B1.13808U		N/A	01/27/2012	0015649Q	0008374E
LCS-00628459U *	LCS	N/A	01/27/2012	0015649Q	0008374E
RBK-00628458T *	RBK	N/A	01/25/2012	0015640F	0008374E

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

PREPARATION METHOD(S) USED

Procedure ID	Title

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13797J	QC batch #:	0008374E
Matrix:	SOIL	Assay batch #:	0015640F
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.510e-02 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	96.46 %	Analyst:	PMT
Ash/dry weight:	98.83 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/24/2012 15:15	1000.0	AS84	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	6.28e+00	2.8e+00	1.2e+00	PCI/GDRY	01/23/2012 10:10 CST
Th228	1.77e+02	1.6e+01	9.7e-01	PCI/GDRY	01/23/2012 10:10 CST
Th230	6.75e+01	8.0e+00	8.5e-01	PCI/GDRY	01/23/2012 10:10 CST
Th232	1.71e+02	1.6e+01	1.2e+00	PCI/GDRY	01/23/2012 10:10 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13798K	QC batch #:	0008374E
Matrix:	SOIL	Assay batch #:	0015640F
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	5.000e-03 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	94.78 %	Analyst:	PMT
Ash/dry weight:	92.77 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/24/2012 15:15	1000.0	AS86	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	7.90e+00	6.5e+00	4.9e+00	PCI/GDRY	01/23/2012 10:10 CST
Th228	2.62e+02	3.2e+01	5.3e+00	PCI/GDRY	01/23/2012 10:10 CST
Th230	8.91e+01	1.6e+01	2.6e+00	PCI/GDRY	01/23/2012 10:10 CST
Th232	2.71e+02	3.2e+01	3.5e+00	PCI/GDRY	01/23/2012 10:10 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13799L	QC batch #:	0008374E
Matrix:	SOIL	Assay batch #:	0015640F
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.527e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	97.09 %	Analyst:	PMT
Ash/dry weight:	98.75 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/24/2012 15:15	1000.0	AS87	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	8.56e-02	1.1e-01	1.3e-01	PCI/GDRY	01/23/2012 10:10 CST
Th228	2.36e+00	4.1e-01	9.1e-02	PCI/GDRY	01/23/2012 10:10 CST
Th230	1.93e+00	3.6e-01	9.1e-02	PCI/GDRY	01/23/2012 10:10 CST
Th232	2.62e+00	4.4e-01	7.2e-02	PCI/GDRY	01/23/2012 10:10 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13800K	QC batch #:	0008374E
Matrix:	SOIL	Assay batch #:	0015640F
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.010e-02 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	94.77 %	Analyst:	PMT
Ash/dry weight:	97.68 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/24/2012 15:15	1000.0	AS89	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	3.35e+00	3.3e+00	4.0e+00	PCI/GDRY	01/23/2012 10:10 CST
Th228	1.70e+02	1.9e+01	2.6e+00	PCI/GDRY	01/23/2012 10:10 CST
Th230	6.48e+01	1.0e+01	1.7e+00	PCI/GDRY	01/23/2012 10:10 CST
Th232	1.66e+02	1.9e+01	1.7e+00	PCI/GDRY	01/23/2012 10:10 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13801L	QC batch #:	0008374E
Matrix:	SOIL	Assay batch #:	0015649Q
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.000e-02 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	95.30 %	Analyst:	PMT
Ash/dry weight:	99.36 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:37	1000.0	AS91	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	1.03e+01	4.9e+00	3.0e+00	PCI/GDRY	01/25/2012 09:40 CST
Th228	1.73e+02	1.9e+01	2.2e+00	PCI/GDRY	01/25/2012 09:40 CST
Th230	5.65e+01	9.0e+00	1.2e+00	PCI/GDRY	01/25/2012 09:40 CST
Th232	1.68e+02	1.8e+01	1.8e+00	PCI/GDRY	01/25/2012 09:40 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13802M	QC batch #:	0008374E
Matrix:	SOIL	Assay batch #:	0015640F
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.534e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	93.05 %	Analyst:	PMT
Ash/dry weight:	97.61 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/24/2012 15:15	1000.0	AS90	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	0.00e+00	4.6e-02	9.4e-02	PCI/GDRY	01/23/2012 10:10 CST
Th228	2.07e-01	1.1e-01	1.1e-01	PCI/GDRY	01/23/2012 10:10 CST
Th230	2.88e-01	1.3e-01	9.1e-02	PCI/GDRY	01/23/2012 10:10 CST
Th232	1.01e-01	8.0e-02	9.1e-02	PCI/GDRY	01/23/2012 10:10 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13802M	QC batch #:	0008374E
Matrix:	SOIL	Assay batch #:	0015640F
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.521e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	93.05 %	Analyst:	PMT
Ash/dry weight:	97.61 %	QC type:	DUP
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/24/2012 15:15	1000.0	AS91	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	-6.86e-03	4.6e-02	1.2e-01	PCI/GDRY	01/23/2012 10:10 CST
Th228	2.97e-01	1.2e-01	8.7e-02	PCI/GDRY	01/23/2012 10:10 CST
Th230	2.34e-01	1.1e-01	4.8e-02	PCI/GDRY	01/23/2012 10:10 CST
Th232	1.81e-01	9.7e-02	7.3e-02	PCI/GDRY	01/23/2012 10:10 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13803N	QC batch #:	0008374E
Matrix:	SOIL	Assay batch #:	0015649Q
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.544e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	91.46 %	Analyst:	PMT
Ash/dry weight:	99.51 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:37	1000.0	AS92	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	1.41e-02	6.3e-02	1.2e-01	PCI/GDRY	01/25/2012 09:40 CST
Th228	5.87e-01	1.8e-01	7.5e-02	PCI/GDRY	01/25/2012 09:40 CST
Th230	4.76e-01	1.6e-01	6.6e-02	PCI/GDRY	01/25/2012 09:40 CST
Th232	4.79e-01	1.6e-01	5.0e-02	PCI/GDRY	01/25/2012 09:40 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13804P	QC batch #:	0008374E
Matrix:	SOIL	Assay batch #:	0015649Q
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.513e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	93.80 %	Analyst:	PMT
Ash/dry weight:	93.69 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:37	1000.0	AS93	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	-6.98e-03	4.6e-02	1.2e-01	PCI/GDRY	01/25/2012 09:40 CST
Th228	2.97e-01	1.2e-01	7.4e-02	PCI/GDRY	01/25/2012 09:40 CST
Th230	2.71e-01	1.2e-01	8.2e-02	PCI/GDRY	01/25/2012 09:40 CST
Th232	3.83e-01	1.4e-01	8.2e-02	PCI/GDRY	01/25/2012 09:40 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13805Q	QC batch #:	0008374E
Matrix:	SOIL	Assay batch #:	0015649Q
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.010e-02 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	96.39 %	Analyst:	PMT
Ash/dry weight:	95.40 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:37	1000.0	AS94	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	6.75e+00	4.1e+00	2.4e+00	PCI/GDRY	01/25/2012 09:40 CST
Th228	1.29e+02	1.6e+01	1.7e+00	PCI/GDRY	01/25/2012 09:40 CST
Th230	4.22e+01	7.8e+00	1.3e+00	PCI/GDRY	01/25/2012 09:40 CST
Th232	1.29e+02	1.6e+01	1.3e+00	PCI/GDRY	01/25/2012 09:40 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13806R	QC batch #:	0008374E
Matrix:	SOIL	Assay batch #:	0015649Q
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.510e-02 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	96.59 %	Analyst:	PMT
Ash/dry weight:	93.91 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:37	1000.0	AS127	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	6.03e+00	2.4e+00	1.2e+00	PCI/GDRY	01/25/2012 09:40 CST
Th228	1.18e+02	1.1e+01	8.2e-01	PCI/GDRY	01/25/2012 09:40 CST
Th230	4.07e+01	5.2e+00	8.8e-01	PCI/GDRY	01/25/2012 09:40 CST
Th232	1.10e+02	1.1e+01	8.2e-01	PCI/GDRY	01/25/2012 09:40 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13807T	QC batch #:	0008374E
Matrix:	SOIL	Assay batch #:	0015649Q
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	1.010e-02 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	96.14 %	Analyst:	PMT
Ash/dry weight:	94.61 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:37	1000.0	AS97	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	1.06e+01	5.1e+00	3.8e+00	PCI/GDRY	01/25/2012 09:40 CST
Th228	1.87e+02	2.0e+01	2.7e+00	PCI/GDRY	01/25/2012 09:40 CST
Th230	7.09e+01	1.0e+01	1.2e+00	PCI/GDRY	01/25/2012 09:40 CST
Th232	1.63e+02	1.8e+01	2.1e+00	PCI/GDRY	01/25/2012 09:40 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	B1.13808U	QC batch #:	0008374E
Matrix:	SOIL	Assay batch #:	0015649Q
Sample type:	SAM	Prep procedure:	N/A
Amount analyzed:	2.597e-01 GASH	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	91.38 %	Analyst:	PMT
Ash/dry weight:	92.67 %	QC type:	ANA
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:37	1000.0	AS98	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	5.91e-02	9.2e-02	1.4e-01	PCI/GDRY	01/25/2012 09:40 CST
Th228	5.87e-01	1.7e-01	8.8e-02	PCI/GDRY	01/25/2012 09:40 CST
Th230	5.38e-01	1.6e-01	6.1e-02	PCI/GDRY	01/25/2012 09:40 CST
Th232	6.01e-01	1.7e-01	6.1e-02	PCI/GDRY	01/25/2012 09:40 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	LCS-00628459U	QC batch #:	0008374E
Matrix:	N/A	Assay batch #:	0015649Q
Sample type:	N/A	Prep procedure:	N/A
Amount analyzed:	1.000e+00 SAMP	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	N/A	Analyst:	PMT
Ash/dry weight:	N/A	QC type:	LCS
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/26/2012 16:37	1000.0	AS99	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	-3.72e-03	1.3e-02	3.7e-02	PCI	01/25/2012 09:40 CST
Th228	2.81e-02	2.0e-02	2.0e-02	PCI	01/25/2012 09:40 CST
Th230	2.82e+00	2.2e-01	1.3e-02	PCI	01/25/2012 09:40 CST
Th232	2.80e-02	2.0e-02	2.0e-02	PCI	01/25/2012 09:40 CST

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

SAMPLE ANALYSIS REPORT

Sample #:	RBK-00628458T	QC batch #:	0008374E
Matrix:	N/A	Assay batch #:	0015640F
Sample type:	N/A	Prep procedure:	N/A
Amount analyzed:	1.000e+00 SAMP	Analysis procedure:	NAREL TH-EICHROM
Dry/wet weight:	N/A	Analyst:	PMT
Ash/dry weight:	N/A	QC type:	RBK
Sample description:	N/A		
Comment:	N/A		

COUNTING INFORMATION

Date and time	Duration (min)	Detector ID	Operator
01/24/2012 15:15	1000.0	AS93	GVJ

ANALYTICAL RESULTS

Analyte	Activity	$\pm 2 \sigma$ Uncertainty	MDC	Unit	Date
Th227	3.89e-03	1.7e-02	3.3e-02	PCI	01/23/2012 10:10 CST
Th228	1.37e-02	1.6e-02	2.1e-02	PCI	01/23/2012 10:10 CST
Th230	6.30e-03	1.3e-02	2.3e-02	PCI	01/23/2012 10:10 CST
Th232	6.29e-03	1.3e-02	2.3e-02	PCI	01/23/2012 10:10 CST

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG 1100241

QC BATCH SUMMARY

QC batch #: 0008374E
Preparation procedure: N/A
Analysis procedure: NAREL TH-EICHROM

NAREL Sample #	QC Type	Yield (%)	$\pm 2 \sigma$ Uncertainty (%)	Analyst
B1.13797J	DUP	76.83 %	1.95 %	PMT
B1.13798K		90.52 %	2.22 %	PMT
B1.13799L		89.16 %	2.19 %	PMT
B1.13800K		88.88 %	2.19 %	PMT
B1.13801L		93.78 %	2.30 %	PMT
B1.13802M		92.45 %	2.26 %	PMT
B1.13802M		92.44 %	2.27 %	PMT
B1.13803N		92.32 %	2.26 %	PMT
B1.13804P		93.84 %	2.30 %	PMT
B1.13805Q		91.41 %	2.24 %	PMT
B1.13806R		93.06 %	2.28 %	PMT
B1.13807T		93.28 %	2.29 %	PMT
B1.13808U		94.62 %	2.31 %	PMT
LCS-00628459U *	LCS	94.38 %	2.31 %	PMT
RBK-00628458T *	RBK	90.14 %	2.21 %	PMT

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

**U.S.ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG 1100241

ASSAY BATCH SUMMARY

SAMPLES ANALYZED

NAREL Sample #	QC Type	Aliquot Size	Completion Date	Assay Batch
B1.13797J	DUP	2.51e-02 GASH	01/25/2012	0015640F
B1.13798K		5.00e-03 GASH	01/25/2012	0015640F
B1.13799L		2.53e-01 GASH	01/25/2012	0015640F
B1.13800K		1.01e-02 GASH	01/25/2012	0015640F
B1.13801L		1.00e-02 GASH	01/27/2012	0015649Q
B1.13802M		2.53e-01 GASH	01/25/2012	0015640F
B1.13802M		2.52e-01 GASH	01/25/2012	0015640F
B1.13803N		2.54e-01 GASH	01/27/2012	0015649Q
B1.13804P		2.51e-01 GASH	01/27/2012	0015649Q
B1.13805Q		1.01e-02 GASH	01/27/2012	0015649Q
B1.13806R		2.51e-02 GASH	01/27/2012	0015649Q
B1.13807T		1.01e-02 GASH	01/27/2012	0015649Q
B1.13808U		2.60e-01 GASH	01/27/2012	0015649Q
LCS-00628459U *	LCS	1.00e+00 SAMP	01/27/2012	0015649Q
RBK-00628458T *	RBK	1.00e+00 SAMP	01/25/2012	0015640F

Samples marked with an asterisk (*) are not in SDG #1100241 but were analyzed with it for QC purposes

**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL AIR AND RADIATION ENVIRONMENTAL LABORATORY**

SDG #1100241

DETECTOR REPORT

The following were used for samples in the SDG

AS127	01/26/2012 16:37	00624604R	B1.13806R
AS84	01/24/2012 15:15	00624568F	B1.13797J
AS86	01/24/2012 15:15	00624572B	B1.13798K
AS87	01/24/2012 15:15	00624576F	B1.13799L
AS89	01/24/2012 15:15	00624580B	B1.13800K
AS90	01/24/2012 15:15	00624588K	B1.13802M
AS91	01/24/2012 15:15	00628455P	B1.13802M
AS91	01/26/2012 16:37	00624584F	B1.13801L
AS92	01/26/2012 16:37	00624592F	B1.13803N
AS93	01/26/2012 16:37	00624596K	B1.13804P
AS94	01/26/2012 16:37	00624600M	B1.13805Q
AS97	01/26/2012 16:37	00624608W	B1.13807T
AS98	01/26/2012 16:37	00624612R	B1.13808U

The following were used for other samples in the QC batches

AS93	01/24/2012 15:15	00628458T
AS99	01/26/2012 16:37	00628459U