EG&G MOUND-30-04-05---9710220017

Environmental Restoration Program

VERIFICATION SAMPLING REPORT

POTENTIAL RELEASE SITE 86
RELEASE BLOCK F
ACTINIUM SEPTIC TANK REMOVAL (AREA 7A)

MOUND PLANT
MIAMISBURG, OHIO

August 1997

FINAL

(Revision 0)

Department Of Energy

EG&G Mound Applied Technologies

Terran Corporation

Environmental Services

September 2, 1997

Gary Coons
Program Manager
EG&G Mound Applied Technologies
P.O. Box 3000
Miamisburg, OH 45343

RE: Final PRS-86 Verification Sampling Report

Dear Mr. Coons:

Terran Corporation has responded to USEPA, OEPA and ODH comments concerning the verification sampling report for PRS-86, Draft, revision 1, June 1997. A written response has been prepared and the document modified where appropriate. Enclosed are 15 copies of the Final, Revision 0, Verification Sampling Report for PRS-86. The complete validation report prepared by Quantalex is enclosed in Appendix B of the final report. Also, enclosed is the MEIMS verification form for the MEIMS shell that Terran populated with the PRS-86 data and electronically delivered to Frank Miller, SAIC, for loading into the complete MEIMS.

This completes all deliverables due for the PRS-86 Verfication Sampling project. If there are any questions concerning these deliverables please contact me at (937) 320-3601.

Cordially,

Roger W. McCready, C.P.G.
Project Manager / Hydrogeologist

Enclosure

Copy: Richard Christopher, Buyer, EG&G Mound Applied Technologies
File EGG797

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Response to Comments
PRS-86 Verification Sampling Report

US DOE Mound Plant
Potential Release Site 86
Verification Sampling Report
June 1997
Draft - Revision 1
USEPA Comments

Comment #1 Section 2.1 - Sample Size Determination
Page 1 of 5, First Paragraph, 5th Line
There is a typographical error in the 5th line. The word "error" should be changed to "err".

Response The correction has been made to the text.

Comment #2 Section 2.2 - Sample Location and Layout
Page 1 of 5
The text in this section implies that a true mean concentration was used to determine whether the removal action achieved the cleanup goals. Later in the same report it is stated that the 95% Upper Confidence Level (UCL) was used to determine compliance with cleanup goals. If the 95% UCL was used, please delete all references to the true mean concentration.

Response A upper one-sided 95% confidence interval was used to test whether the site meets cleanup standards. A confidence interval is a method to determine how close the sample mean approximates the true mean of the population. A 95% confidence interval determined from sample data will approximate the true mean 95 percent of the time.

The text has been revised in Section 2.2 - Sample Location and Layout to better describe the use of the upper 95% confidence interval.

Comment #3 Section 2.2 - Sample Location and Layout
Page 2 of 5, First Paragraph, 3rd Line
There is a typographical error in the 3rd line. The word "sysmatic" should be changed to "systematic".

Response The text has been corrected.

Comment #4 Section 3.3 - Results
Page 1 of 5, Last Paragraph on the Page
It is stated in this paragraph that "Ninety-eight percent of the actinium-227 results were reported at 46 minium detectable actively". Please explain what this sentence means.

Response The sentence is correct that 98 percent of the actinium-227 results were qualified at a minium detectable activity. And due to this situation the handling of non-detects had to be explained. The number 46 is a typographic error and has no relevance to the sentence. The number 46 has been omitted and the paragraph restructured.

US DOE Mound Plant
Potential Release Site 86
Verification Sampling Report
June 1997
Draft - Revision 1
OEPA and ODH Comments

Comment #1 Section 3.3 - Results
Page 1 of 5
First Paragraph
The reference to tables should read "Tables III.1, III.2, III.3 rather than "V.1, V.2 and V.3"

Response The references to tables for section 3 have been corrected.

Environmental Restoration Program

VERIFICATION SAMPLING REPORT

POTENTIAL RELEASE SITE 86
RELEASE BLOCK F
ACTINIUM SEPTIC TANK REMOVAL (AREA 7A)

MOUND PLANT
MIAMISBURG, OHIO

August 1997

FINAL

(Revision 0)

Department Of Energy

EG&G Mound Applied Technologies

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ACKNOWLEDGMENTS

This report was prepared by Terran Corporation of Beavercreek, Ohio as report number TB-9730. It was completed under Task Order 17379 with EG&G Mound Applied Technologies. The author and project manager was Roger McCready with graphics and word processing provided by Sandra Allen. The expeditious completion of field work required to meet a key milestone was conducted by field manager Brad Huntsman, Scott Hora and Christopher Ruef. Radiological data validation was completed by Quantalex, Lakewood, Colorado.

1.0 INTRODUCTION

A Verification Sampling Report (VSR) has been prepared as part of the Environmental Restoration (ER) Program for Potential Release Site (PRS) 86 at the U.S. Department of Energy (DOE) Mound Plant, Miamisburg, Ohio. The VSR is intended to summarize results for the PRS 86 verification sampling. The primary objective of the verification sampling was to verify that the actinium removal action has been successfully completed. To determine this, soil samples were collected at specific locations and depths and analyzed for radionuclides.

Specific objectives of the verification sampling program were as follows:

- Provide environmental data obtained through sampling and analysis that is comparable in quality to Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Remedial Investigations using regulatory agency approved procedures.

- Verify that the removal action has met the established cleanup goals of:

  5 pCi/g for actinium^{227} established in the Action Memorandum for PRS 86

  15 pCi/g for radium^{226} per CFR 192.12 and

  .42 pCi/g for cesium^{137} which is Mound background.

1.1 HISTORICAL INFORMATION

Potential Release Site (PRS) 86 (a.k.a. Area 7A) is a former disposal site located south of Building 29. Due to elevated levels of actinium^{227} contamination in the soil, a decision was made in 1995 to conduct a Removal Site Evaluation (RSE) and as a result implementation of a Removal Action began in August of 1995.[1]

The PRS 86 area was identified as a suspected burial location for radioactive contaminated soils from SW Building. In 1959/60, approximately three truckloads of soil and gravel containing radium^{226}, actinium^{227} and thorium ^{228} were disposed of near an inactive septic tank. The septic tank, estimated to be a 1,500 to 3,000 gallon poured concrete tank, was used during the original Mound Plant construction activities and was abandoned in the 1950's.[2]

1.2 PREVIOUS INVESTIGATIONS

The Radiological Site Survey in 1983[3]: PRS 86 soils from four sample locations (S0274, S0276, C0008 and C0009) were analyzed for radioactivity:

Contaminant	Maximum Concentration Detected	Guideline Criteria
Actinium^{227}	1400 pCi/g	1 pCi/g
Cesium^{137}	1.2 pCi/g	0.46 pCi/g

The soil concentrations of Plutonium^{238}, Thorium, Cobalt^{60}, Radium^{226} and Americium^{241} were below guideline criteria.

The Operable Unit 5 Area 7A Investigation[4]: In 1995, PRS 86 soil from one sample location, B16, was Analyzed for radioactivity:

Contaminant	Maximum Concentration Detected	Guideline Criteria
Actinium^{227}	44.68 pCi/g	1 pCi/g

The soil concentrations of plutonium, Thorium, Uranium, Tritium, Cesium^{137}, Radium^{226}, and Americium^{241} were below guideline criteria.

Volatile Organic Compound (VOC) Investigations:
During the Soil Gas Reconnaissance Sampling[5] in 1992/93, Freon 11 was detected at a concentration of 33 ppb and Tetrachloroethene (PCE) was detected at a concentration of 6 ppb. Both of these concentrations are below guideline criteria. No other compounds were detected within PRS 86.

During the operable Unit 5 Area 7A Investigation[4], the only VOC detected was 2-Butanone at a concentration of 110ppb or 0.110 mg/kg which is below guideline criteria.

1.3 SITE DESCRIPTION

The PRS 86 Actinium Removal Action area, consists of a small portion of PRS 66, near Building 29, as shown in Figure 1.1. The area is bounded by Building 29 to the northwest, the plant entrance road to the north, the asphalt-lined pond to the east and the Area 7A parking lot to the south. The removal reached a final depth of approximately 25 to 30 feet. After the excavation was complete, the area was partially back filled with clean material.

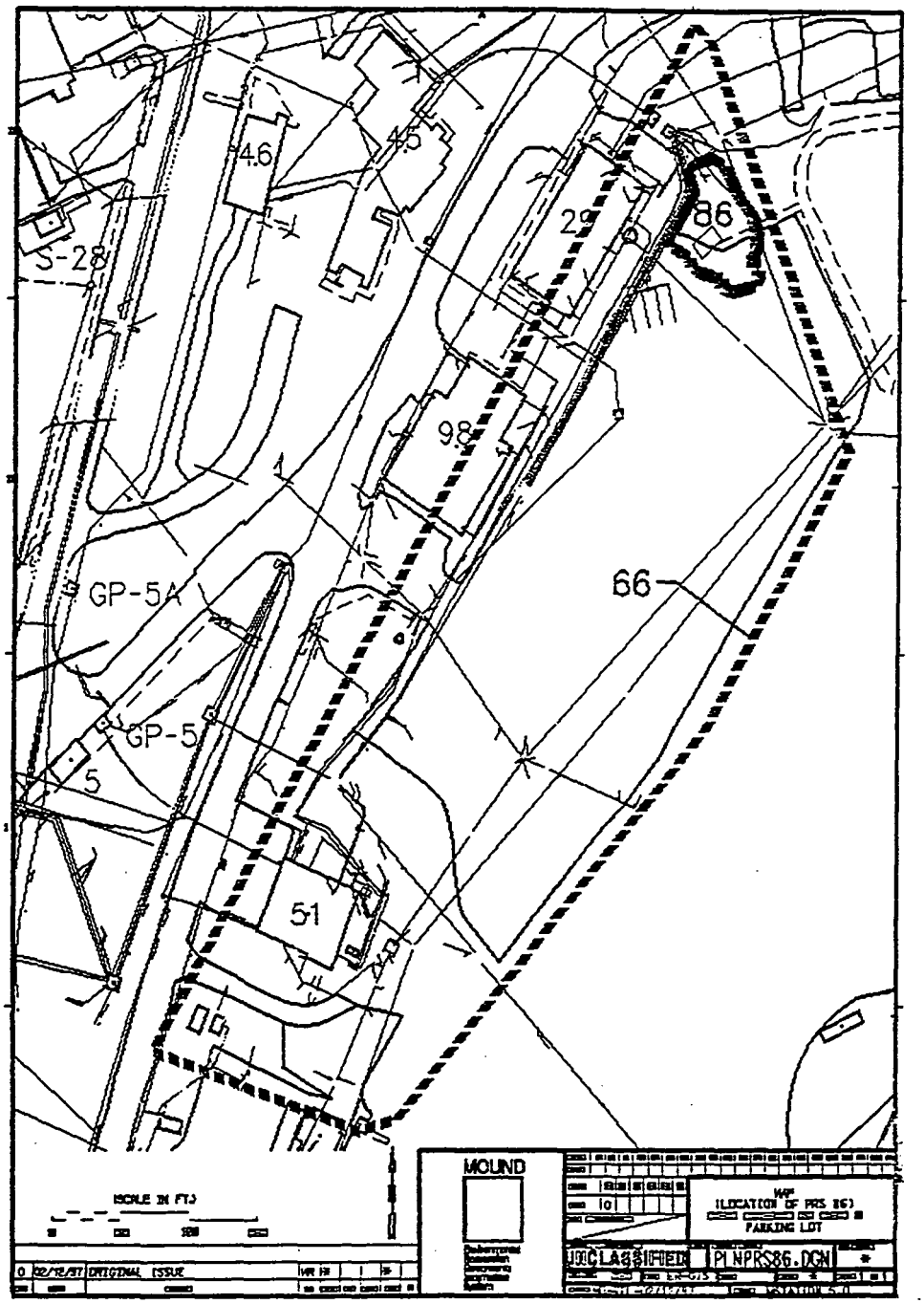

Figure 1.1. Location of PRS 86 within PRS 66.

2.0 SAMPLE SIZE, LOCATION, METHODOLOGY AND RESULTS

The PRS 86 Verification Sampling and Analysis Plan[6] was designed to provide guidance to field personnel in implementing the proposed verification sampling activities associated with PRS 86 (Area 7A). The main objective of the VSAP was to ensure that the field activities, sampling techniques, and sample handling procedures meet the data quality objectives stated in the OU9 QAPP[7].

2.1 SAMPLE SIZE DETERMINATION

The validity of the decision that a site meets the cleanup standard depends on how well the soil samples represent the site, how accurately the soil samples are analyzed, and in the inherent differences in soil samples, all of which are subject to variation. This variation introduces uncertainty into the decision concerning the attainment of the cleanup standard. Given the uncertainty associated with the decision process, procedures that err in favor of the environment or human health will be used. That is, if an incorrect decision is made, it is better environmentally to decide that PRS 86 is dirty when it is not (Type II error, or beta) rather than decide that PRS 86 is clean when in fact it is dirty (Type I error, or alpha). For the purpose of this VSR, an alpha = 0.05 and beta = 0.20 were selected. These values reflect acceptance of errors that could adversely impact human health and the environment five percent of the time, and that could involve cleaning up a "non-problem" 20 percent of the time.

With these alpha and beta values and estimated values of mean, standard deviation, and variance obtained from the field screening data, EPA guidance[8] was used to determine the number of samples required to verify that the cleanup standards have been met.

2.2 SAMPLE LOCATION AND LAYOUT

The sample area for verification sampling was the geographic area defined by a modified systematic random sampling strategy as presented in the VSAP. Any point within the boundary of the removal area was a possible bore location, and samples were collected from material beneath the fill but within two feet of the excavation / fill interface. In addition, points within two feet of the outside of the excavation area were included in the sample area to determine that the lateral extent of contamination has been removed. The number of verification samples and the procedure for locating the sample points are discussed below.

Verification sampling and analysis was carried out to decide whether concentrations in the residual area meet the cleanup standards. Upon completion of removal based on field screening results verification sampling and analysis was completed. An upper one-sided 95 percent confidence interval (95% UCL) was calculated for the three constituents of concern (actinium^{227}, cesium^{137}, radium^{226}) with verification sample data. A confidence interval is a method to determine how close the sample mean approximates the true mean of the population. A 95 percent confidence interval determined from sample data will approximate the true mean 95 percent of the time. The 95% UCL for each parameter was then compared to cleanup standards.

Determination of the sample size required for verification was based on the following hypothesis testing structure. The null hypothesis (H_0) is that the site is contaminated at levels exceeding the cleanup standard; that is, the mean concentration (μ) is greater than the cleanup standard (C_s). The null hypothesis was assumed true unless sufficient evidence exists to show that it is false. The alternative hypothesis (H_1) is typically formulated as that which is intended to be proven. In this case, the goal is to prove that the remaining contamination is below the cleanup standard; that is, the mean concentration (μ) is equal to some value (μ_1) less than C_s.

The necessary calculations for determining the sample size was presented in the VSAP. Thirty-nine samples were required to meet the desired confidence. The VSAP provided a procedure for locating the 39 sample points according to a systematic random sampling strategy. An actual realization of the sample locating strategy was presented in the VSAP. This realization was used to locate the thirty-nine sample locations. The realization was done using the ER Program GIS (Figure 2.1) and translated to the field by locating several of the sampling location using triangulation. From these known points, the 12 foot by 12 foot grid system was marked in the field.

2.3 SAMPLE TYPES, METHODOLOGY, AND DESIGNATION

All samples obtained during the verification sampling program were from the subsurface soils taken from beneath the fill. No groundwater or surface water samples were collected for the verification sampling. Soil sampling procedures followed are presented in the Mound Plant ER Program Methods Compendium.[9]

Two methods of soil collection were used to obtain all samples depending on the sample location. Thirteen locations were above the level of backfill and were collected using a stainless steel 3-inch diameter hand auger. These hand auger samples were collected at a depth of 1 foot below ground surface. The remaining samples were collected using a drill rig with 4.25-inch augers. The augers were advanced to the extent of fill and a 3-inch diameter splitspoon sampler was driven 2 feet past the excavation / fill interface to collect the sample.

Boreholes at locations that required drilling through the backfill material were allowed to collapse as the augers were removed therefore no formal abandonment was required. All soil cuttings that originated from the excavation wall and reached the surface during drilling were left at the surface at the borehole.

All samples were prepared and shipped per the QAPP and ER Method Compendium.

Soil and quality control (QC) samples were identified and labeled according to procedures in ER Program SOP 3.1, Sample Control and Documentation located in Appendix A of the Remedial Investigation/Feasibility Study, Operable Unit 9, Site-Wide, Quality Assurance Project Plan, Final 1995 (QAPP). Sample identification labels were used for each sample container. Samples were sealed in containers immediately after collection. Labels were completed prior to collection to minimize the handling of the sample containers. Each label included the following information:

Sample identification
Time and date of collection
Parameters to be analyzed
Samplers Initials

Collected samples were uniquely identified according to the system PRS 86-W-XX-YY-ZZZZZ, where:

W = QC sample
- 0 = no QC sample
- 1 = field duplicate
- 2 = equipment rinsate
- 3 = matrix spike
- 4 = matrix spike/laboratory duplicate

XX = the horizontal grid locator (i.e., A1)
YY = the depth in feet (i.e., 00, 04, 08, etc.)
ZZZZZZ = a unique, sequential six digit sampler identifier (i.e., 000001, 000002 etc.) to be used on the laboratory chain of custody.

2.4 SAMPLE COLLECTION RESULTS

The sample collection was conducted on June 2 through June 4, 1997. A total of 40 samples were collected. These samples were collected from station numbers 1 through 41 except for station number 27 was not sampled due to proximity to a utility. Thirteen samples were hand auger samples and 27 were collected using the soil boring and splitspoon sampler method. The samples depths ranged from 3 to 25 feet below the surface level of the fill material. Figure 2.2 illustrates the collection results. Quality control samples collected consisted of two duplicates and two rinsates of the splitspoon sampler. One matrix spike and matrix spike duplicate was also collected.

2.5 FIELD MEASUREMENTS

This verification sampling was conducted under a General RWP . The work was monitored by a full-time health physicist using a FIDLER, alpha scintillometer and Geiger-Muller pancake probe. Soil cuttings, samples and equipment and personnel were all monitored by the health physicist. One work stoppage occurred on June 3, 1997 at station number 32 grid location C6. During the scanning of the sample from 23 to 25 feet a count above the action level was recorded. A sample was sent for counting overnight to determine the radioactive constituent. It was determined that the hit was from radon and the RWP was modified to include the appropriate personal protective equipment (gloves and shoe covers). No other elevated readings were measured.

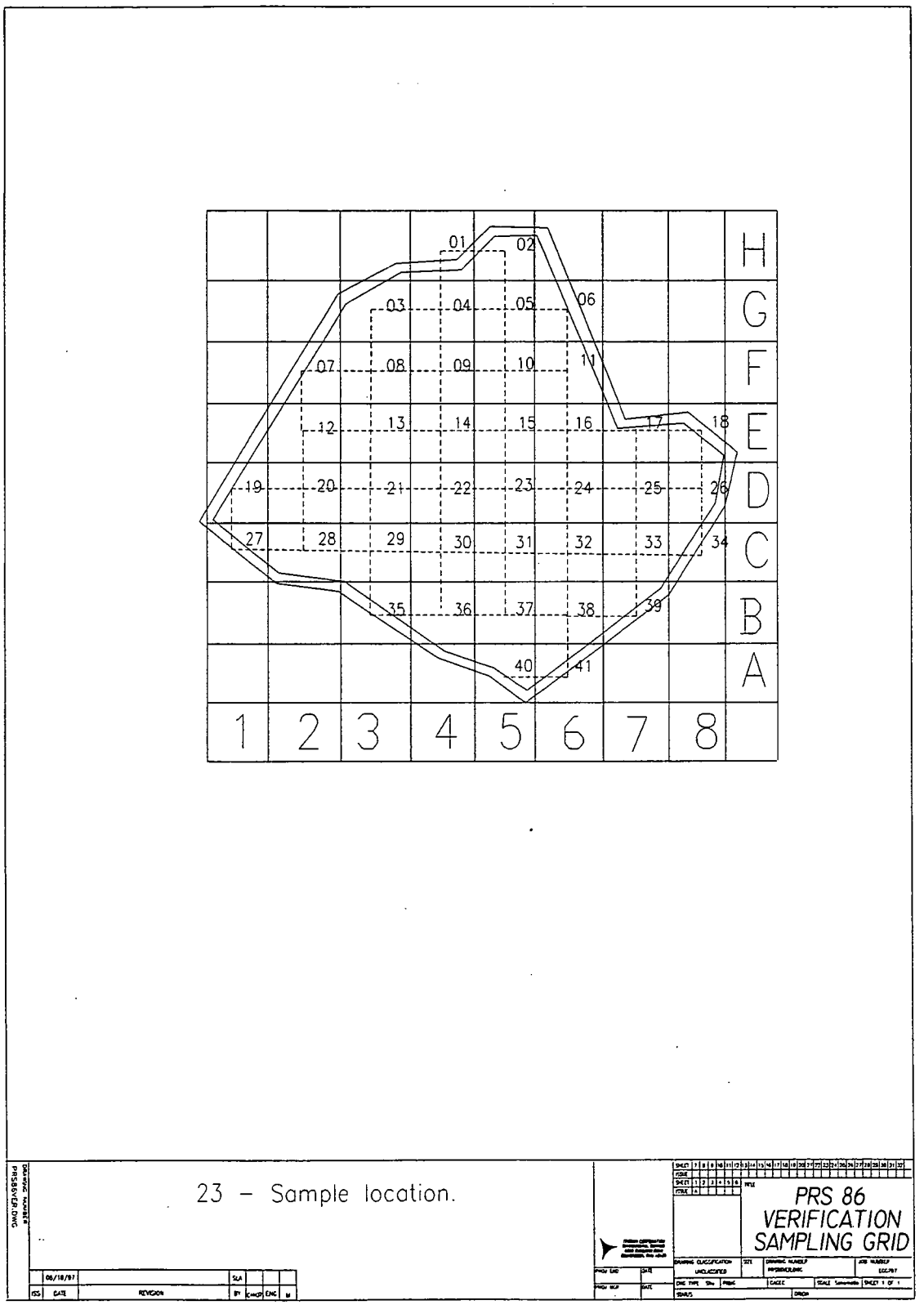

Figure 2.1. Systematic random sampling strategy realization layout.

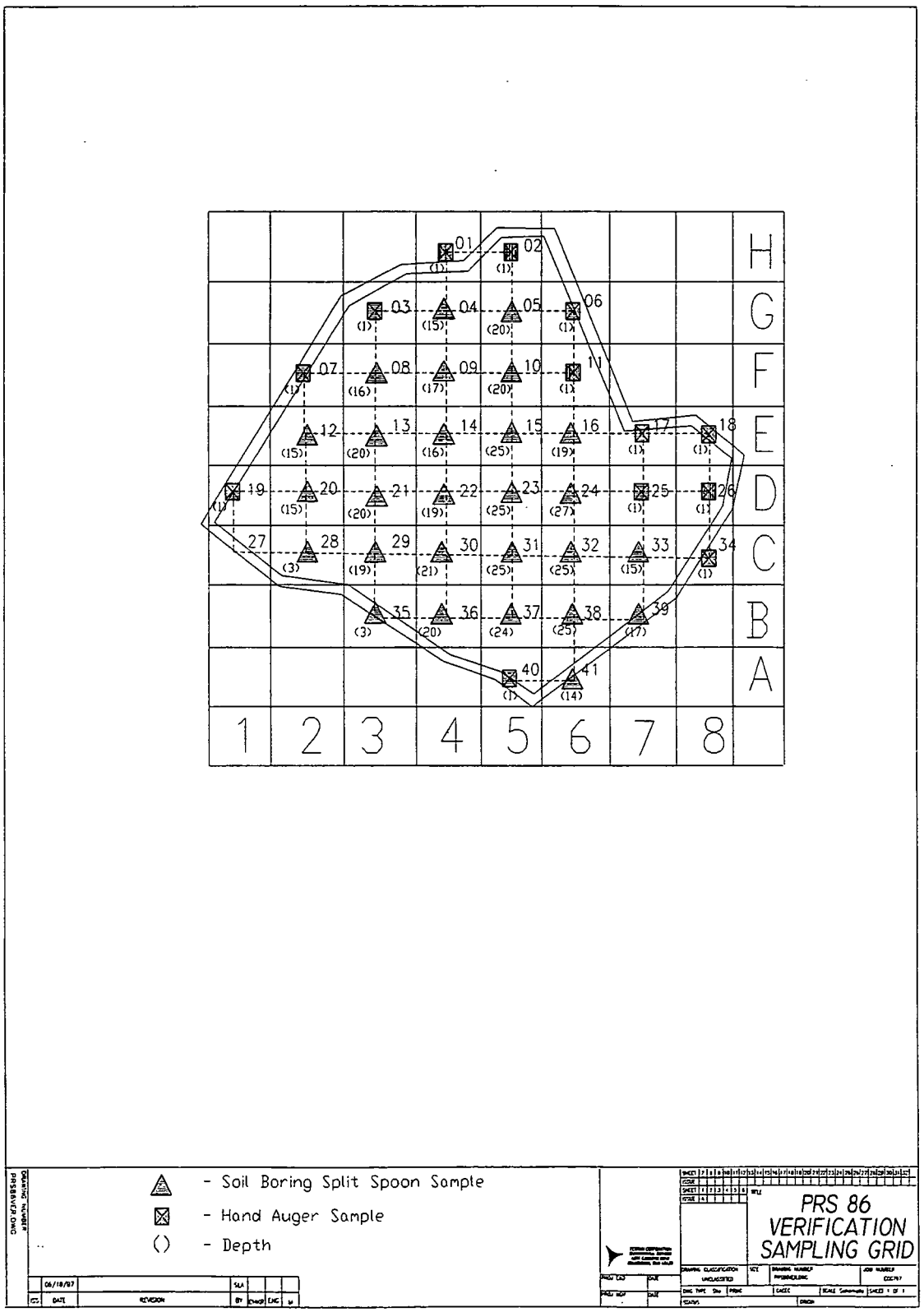

Figure 2.2. Soil sample collection alpha numeric grid, station number and collection depth.

3.0 LABORATORY ANALYSES, VALIDATION AND RESULTS

3.1 LABORATORY ANALYSIS

A portion of all samples were submitted to the Mound Soil Screening lab for analysis by gamma spectrometry for transportation purposes. All screening results were below DOT regulations and all samples were shipped to the off-site laboratory on June 5, 1997. Mound Soil Screening Laboratory results are provided in Appendix A.

All soil samples were sent to Quanterra Environmental Services Laboratory, Richland, Washington for radionuclide analyses. All samples were received by the laboratory on June 6, 1997 for one week turn-around. As per the VSAP the samples were analyzed by gamma spectrometry method (ER Compendium Method A-15) for actinium^{227}, radium^{226}, and cesium^{137}. The reporting limits for actinium were reduced to 0.5 pCi/g from the 1.0 pCi/g in the VSAP as per EG&G ER technical personnel instruction. All other reporting limits remained the same as in the VSAP. In addition, each sample was analyzed for isotopic Plutonium and Thorium by alpha spectrometry method (ER Compendium Method A-12).

3.2 DATA VALIDATION

Data validation of the Quanterra results was performed by Quantalex of Lakewood, Colorado. Quantalex received the data packaged on Wednesday, June 18, 1997. A 100-percent data validation of the data packages was completed using ER Compendium Methods (DV-012 and DV-015). The validation required no additional qualifiers to be assigned. Due to time constraint an summary validation report was prepared and is included in Appendix B. A full validation report will be submitted within two weeks of this report and will be included in a later revision of this document.

3.3 RESULTS

Summary tables of the analytical results for actinium^{227}, radium^{226}, and cesium^{137} are presented in Tables III.1, III.2 and III.3 respectively. The tables include the unique sample number, grid location, station number, depth below ground surface the sample was collected, analytical result, and minimum detectable activity.

Only one sample analyzed for actinium^{227} was detected above the minimum detectable activity (MDA) which ranged between 0.234 and 0.890 pCi/g. The one sample above the MDA was from grid location E6, station number 16, at a depth of 17 to 19 feet below ground surface. This sample had 1.96 pCi/g of actinium^{227} and is below the cleanup goal of 5 pCi/g.

All samples from the 40 locations sampled had detectable activity of radium^{226} . These detections ranged from 0.347 to 0.942 pCi/g all of which is well below the cleanup goal of 15 pCi/g for radium^{226}.

Five of the 40 samples analyzed for cesium^{137} had activity above the MDA. These samples were grid locations B6, B7 at 25 and 17 feet below ground surface respectively. Sample locations D7, D8 and H4 which were hand auger samples collected at 1 foot below ground surface also had detectable cesium^{137}. These cesium^{137} samples ranged in activity from 0.01 to 0.16 pCi/g which is below the Mound background for cesium^{137} of 0.42 pCi/g.

The VSAP required the upper one-sided 95% confidence interval to be used to test whether the site meets cleanup standards. The VSAP Section 6 provided the equation used for calculation of the upper 95% UCL. Ninety-eight percent of the actinium^{227} results were reported at minimum detectable actively. An acceptable practice of including less than detection limits in statistical analysis has been using one-half the detection limit. This method has been used for data evaluation at the Mound and will continue to be used. However, non-detectable results were included in the 95% UCL calculation

by using the reported minimum detectable activity. The use of the MDA instead of one-half the MDA was chosen to be overly conservative which would illustrate how low the remaining soil concentrations are with respect to cleanup goals. Results of the 95% UCL calculation are listed for actinium^{227}, radium^{226}, and cesium^{137} in the respective tables that follow.

Table III.1. Soil Sample Summary and Actinium^{227} Results

Actinium^{227} Area 7A Sample Name	Station #	Grid Location	Date Sampled	Total Depth	Actinium^{227}	Qualifier	MDA	UNITS
PRS86-0-A5-01-000023	40	A5	3 June	1	0.378	U	0.378	pCi/g
PRS86-0-A6-14-000002	41	A6	2 June	14	0.306	U	0.306	pCi/g
PRS86-0-B3-03-000043	35	B3	4 June	3	0.543	U	0.543	pCi/g
PRS86-0-B4-20-000010	36	B4	2 June	20	0.287	U	0.287	pCi/g
PRS86-0-B5-24-000007	37	B5	2 June	24	0.329	U	0.329	pCi/g
PRS86-0-B6-25-000031	38	B6	3 June	25	0.329	U	0.329	pCi/g
PRS86-0-B7-17-000041	39	B7	4 June	17	0.519	U	0.519	
PRS86-0-C2-03-000042	28	C2	4 June	3	0.570	U	0.57	pCi/g
PRS86-0-C3-18-000019	29	C3	2 June	19	0.345	U	0.345	pCi/g
PRS86-0-C4-21-000013	30	C4	2 June	21	0.442	U	0.442	pCi/g
PRS86-0-C5-25-000030	31	C5	3 June	25	0.286	U	0.286	pCi/g
PRS86-0-C6-25-000032	32	C6	3 June	25	0.890	U	0.89	pCi/g
PRS86-0-C7-15-000040	33	C7	4 June	15	0.293	U	0.293	pCi/g
PRS86-0-C8-01-000001	34	C8	2 June	1	0.387	U	0.387	pCi/g
PRS86-0-D1-01-000018	19	D1	2 June	1	0.383	U	0.383	pCi/g
PRS86-0-D2-15-000025	20	D2	2 June	15	0.414	U	0.414	pCi/g
PRS86-0-D3-20-000020	21	D3	2 June	20	0.316	U	0.316	pCi/g
PRS86-0-D4-19-000028	22	D4	3 June	19	0.295	U	0.295	pCi/g
PRS86-0-D5-25-000029	23	D5	3 June	25	0.264	U	0.264	pCi/g
PRS86-0-D6-27-000033	24	D6	4 June	27	0.374	U	0.374	pCi/g
PRS86-0-D7-01-000004	25	D7	2 June	1	0.458	U	0.458	pCi/g
PRS86-0-D8-01-000003	26	D8	2 June	1	0.498	U	0.498	pCi/g
PRS86-0-E2-15-000024	12	E2	3 June	15	0.266	U	0.266	pCi/g
PRS86-0-E3-20-000022	13	E3	3 June	20	0.306	U	0.306	pCi/g
PRS86-0-E4-16-000027	14	E4	3 June	16	0.306	U	0.306	pCi/g
PRS86-0-E5-25-000034	15	E5	4 June	25	0.407	U	0.407	pCi/g
PRS86-0-E6-19-000039	16	E6	4 June	19	1.960		NA	pCi/g
PRS86-0-E7-01-000008	17	E7	2 June	1	0.345	U	0.345	pCi/g
PRS86-0-E8-01-000006	18	E8	2 June	1	0.414	U	0.414	pCi/g
PRS86-0-F2-01-000017	7	F2	2 June	1	0.324	U	0.324	pCi/g
PRS86-0-F3-16-000026	8	F3	3 June	16	0.293	U	0.293	pCi/g
PRS86-0-F4-17-000035	9	F4	4 June	17	0.360	U	0.36	pCi/g
PRS86-0-F5-20-000038	10	F5	4 June	20	0.331	U	0.331	pCi/g
PRS86-0-F6-01-000011	11	F6	2 June	1	0.380	U	0.38	pCi/g
PRS86-0-G3-01-000016	3	G3	2 June	1	0.296	U	0.296	pCi/g
PRS86-0-G4-15-000036	4	G4	4 June	15	0.234	U	0.234	pCi/g
PRS86-0-G5-20-000037	5	G5	4 June	20	0.401	U	0.401	pCi/g
PRS86-0-G6-01-000012	6	G6	2 June	1	0.289	U	0.289	pCi/g
PRS86-0-H4-01-000014	1	H4	2 June	1	0.379	U	0.379	pCi/g
PRS86-0-H5-01-000015	2	H5	2 June	1	0.338	U	0.338	pCi/g
				Sum	16.535			
				Count	40			
				Mean	0.413			
				S	0.272			
				Sx	0.043			
				UCL	0.486			

MDA - Minimum Detectable Activity, U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit. Grid location and station # see Figure 2.1.

Table III.2. Soil Sample Summary and Cesium^{137} Results

Cesium^{137} Area 7A Sample Name	Station #	Grid Location	Date Sampled	Total Depth	Cesium^{137}	Qualifier	MDA	UNITS
PRS86-0-A5-01-000023	40	A5	3 June	1	0.0752	U	0.0752	pCi/g
PRS86-0-A6-14-000002	41	A6	2 June	14	0.0750	U	0.0750	pCi/g
PRS86-0-B3-03-000043	35	B3	4 June	3	0.1110	U	0.1110	pCi/g
PRS86-0-B4-20-000010	36	B4	2 June	20	0.0445	U	0.0445	pCi/g
PRS86-0-B5-24-000007	37	B5	2 June	24	0.0630	U	0.0630	pCi/g
PRS86-0-B6-25-000031	38	B6	3 June	25	0.0746		0.0716	pCi/g
PRS86-0-B7-17-000041	39	B7	4 June	17	0.1550		NA	
PRS86-0-C2-03-000042	28	C2	4 June	3	0.1080	U	0.1080	pCi/g
PRS86-0-C3-18-000019	29	C3	2 June	19	0.0627	U	0.0627	pCi/g
PRS86-0-C4-21-000013	30	C4	2 June	21	0.0607	U	0.0607	pCi/g
PRS86-0-C5-25-000030	31	C5	3 June	25	0.0545	U	0.0545	pCi/g
PRS86-0-C6-25-000032	32	C6	3 June	25	0.1210	U	0.1210	pCi/g
PRS86-0-C7-15-000040	33	C7	4 June	15	0.0635	U	0.0635	pCi/g
PRS86-0-C8-01-000001	34	C8	2 June	1	0.0765	U	0.0765	pCi/g
PRS86-0-D1-01-000018	19	D1	2 June	1	0.0796	U	0.0796	pCi/g
PRS86-0-D2-15-000025	20	D2	2 June	15	0.0542	U	0.0542	pCi/g
PRS86-0-D3-20-000020	21	D3	2 June	20	0.0624	U	0.0624	pCi/g
PRS86-0-D4-19-000028	22	D4	3 June	19	0.0613	U	0.0613	pCi/g
PRS86-0-D5-25-000029	23	D5	3 June	25	0.0558	U	0.0558	pCi/g
PRS86-0-D6-27-000033	24	D6	4 June	27	0.0609	U	0.0609	pCi/g
PRS86-0-D7-01-000004	25	D7	2 June	1	0.0116		0.0936	pCi/g
PRS86-0-D8-01-000003	26	D8	2 June	1	0.1350		0.1070	pCi/g
PRS86-0-E2-15-000024	12	E2	3 June	15	0.0521	U	0.0521	pCi/g
PRS86-0-E3-20-000022	13	E3	3 June	20	0.0556	U	0.0556	pCi/g
PRS86-0-E4-16-000027	14	E4	3 June	16	0.0586	U	0.0586	pCi/g
PRS86-0-E5-25-000034	15	E5	4 June	25	0.0590	U	0.0590	pCi/g
PRS86-0-E6-19-000039	16	E6	4 June	19	0.0672	U	0.0672	pCi/g
PRS86-0-E7-01-000008	17	E7	2 June	1	0.0805	U	0.0805	pCi/g
PRS86-0-E8-01-000006	18	E8	2 June	1	0.0830	U	0.0830	pCi/g
PRS86-0-F2-01-000017	7	F2	2 June	1	0.0515	U	0.0515	pCi/g
PRS86-0-F3-16-000026	8	F3	3 June	16	0.0470	U	0.0470	pCi/g
PRS86-0-F4-17-000035	9	F4	4 June	17	0.0564	U	0.0564	pCi/g
PRS86-0-F5-20-000038	10	F5	4 June	20	0.0507	U	0.0507	pCi/g
PRS86-0-F6-01-000011	11	F6	2 June	1	0.0785	U	0.0785	pCi/g
PRS86-0-G3-01-000016	3	G3	2 June	1	0.0714	U	0.0714	pCi/g
PRS86-0-G4-15-000036	4	G4	4 June	15	0.0407	U	0.0407	pCi/g
PRS86-0-G5-20-000037	5	G5	4 June	20	0.0676	U	0.0676	pCi/g
PRS86-0-G6-01-000012	6	G6	2 June	1	0.0653	U	0.0653	pCi/g
PRS86-0-H4-01-000014	1	H4	2 June	1	0.1010		NA	pCi/g
PRS86-0-H5-01-000015	2	H5	2 June	1	0.0694	U	0.0694	pCi/g
				Sum	2.822			
				Count	40			
				Mean	0.0705			
				S	0.0260			
				Sx	0.0041			
				UCL	0.0775			

MDA - Minimum Detectable Activity, U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit. Grid location and station # see Figure 2.1.

Table III.3. Soil Sample Summary and Radium^{226} Results

Radium^{226} Area 7A Sample Name	Station #	Grid Location	Date Sampled	Total Depth	Radium^{226}	Qualifier	MDA	UNITS
PRS86-0-A5-01-000023	40	A5	3 June	1	0.542		0.245	pCi/g
PRS86-0-A6-14-000002	41	A6	2 June	14	0.445		NA	pCi/g
PRS86-0-B3-03-000043	35	B3	4 June	3	0.581		0.313	pCi/g
PRS86-0-B4-20-000010	36	B4	2 June	20	0.667		NA	pCi/g
PRS86-0-B5-24-000007	37	B5	2 June	24	0.643		NA	pCi/g
PRS86-0-B6-25-000031	38	B6	3 June	25	0.565		0.239	pCi/g
PRS86-0-B7-17-000041	39	B7	4 June	17	0.527		0.225	
PRS86-0-C2-03-000042	28	C2	4 June	3	0.522		0.262	pCi/g
PRS86-0-C3-18-000019	29	C3	2 June	19	0.942		NA	pCi/g
PRS86-0-C4-21-000013	30	C4	2 June	21	0.616		NA	pCi/g
PRS86-0-C5-25-000030	31	C5	3 June	25	0.531		NA	pCi/g
PRS86-0-C6-25-000032	32	C6	3 June	25	0.641		0.316	pCi/g
PRS86-0-C7-15-000040	33	C7	4 June	15	0.395		0.194	pCi/g
PRS86-0-C8-01-000001	34	C8	2 June	1	0.468		0.224	pCi/g
PRS86-0-D1-01-000018	19	D1	2 June	1	0.473		0.256	pCi/g
PRS86-0-D2-15-000025	20	D2	2 June	15	0.477		NA	pCi/g
PRS86-0-D3-20-000020	21	D3	2 June	20	0.459		NA	pCi/g
PRS86-0-D4-19-000028	22	D4	3 June	19	0.620		0.235	pCi/g
PRS86-0-D5-25-000029	23	D5	3 June	25	0.458		0.210	pCi/g
PRS86-0-D6-27-000033	24	D6	4 June	27	0.595		NA	pCi/g
PRS86-0-D7-01-000004	25	D7	2 June	1	0.536		0.217	pCi/g
PRS86-0-D8-01-000003	26	D8	2 June	1	0.506		0.255	pCi/g
PRS86-0-E2-15-000024	12	E2	3 June	15	0.607		NA	pCi/g
PRS86-0-E3-20-000022	13	E3	3 June	20	0.646		0.229	pCi/g
PRS86-0-E4-16-000027	14	E4	3 June	16	0.660		NA	pCi/g
PRS86-0-E5-25-000034	15	E5	4 June	25	0.635		0.235	pCi/g
PRS86-0-E6-19-000039	16	E6	4 June	19	0.347		NA	pCi/g
PRS86-0-E7-01-000008	17	E7	2 June	1	0.499		NA	pCi/g
PRS86-0-E8-01-000006	18	E8	2 June	1	0.646		0.270	pCi/g
PRS86-0-F2-01-000017	7	F2	2 June	1	0.703		NA	pCi/g
PRS86-0-F3-16-000026	8	F3	3 June	16	0.460		NA	pCi/g
PRS86-0-F4-17-000035	9	F4	4 June	17	0.615		NA	pCi/g
PRS86-0-F5-20-000038	10	F5	4 June	20	0.645		NA	pCi/g
PRS86-0-F6-01-000011	11	F6	2 June	1	0.452		0.212	pCi/g
PRS86-0-G3-01-000016	3	G3	2 June	1	0.518		0.244	pCi/g
PRS86-0-G4-15-000036	4	G4	4 June	15	0.392		0.151	pCi/g
PRS86-0-G5-20-000037	5	G5	4 June	20	0.695		0.256	pCi/g
PRS86-0-G6-01-000012	6	G6	2 June	1	0.480		0.199	pCi/g
PRS86-0-H4-01-000014	1	H4	2 June	1	0.600		0.268	pCi/g
PRS86-0-H5-01-000015	2	H5	2 June	1	0.521		0.255	pCi/g
				Sum	22.330			
				Count	40			
				Mean	0.558			
				S	0.107			
				Sx	0.017			
			Detection	UCL	0.587			

MDA - Minimum Detectable Activity, U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit. Grid location and station # see Figure 2.1.

4.0 CONCLUSIONS

The objective of the verification sampling is to provide high-quality data that confirms the removal action was successful. This was accomplished through the sampling and analysis that is comparable in quality to Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Remedial Investigations using regulatory agency approved procedures. For the removal action to be complete the verification sampling must meet the established cleanup goals of:

5 pCi/g for actinium^{227} established in the Action Memorandum for PRS 86
15 pCi/g for radium^{226} per CFR 192.12 and
0.42 pCi/g for cesium^{137} which is Mound background.

Attainment of the established cleanup goals was fullfilled for the upper one-sided 95% confidence interval if it is less than the cleanup level. Table IV.1 compares the UCL with the cleanup goals.

Table IV.1 Cleanup goals versus calculated UCL

	UCL	Clean Up Goal
Actinium^{227}	0.486	5 pCi/g
Radium^{226}	0.587	15 pCi/g
Cesium^{137}	0.0775	0.42 pCi/g

Based on the approved methodology, analytical results and data evaluation the PRS 86 removal action is complete.

5.0 REFERENCES

1) Removal Action, Final, February 1996. Action memorandum/Removal Site Evaluation, operable Unit 5, Area 7A.

2) Mound Plant Underground Storage Tank Program Plan and Regulatory Status Review, Final, November 1992.

3) Operable Unit 9, Site Scoping Report: Volume 3-Radiological Site Survey, Final, June 1993.

4) Operable Unit 5, Operational Area Phase I Investigation, Area 7A Field Report, Final, June 1995.

5) Reconnaissance Sampling Report, Soil Gas Survey and Geophysical Investigations, Mound Plant Main Hill and SM/PP Hill, February 1993.

6) DOE 1997. Verification Sampling and Analysis Plan, PRS-86, Release Block F, Final (Revision 0), May 1997.

7) DOE 1993a. Remedial Investigation/Feasibility Study Operale Unit 9, Site-Wide Quality Assurance Project Plan, Revision 3. U.S. Department of Energy, Albuquerque Field Office, June 1993.

8) EPA 1989. Methods for Evaluating the Attainment of Cleanup Standards. Volume 1-Soils and Soil Media. U.S. Environmental Protection Agency Statistical Policy Branch.

9) Mound Methods Compendium, 1997.

APPENDIX A

MOUND SOIL SCREENING LAB RESULTS

SOIL ANALYSIS REPORT

SAMPLE ID: AR701187
FILE ID: SSD00783.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.04
Cs-137	<	0.04
Pb-210	<	0.72
Ra-226	<	1.08
Ac-227 (D)	<	0.30
Th-228	<	21.78
Th-229	<	0.66
Th-230	<	9.33
Th-232 (D)		0.41
Pa-231	<	1.65
U-235	<	0.54
U-238 (D)	<	8.81
Pu-238	<	91.70
Am-241	<	0.11

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT **0.14** **nCi/g** Σ

Description:
AREA 7 PRS86-0-B4-20-000010

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701190
FILE ID: SSD00784.S0
PRIORITY:

Isotope		Activity (pCi/g)		
Co-60	<	0.05		
Cs-137	<	0.04		
Pb-210	<	0.89		
Ra-226		1.73		
Ac-227 (D)	<	0.25		
Th-228	<	21.62		
Th-229	<	0.67		
Th-230	<	10.91		
Th-232 (D)		0.47		
Pa-231	<	2.17		
U-235	<	0.62		
U-238 (D)	<	6.96		
Pu-238	<	75.55		
Am-241	<	0.08		

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.12 nCi/g Σ

Description:
AREA 7 PRS86-0-A5-01-000022

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701191
FILE ID: SSC00961.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.07
Cs-137	<	0.03
Pb-210	<	0.92
Ra-226	<	1.48
Ac-227 (D)	<	0.31
Th-228	<	23.62
Th-229	<	0.62
Th-230	<	8.56
Th-232 (D)	<	0.22
Pa-231	<	2.11
U-235	<	0.59
U-238 (D)	<	7.43
Pu-238	<	108.50
Am-241	<	0.09

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.15 nCi/g Σ

Description:
AREA 7 PRS86-0-A5-01-000023

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701180
FILE ID: SSB00425.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	**0.06**
Cs-137	<	**0.06**
Pb-210	<	**0.75**
Ra-226	<	**1.15**
Ac-227 (D)	<	**0.31**
Th-228	<	**22.59**
Th-229	<	**0.81**
Th-230	<	**9.93**
Th-232 (D)		**0.60**
Pa-231	<	**1.71**
U-235	<	**0.63**
U-238 (D)	<	**7.34**
Pu-238	<	**103.60**
Am-241	<	**0.10**

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT **0.15** **nCi/g** Σ

Description:
AREA 7 PRS86-0-A6-14-000002

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701210
FILE ID: SSC00968.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.09
Cs-137	<	0.12
Pb-210	<	1.59
Ra-226	<	1.71
Ac-227 (D)	<	0.48
Th-228	<	37.88
Th-229	<	1.35
Th-230	<	17.79
Th-232 (D)		2.19
Pa-231	<	2.57
U-235	<	1.09
U-238 (D)	<	13.46
Pu-238	<	158.90
Am-241	<	0.20

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.24 nCi/g Σ

Description:
AREA 7 PRS86-0-B3-03-000043

Collector: TERRAN

Date Received: 6/4/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/5/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701197
FILE ID: SSD00787.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.04
Cs-137	<	0.05
Pb-210	<	1.18
Ra-226	<	1.12
Ac-227 (D)	<	0.28
Th-228	<	23.81
Th-229	<	0.80
Th-230	<	11.11
Th-232 (D)		0.86
Pa-231	<	2.15
U-235	<	0.66
U-238 (D)	<	6.72
Pu-238	<	111.40
Am-241	<	0.12

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.16 nCi/g Σ

Description:
AREA 7 PRS86-0-B6-25-000031

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701209
FILE ID: SSB00434.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.07
Cs-137	<	0.06
Pb-210	<	0.85
Ra-226	<	1.63
Ac-227 (D)	<	0.30
Th-228	<	24.98
Th-229	<	0.82
Th-230	<	11.20
Th-232 (D)		0.94
Pa-231	<	2.09
U-235	<	0.64
U-238 (D)	<	6.84
Pu-238	<	83.82
Am-241	<	0.10

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.13 nCi/g Σ

Description:
AREA 7 PRS86-0-B7-17-000041

Collector: TERRAN

Date Received: 6/4/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/5/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701183
FILE ID: SSC00958.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.05
Cs-137	<	0.06
Pb-210	<	1.00
Ra-226	<	1.73
Ac-227 (D)	<	0.27
Th-228	<	23.48
Th-229	<	0.77
Th-230	<	9.15
Th-232 (D)		0.41
Pa-231	<	1.83
U-235	<	0.61
U-238 (D)	<	7.50
Pu-238	<	82.09
Am-241	<	0.10

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.13 nCi/g Σ

Description:
AREA 7 PRS86-0-B5-24-000007

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701206
FILE ID: SSb00433.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.05
Cs-137	<	0.07
Pb-210	<	1.02
Ra-226	<	1.24
Ac-227 (D)	<	0.37
Th-228	<	30.61
Th-229	<	0.94
Th-230	<	12.94
Th-232 (D)		2.01
Pa-231	<	2.51
U-235	<	0.75
U-238 (D)	<	9.29
Pu-238	<	123.80
Am-241	<	0.14

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.19 nCi/g Σ

Description:
AREA 7 PRS86-0-c2-03-000042

Collector: TERRAN

Date Received: 6/4/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/5/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701181
FILE ID: SSC00957.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.08
Cs-137	<	0.06
Pb-210	<	0.82
Ra-226		1.39
Ac-227 (D)	<	0.33
Th-228	<	22.49
Th-229	<	0.61
Th-230	<	10.56
Th-232 (D)		0.43
Pa-231	<	1.87
U-235	<	0.66
U-238 (D)	<	9.87
Pu-238	<	115.00
Am-241	<	0.10

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.16 nCi/g Σ

Description:
AREA 7 PRS86-0-C3-18-000019

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701185
FILE ID: SSB00427.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.05
Cs-137	<	0.06
Pb-210	<	1.15
Ra-226	<	1.80
Ac-227 (D)	<	0.50
Th-228	<	26.00
Th-229	<	0.84
Th-230	<	12.39
Th-232 (D)		0.76
Pa-231	<	2.50
U-235	<	0.82
U-238 (D)	<	11.43
Pu-238	<	111.50
Am-241	<	0.13

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.17 nCi/g Σ

Description:
AREA 7 PRS86-0-C4-21-000013

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701192
FILE ID: SSd00786.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.05
Cs-137	<	0.04
Pb-210	<	1.09
Ra-226	<	1.25
Ac-227 (D)	<	0.36
Th-228	<	21.72
Th-229	<	0.68
Th-230	<	9.59
Th-232 (D)		0.39
Pa-231	<	2.35
U-235	<	0.67
U-238 (D)	<	5.84
Pu-238	<	89.41
Am-241	<	0.10

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.13 nCi/g Σ

Description:
AREA 7 PRS86-0-C5-25-000030

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701201
FILE ID: SSB00431.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	**0.09**
Cs-137	<	**0.11**
Pb-210	<	**1.72**
Ra-226	<	**2.19**
Ac-227 (D)	<	**0.68**
Th-228	<	**58.06**
Th-229	<	**1.71**
Th-230	<	**25.38**
Th-232 (D)		**9.71**
Pa-231	<	**4.55**
U-235	<	**1.58**
U-238 (D)	<	**11.77**
Pu-238	<	**199.00**
Am-241	<	**0.25**

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT **0.32** **nCi/g** Σ

Description:
AREA 7 PRS86-0-C6-25-000032

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701208
FILE ID: SSD00790.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.08
Cs-137	<	0.06
Pb-210	<	1.09
Ra-226	<	0.96
Ac-227 (D)	<	0.32
Th-228	<	19.87
Th-229	<	0.80
Th-230	<	10.23
Th-232 (D)		0.64
Pa-231	<	1.70
U-235	<	0.56
U-238 (D)	<	11.07
Pu-238	<	101.90
Am-241	<	0.10

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.15 nCi/g Σ

Description:
AREA 7 PRS86-0-C7-15-000040

Collector: TERRAN

Date Received: 6/4/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/5/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701182
FILE ID: SSB00426.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.07
Cs-137	<	0.06
Pb-210	<	0.94
Ra-226		2.00
Ac-227 (D)	<	0.39
Th-228	<	23.65
Th-229	<	0.79
Th-230	<	10.70
Th-232 (D)		0.99
Pa-231	<	2.33
U-235	<	0.76
U-238 (D)	<	8.46
Pu-238	<	117.50
Am-241	<	0.13

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.17 nCi/g Σ

Description:
AREA 7 PRS86-0-C8-01-000001

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701177
FILE ID: SSC00956.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	**0.02**
Cs-137	<	**0.05**
Pb-210	<	**1.06**
Ra-226	<	**1.20**
Ac-227 (D)	<	**0.40**
Th-228	<	**24.69**
Th-229	<	**0.72**
Th-230	<	**9.15**
Th-232 (D)		**0.45**
Pa-231	<	**1.73**
U-235	<	**0.77**
U-238 (D)	<	**10.61**
Pu-238	<	**110.20**
Am-241	<	**0.11**

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT **0.16** **nCi/g** Σ

Description:
AREA 7 PRS86-0-D1-01-000018

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701194
FILE ID: SSC00962.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.06
Cs-137	<	0.05
Pb-210	<	1.10
Ra-226	<	1.76
Ac-227 (D)	<	0.62
Th-228	<	26.08
Th-229	<	0.63
Th-230	<	12.34
Th-232 (D)		0.43
Pa-231	<	2.05
U-235	<	0.72
U-238 (D)	<	7.85
Pu-238	<	134.70
Am-241	<	0.12

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.19 nCi/g Σ

Description:
AREA 7 PRS86-0-D2-15-000025

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701188
FILE ID: SSB00428.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.05
Cs-137	<	0.04
Pb-210	<	0.83
Ra-226	<	1.17
Ac-227 (D)	<	0.31
Th-228	<	23.29
Th-229	<	0.65
Th-230	<	8.40
Th-232 (D)		0.36
Pa-231	<	1.96
U-235	<	0.60
U-238 (D)	<	7.33
Pu-238	<	92.30
Am-241	<	0.10

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.14 nCi/g Σ

Description:
AREA 7 PRS86-0-D3-20-000020

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701198
FILE ID: SSB00430.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.05
Cs-137	<	0.04
Pb-210	<	0.87
Ra-226	<	1.32
Ac-227 (D)	<	0.24
Th-228	<	19.79
Th-229	<	0.63
Th-230	<	9.36
Th-232 (D)		0.43
Pa-231	<	1.67
U-235	<	0.61
U-238 (D)	<	5.22
Pu-238	<	83.92
Am-241	<	0.08

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.12 nCi/g Σ

Description:
AREA 7 PRS86-0-D4-19-000028

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701193
FILE ID: SSB00429.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.06
Cs-137	<	0.04
Pb-210	<	1.09
Ra-226	<	1.17
Ac-227 (D)	<	0.30
Th-228	<	26.71
Th-229	<	0.82
Th-230	<	11.00
Th-232 (D)		0.77
Pa-231	<	2.12
U-235	<	0.67
U-238 (D)	<	9.84
Pu-238	<	107.40
Am-241	<	0.10

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.16 nCi/g Σ

Description:
AREA 7 PRS86-0-D5-25-000029

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701200
FILE ID: SSC00964.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.04
Cs-137	<	0.05
Pb-210	<	1.11
Ra-226		2.09
Ac-227 (D)	<	0.33
Th-228	<	28.49
Th-229	<	0.83
Th-230	<	11.34
Th-232 (D)		0.50
Pa-231	<	2.31
U-235	<	0.68
U-238 (D)	<	6.46
Pu-238	<	104.70
Am-241	<	0.13

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT **0.16** **nCi/g** Σ

Description:
AREA 7 PRS86-0-D6-27-000033

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701173
FILE ID: SSB00423.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.08
Cs-137		0.11
Pb-210	<	0.99
Ra-226	<	2.08
Ac-227 (D)	<	0.41
Th-228	<	24.54
Th-229	<	1.06
Th-230	<	12.24
Th-232 (D)		1.39
Pa-231	<	3.15
U-235	<	0.86
U-238 (D)	<	8.64
Pu-238	<	134.90
Am-241	<	0.13

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.19 nCi/g Σ

Description:
AREA 7 PRS86-0-D7-01-000004

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 0 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/3/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701175
FILE ID: SSD00779.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.06
Cs-137		0.13
Pb-210	<	1.36
Ra-226	<	1.85
Ac-227 (D)	<	0.48
Th-228	<	41.31
Th-229	<	1.23
Th-230	<	19.17
Th-232 (D)		3.42
Pa-231	<	3.35
U-235	<	1.11
U-238 (D)	<	9.99
Pu-238	<	149.20
Am-241	<	0.19

Other Nuclides:

Isotope	Activity (pCi/g)
Tl-208	3.05
Pb-214	0.72

Σ DOT **0.24** **nCi/g** Σ

Description:
AREA 7 PRS86-0-D8-01-000003

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 0 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/3/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701189
FILE ID: SSC00960.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.06
Cs-137	<	0.05
Pb-210	<	1.01
Ra-226	<	1.35
Ac-227 (D)	<	0.20
Th-228	<	22.33
Th-229	<	0.60
Th-230	<	10.09
Th-232 (D)	<	0.36
Pa-231	<	2.12
U-235	<	0.62
U-238 (D)	<	1.45
Pu-238	<	113.10
Am-241	<	0.11

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT **0.15** **nCi/g** Σ

Description:
AREA 7 PRS86-0-E2-15-000024

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701195
FILE ID: SSD00785.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.04
Cs-137	<	0.02
Pb-210	<	1.13
Ra-226	<	1.20
Ac-227 (D)	<	0.29
Th-228	<	22.81
Th-229	<	0.77
Th-230	<	8.79
Th-232 (D)		0.34
Pa-231	<	1.61
U-235	<	0.59
U-238 (D)	<	6.22
Pu-238	<	109.70
Am-241	<	0.12

Other Nuclides:

Isotope	Activity (pCi/g)

Σ DOT 0.15 nCi/g Σ

Description:
AREA 7 PRS86-0-E4-16-000027

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701199
FILE ID: SSD00788.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.05
Cs-137	<	0.05
Pb-210	<	1.07
Ra-226		2.13
Ac-227 (D)	<	0.29
Th-228	<	23.52
Th-229	<	0.84
Th-230	<	10.29
Th-232 (D)		0.36
Pa-231	<	1.70
U-235	<	0.62
U-238 (D)	<	7.68
Pu-238	<	96.89
Am-241	<	0.10

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.15 nCi/g Σ

Description:
AREA 7 PRS86-0-E5-25-000034

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701207
FILE ID: SSC00967.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.05
Cs-137	<	0.09
Pb-210	<	1.44
Ra-226	<	1.37
Ac-227 (D)		1.54
Th-228	<	33.06
Th-229	<	0.92
Th-230	<	17.03
Th-232 (D)		1.27
Pa-231	<	2.62
U-235	<	0.83
U-238 (D)	<	6.15
Pu-238	<	178.10
Am-241	<	0.15

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT **0.24** **nCi/g** Σ

Description:
AREA 7 PRS86-0-E6-19-000039

Collector: TERRAN

Date Received: 6/4/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/5/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701172
FILE ID: SSC00954.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.09
Cs-137	<	0.09
Pb-210	<	1.14
Ra-226	<	1.30
Ac-227 (D)	<	0.46
Th-228	<	31.15
Th-229	<	0.81
Th-230	<	12.79
Th-232 (D)		0.82
Pa-231	<	2.88
U-235	<	0.68
U-238 (D)	<	10.20
Pu-238	<	135.20
Am-241	<	0.14

Other Nuclides:

Isotope	Activity (pCi/g)
Pb-214	0.75

Σ DOT 0.20 nCi/g Σ

Description:
AREA 7 PRS86-0-E7-01-000008

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 0 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/3/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701186
FILE ID: SSC00959.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.11
Cs-137	<	0.08
Pb-210	<	1.21
Ra-226	<	1.55
Ac-227 (D)	<	0.40
Th-228	<	29.21
Th-229	<	0.93
Th-230	<	16.15
Th-232 (D)		0.73
Pa-231	<	3.11
U-235	<	1.11
U-238 (D)	<	11.02
Pu-238	<	127.50
Am-241	<	0.14

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.19 nCi/g Σ

Description:
AREA 7 PRS86-0-E8-01-000006

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701174
FILE ID: SSC00955.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.07
Cs-137	<	0.05
Pb-210	<	1.02
Ra-226	<	1.25
Ac-227 (D)	<	38.00
Th-228	<	20.50
Th-229	<	0.80
Th-230	<	11.01
Th-232 (D)		0.73
Pa-231	<	2.16
U-235	<	0.71
U-238 (D)	<	7.58
Pu-238	<	111.00
Am-241	<	0.12

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.20 nCi/g Σ

Description:
AREA 7 PRS86-0-F2-01-000017

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 0 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/3/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701196
FILE ID: SSC00963.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.05
Cs-137	<	0.05
Pb-210	<	0.97
Ra-226	<	1.14
Ac-227 (D)	<	0.36
Th-228	<	20.63
Th-229	<	0.77
Th-230	<	8.72
Th-232 (D)		0.34
Pa-231	<	1.88
U-235	<	0.57
U-238 (D)	<	8.04
Pu-238	<	103.70
Am-241	<	0.10

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.15 nCi/g Σ

Description:
AREA 7 PRS86-0-F3-16-000026

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701202
FILE ID: SSd00789.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.03
Cs-137	<	0.04
Pb-210	<	0.92
Ra-226	<	1.18
Ac-227 (D)	<	0.32
Th-228	<	24.17
Th-229	<	0.71
Th-230	<	10.04
Th-232 (D)		0.52
Pa-231	<	2.16
U-235	<	0.67
U-238 (D)	<	7.40
Pu-238	<	93.57
Am-241	<	0.11

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.14 nCi/g Σ

Description:
AREA 7 PRS86-4-F4-17-000035

Collector: TERRAN

Date Received: 6/4/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/5/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701203
FILE ID: SSC00965.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.02
Cs-137	<	0.03
Pb-210	<	1.16
Ra-226	<	1.75
Ac-227 (D)	<	0.29
Th-228	<	19.98
Th-229	<	0.73
Th-230	<	10.43
Th-232 (D)	<	0.26
Pa-231	<	2.03
U-235	<	0.63
U-238 (D)	<	9.91
Pu-238	<	108.30
Am-241	<	0.11

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT **0.16** **nCi/g** Σ

Description:
AREA 7 PRS86-0-F5-20-000038

Collector: TERRAN

Date Received: 6/4/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/5/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701184
FILE ID: SSD00782.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.06
Cs-137	<	0.06
Pb-210	<	1.09
Ra-226	<	1.68
Ac-227 (D)	<	0.31
Th-228	<	25.17
Th-229	<	1.09
Th-230	<	11.75
Th-232 (D)		0.87
Pa-231	<	2.56
U-235	<	0.81
U-238 (D)	<	11.31
Pu-238	<	92.43
Am-241	<	0.09

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.15 nCi/g Σ

Description:
AREA 7 PRS86-0-F6-01-000011

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701176
FILE ID: SSB00424.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.03
Cs-137	<	0.04
Pb-210	<	0.67
Ra-226	<	0.88
Ac-227 (D)	<	0.26
Th-228	<	18.46
Th-229	<	0.63
Th-230	<	7.80
Th-232 (D)	<	0.25
Pa-231	<	1.32
U-235	<	0.41
U-238 (D)	<	6.08
Pu-238	<	82.67
Am-241	<	0.08

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT **0.12** **nCi/g** Σ

Description:
AREA 7 PRS86-0-G3-01-000016

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701205
FILE ID: SSC00966.S0
PRIORITY:

Isotope		Activity (pCi/g)		
Co-60	<	0.05		
Cs-137	<	0.04		
Pb-210	<	1.01		
Ra-226	<	1.07		
Ac-227 (D)	<	0.28		
Th-228	<	18.42		
Th-229	<	0.71		
Th-230	<	8.62		
Th-232 (D)		0.32		
Pa-231	<	1.38		
U-235	<	0.57		
U-238 (D)	<	6.32		
Pu-238	<	92.80		
Am-241	<	0.09		

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.13 nCi/g Σ

Description:
AREA 7 PRS86-0-G4-15-000036

Collector: TERRAN

Date Received: 6/4/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/5/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701204
FILE ID: SSB00432.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.07
Cs-137	<	0.04
Pb-210	<	0.77
Ra-226		1.75
Ac-227 (D)	<	0.33
Th-228	<	20.22
Th-229	<	0.58
Th-230	<	8.74
Th-232 (D)		0.62
Pa-231	<	1.59
U-235	<	0.69
U-238 (D)	<	5.70
Pu-238	<	82.59
Am-241	<	0.10

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.12 nCi/g Σ

Description:
AREA 7 PRS86-0-G5-20-000037

Collector: TERRAN

Date Received: 6/4/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/5/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701179
FILE ID: SSD00781.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.07
Cs-137	<	0.06
Pb-210	<	1.10
Ra-226		1.67
Ac-227 (D)	<	0.27
Th-228	<	21.48
Th-229	<	0.82
Th-230	<	10.99
Th-232 (D)		0.71
Pa-231	<	2.32
U-235	<	0.73
U-238 (D)	<	10.44
Pu-238	<	96.06
Am-241	<	0.14

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.15 nCi/g Σ

Description:
AREA 7 PRS86-0-G6-01-000012

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701178
FILE ID: SSD00780.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	0.05
Cs-137	<	0.08
Pb-210	<	0.84
Ra-226	<	1.31
Ac-227 (D)	<	0.28
Th-228	<	21.45
Th-229	<	0.85
Th-230	<	8.96
Th-232 (D)		0.80
Pa-231	<	2.02
U-235	<	0.59
U-238 (D)	<	9.19
Pu-238	<	96.34
Am-241	<	0.11

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT 0.14 nCi/g Σ

Description:
AREA 7 PRS86-0-H4-01-000014

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 1 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/4/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

SOIL ANALYSIS REPORT

SAMPLE ID: AR701171
FILE ID: SSB00422.S0
PRIORITY:

Isotope		Activity (pCi/g)
Co-60	<	**0.07**
Cs-137	<	**0.05**
Pb-210	<	**1.12**
Ra-226	<	**1.52**
Ac-227 (D)	<	**0.35**
Th-228	<	**21.74**
Th-229	<	**0.77**
Th-230	<	**10.95**
Th-232 (D)		**0.59**
Pa-231	<	**1.81**
U-235	<	**0.72**
U-238 (D)	<	**11.96**
Pu-238	<	**107.80**
Am-241	<	**0.12**

Other Nuclides:

Isotope	Activity (pCi/g)		

Σ DOT **0.16** **nCi/g** Σ

Description:
AREA 7 PRS86-0-H5-01-000015

Collector: TERRAN

Date Received: 6/3/97

Product Cycle Time: 0 Days

Comments:

Σ Respirator <1 indicates soil levels below limits. Values > or = 1 indicate the soil levels exceed alarm limits for that operation. Respirator limits provided by Health Physics on May 15, 1995.

Σ DOT 2 nCi/g limit, total activity.

(D) denotes identification by daughter emissions. Sample is assumed to be in secular equilibrium.

< by activity means it is less than the MDA. MDA value used in calculation of respirator and DOT limits.

Date: 6/3/97 Counted By: 5890 Report By: 5613 INITIALS [redacted]

APPENDIX B

QUANTALEX DATA VALIDATION REPORT
AND QUANTERRA RICHLAND DATA PACKAGE

QUANTALEX

June 27, 1997

Mr. Roger McCready
Chemistry Task Leader
Terran Corporation
4080 Executive Dr.
Beavercreek, Ohio 45420

RE: Transmittal of 1 Radiological Data Validation Report for Batch Number 8359 Analyzed by Quanterra-Richland

Dear Mr. McCready:

Enclosed is the data validation report for SDG 8359 Radiological analyses of 42 soil and 2 water samples by Quanterra-Richland laboratory.

If you have any questions, please contact us at (303) 763-8881.

Sincerely yours,
QUANTALEX, INC.

Richard Thurman

Richard Thurman
Staff Consultant

Enclosures

cc: Bob Thielke, (letter only)

IF: D262-001

300 UNION BOULEVARD SUITE 600
LAKEWOOD, COLORADO 80228
TEL 303.763.8881 FAX 303.763.8889

//

REPORT OF DATA VALIDATION RESULTS

Lab Batch: 8359

PROJECT: EG&G MOUND **DATE:** June 25, 1997

TASK: EGG797

LABORATORY: Quanterra - Richland, WA

LAB BATCH: 8359

ANALYSIS: Radiological

1. CASE SUMMARY

Forty two (42) soil and two (2) water samples were collected 2 through 4 June, 1997and the samples were assigned Quanterra Laboratory - Richland, Washington batch number 8359. The chain-of-custody documentation indicates that the samples were received by the laboratory in good condition.

The soil samples and related laboratory control samples were labeled as follows:

WESTON SAMPLE ID	LABORATORY ID	PARAMETER
D101000018	70610301	Group A (1, 2)
E801000006	70610302	Group A (1, 2)
E701000008	70610303	Group A (1, 2)
E701000009	70610304	Group A (1, 2)
D701000004	70610305	Group A (1, 2)
D801000003	70610306	Group A (1, 2)
C203000042	70610307	Group A (1, 2)
C318000019	70610308	Group A (1, 2)
C421000013	70610309	Group A (1, 2)
C525000030	70610310	Group A (1, 2)
C625000032	70610311	Group A (1, 2)
A501000044	70610312	Group A (1, 2)
A501000023	70610313	Group A (1, 2)
B717000041	70610314	Group A (1, 2)
B625000031	70610315	Group A (1, 2)
B524000007	70610316	Group A (1, 2)
B420000010	70610317	Group A (1, 2)
B303000043	70610318	Group A (1, 2)
C801000001	70610319	Group A (1, 2)
C715000040	70610320	Group A (1, 2)

REPORT OF DATA VALIDATION RESULTS

Lab Batch: 8359

A614000002	70610321	Group A (1, 2)
D101000018 Replicate	R0610301	Group A (1, 2)
Blank Results	T061031B	Group A (1, 2)
Method Spike results	T061031S	Group A (1, 2)
F316000026	70610201	Group A (1, 2)
F201000017	70610202	Group A (1, 2)
G601000012	70610203	Group A (1, 2)
G520000037	70610204	Group A (1, 2)
G415000036	70610205	Group A (1, 2)
G301000016	70610206	Group A (1, 2)
H501000015	70610207	Group A (1, 2)
H401000014	70610208	Group A (1, 2)
F417000035	70610209	Group A (1, 2)
F520000038	70610210	Group A (1, 2)
F601000011	70610211	Group A (1, 2)
E215000024	70610214	Group A (1, 2)
E320000022	70610213	Group A (1, 2)
E416000027	70610214	Group A (1, 2)
E525000034	70610215	Group A (1, 2)
E619000039	70610216	Group A (1, 2)
D627000033	70610217	Group A (1, 2)
D525000029	70610218	Group A (1, 2)
D419000028	70610219	Group A (1, 2)
D320000020	70610220	Group A (1, 2)
D215000025	70610221	Group A (1, 2)
F201000017 Replicate	R0610202	Group A (2)
F316000026 Replicate	R0610201	Group A (1)
Blank Results	T061021B	Group A (1, 2)
Method Spike Results	T061021S	Group A (1, 2)
Matrix Spike Results	V0610209	Group A (1, 2)

The water samples and related laboratory control samples were labeled as follows:

A500000021	70610401	Group A (1, 2)
E800000005	70610402	Group A (1, 2)
Blank Results	T061041B	Group A (1, 2)
A500000021 Replicate	R0610401	Group A (1, 2)
Method Spike Results	T061041S	Group A (1, 2)

1. CASE SUMMARY (continued)

The Group A-1 analyses requested include:

Alpha Spectrometry

Plutonium-238, 239/240 (PUISO) by method QUANTERRA RICHR C5010
Thorium-228, 230, 232 (THISO) by method QUANTERRA RICHR C5011

The Group A-2 analyses requested include:

Gamma Spectrometry

Gamma Scan (GAMMA) by method QUANTERRA RICHR C5017

Data validation was performed according to the Methods Compendium August 1996, Methods DV-012 and DV-014, Revision 1 (DOE 1996).

2. DATA COMPLETENESS

All laboratory data were submitted in full.

3. SAMPLE HOLDING TIMES

The alpha spectrometry analysis of the samples was performed within 13 days of sampling.

The gamma spectrometry analysis of the samples was performed within 11 days of sampling.

4. RESULTS OF LABORATORY QUALITY CONTROL CHECKS

a. Calibration and Instrument Performance

All calibrations and instrument performance data were within the limits specified in the Methods Compendium August 1996, Methods DV-012 and DV-014, Revision 1 (DOE 1996).

b. Blanks

Method blanks for alpha spectrometry and gamma spectrometry were analyzed and were within the limits in the Methods Compendium August 1996, Methods DV-012 and DV-014, Revision 1 (DOE 1996).

c. Background

Counter backgrounds for alpha spectrometry and gamma spectrometry were analyzed and were within the acceptance limits in the Methods Compendium August 1996, Methods DV-012 and DV-014, Revision 1 (DOE 1996).

d. Method Spike

Method spikes for alpha spectrometry and gamma spectrometry were analyzed and were within the limits specified in the Methods Compendium August 1996, Methods DV-012 and DV-014, Revision 1 (DOE 1996) with the exception of a Cesium-137 LCS that was analyzed for gamma spectrometry with the samples in laboratory work order 706102 which is a subset of laboratory.batch 8359.

The Cesium-137 method spike that was analyzed with the twenty one (21) soil samples in the laboratory work order number 706102 had an activity that was outside 4 standard deviations of the known value which is outside the criteria. However, a matrix spike result was submitted with this work order and its activity was well within the criteria. Additionally, the observed Cesium-137 activity of the method spike was biased high, while the Cesium-137 activities of all the samples analyzed in this work order were less than their respective Minimum Detectable Activities (MDAs). No action was necessary.

e. Matrix Spike

Matrix spikes for alpha spectrometry and gamma spectrometry were analyzed only with laboratory work order number 706102 and were within the limits specified in the Methods Compendium August 1996, Methods DV-012 and DV-014, Revision 1 (DOE 1996).

f. Replicates

Replicates were analyzed for alpha spectrometry and gamma spectrometry and were within the acceptance limits specified in the Methods Compendium August 1996, Methods DV-012 and DV-014, Revision 1 (DOE 1996) with the exception of all the replicate analyses for the original water sample A500000021, the gamma spectrometry replicate analysis of the original soil samples D101000018 and F201000017, the Plutonium-238 replicate analysis of original soil sample D101000018, and the Plutonium-239 replicate analysis of the original soil sample F316000026. Either the original sample activities or the replicate activities were less than the respective MDAs. Additionally, there is a possibility of homogeneity problems with soil samples. Therefore, no action was taken.

g. Sample Result Verification

The results for soil samples F316000026, F601000011, E619000039, D101000018, D701000004, C525000030, B717000041, C801000001 for alpha spectrometry analyses, the results for water samples A500000021, E800000005 for alpha spectrometry and gamma spectrometry analyses, the results for soil samples F316000026, F520000038, D101000018, D701000004, C525000030, B717000041, and C801000001 for gamma spectrometry were found to be correct. Proper efficiencies, yields, decay factors, and backgrounds were used. The results for all of the water samples with the exception of Potassium-40 were reported as less than their respective MDA. The Actinium-227, Americium-241, Bismuth-207, Bismuth-210m, and Cobalt-60 results for all of the samples were reported as less than their respective MDA. The MDAs for the Plutonium-238 and Plutonium-239 analysis of the following soil samples exceeded the Required Detection Limits: D101000018, E801000006, E701000008, E701000009, D701000004, D801000003, C203000042, C318000019, C421000013, C525000030, C625000032, A501000044, A501000023, B717000041, B625000031, B524000007, B420000010, B303000043, C801000001, C715000040, A614000002, and E416000027. no action was necessary.

5. RESULTS OF ASSOCIATED FIELD QUALITY CONTROL CHECKS

a. Field Duplicates

No field duplicates were submitted with this SDG.

b. Field Blanks

No field blanks were submitted with this SDG.

6. OVERALL ASSESSMENT OF THE DATA

The results in this laboratory batch are generally acceptable and remain unqualified. The verified results as reported in Section 4g of this report are summarized in Attachment III.

7. REFERENCE

DOE. 1996 "Methods Compendium." Mound Plant, Environmental Restoration Program, U.S. Department of Energy, Ohio Field Office, Miamisburg, Ohio, August 1996.

ATTACHMENT I

2. Data Validation Tables

Gamma Spectra

Table I Holding Times
Table II Check Source
Table III Background
Table IV Method Spikes
Table V Replicates
Gamma Calculation

Alpha Isotopic

Table I Holding Times
Table II Check Source
Table III Background
Table IV Method Spikes
Table V Matrix Spikes
Table VI Yield
Table VII Replicates
Alpha Isotopic Calculation

Holding Time Summary
Gamma Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-23-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra - Richland, WA	Collection Date: June 2-3, 1997
QC Limits: None	

	Laboratory Sample Identification	Mound Sample Identification	Sample Date	Count Date	Days	Comments
water	70610401	A500000021	6-3-97	6-10-97	7	
water	70610402	E800000005	6-2-97	6-10-97	8	

Reviewer: _____

Holding Time Summary
Gamma Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-24-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra - Richland, WA	Collection Date: June 2-4, 1997
QC Limits: None	

Laboratory Sample Identification	Mound Sample Identification	Sample Date	Count Date	Days	Comments
70610301 ~~D101~~ KT 6/24/97	D101000018	6-2-97	6-12-97	10	
70610302	E801000006				
70610303	E701000008				
70610304	E701000009				
70610305	D701000004				
70610306	D801000003			10	
70610307	C203000042	6-4-97		8	
70610308	C318000019	6-2-97		10	
70610309	C421000013				
70610310	C525000030	6-3-97		9	
70610311	C625000032				

soil

Reviewer: _____

Holding Time Summary
Gamma Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-24-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra - Richland, WA	Collection Date: June 2-4, 1997

QC Limits: None

	Laboratory Sample Identification	Mound Sample Identification	Sample Date	Count Date	Days	Comments
Soil	70610312	A501000044	6-3-97	6-13-97	10	
	70610313	A501000023				
	70610314	B717000041				
	70610315	B625000031			10	
	70610316	B524000007	6-2-97		11	
	70610317	B420000010				
	70610318	B303000043	6-4-97		9	
	70610319	C801000001	6-2-97		11	
	70610320	C715000040	6-4-97		9	
	70610321	A614000002	6-2-97		11	

Reviewer: _____

Holding Time Summary
Gamma Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-25-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra - Richland, WA	Collection Date: June 2-4, 1997
QC Limits: None	

	Laboratory Sample Identification	Mound Sample Identification	Sample Date	Count Date	Days	Comments
soil	70610201	F316000026	6-3-97	6-11-97	8	
	2	F201000017	6-2-97		9	
	3	G601000012				
	4	G520000037	6-4-97		7	
	5	G415000036				
	6	G301000016	6-2-97		9	
	7	H501000015				
	8	H401000014				
	9	F417000035	6-4-97		7	
	10	F520000038				
	11	F601000011	6-2-97		9	

Reviewer: _____

Holding Time Summary
Gamma Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-25-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra - Richland, WA	Collection Date: June 2-4, 1997

QC Limits: None

	Laboratory Sample Identification	Mound Sample Identification	Sample Date	Count Date	Days	Comments
soil	70610212	E215000024	6-3-97	6-11-97	8	
	213	E320000022				
	214	E416000027				
	215	E525000034	6-4-97		7	
	216	E619000039				
	217	D627000033				
	218	D525000029	6-3-97		8	
	219	D419000028				
	220	D320000020	6-2-97		9	
	221	D215000025				

Reviewer: _____

Check Source Summary
Gamma Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-23-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra - Richland, WA	Collection Date: June 2-3, 1997

QC Limits: ± 3σ from Mean Value

Laboratory Sample Identification	Mound Sample Identification	Sample Count Date	Result	Comments
water + soil None were qualified				

Reviewer: _____

Background Summary
Gamma Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-23-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra - Richland, WA	Collection Date: June 2-3, 1997

QC Limits: Counted within one week of sample.
No peaks identified with ± 20% error.

Laboratory Sample Identification	Mound Sample Identification	Sample Count Date	Background Count Date	Comments
water & soil None were qualified				

Reviewer: _____

Replicates Summary
Gamma Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-23-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra - Richland, WA	Collection Date: June 2-3, 1997

QC Limits: ±4 σ of Normalized Range

	Laboratory Sample Identification	Mound Sample Identification	Orig Result pCi/g = soil pCi/L = water	Rep Result pCi/g = soil pCi/L = water	Diff Std Dev	Comments
K-40 water	70610401	A500000021	133	572	-24.9	No qualification was necessary because the original/sample activity is less than the total error @ 2 sigma confidence ~~limit~~ level and less than the reviewer calculated MDA. MDA was reported as N/A by the laboratory. - RT 6/23/97
Ra-226 soil	70610301	D101000018	0.473	0.383	4.21	No action necessary. original + rep activities <MDA RT 6/24/97
	70610202	F201000017	0.703	0.557	4.63	No action necessary. Original + rep activities <MDA RT 6/25/97

Reviewer: _____

Field Duplicate Summary
Gamma Analyses

Prepared by:	WESTON Work Order:
Date:	Mound Project Name:
Laboratory Batch Number:	Operable Unit: NA
Laboratory Name/Location:	Collection Date:

QC Limits: ±4 σ of Normalized Range

Laboratory Sample Identification	Mound Sample Identification	Orig Result pCi/	Rep Result pCi/	Diff Std Dev	Comments
N/A					

Reviewer: _____

Weston-Mound

Batch # 8359-soil-3
QLI # LCS,MS=Cs137
lol Gam.K40,R226
Unique # 200
X Value 0.05

Method Spike Cs-137

Oserved Act. 1	0.56
Known Act. 1	0.455
Sigma Value 1	4.6154
Qual 1	~~Investigate~~ V

No qualification is necessary. The LCS observed value is biased high. All sample values are reported at or below detection limit (MDA). Matrix Spike value is within acceptance limits.

Matrix Spike Cs-137

Oserved Act. 2	0.204
Known Act. 2	0.231
Sigma Value 2	-2.3377
Qual 2	V

Lab **Replicate** K-40

Orig. Act. 1	11.6
Rep. Act. 1	10.3
Sigma Value 3	2.3744
Qual 3	V

Lab Replicate Ra-226
~~Field Duplicate~~ RET 6-19-97

Orig. Act. 2	0.703
Rep. Act. 2	0.557
Sigma Value 4	4.6349
Qual 4	~~X~~ V

Sample and replicate activities are not sufficiently above the respective MDA to provide good precision test. No qualification is necessary.
- RET 6/19/97

Blank

K-40

Blank Act. 1	2.47
MDA 1	1.87
Qual 5	V

RET
6/19/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610201
Sample # : F316000026
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 3 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 10:44 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G7
Aliquot : 206.05

Holding Time : 8

ROI Ac-227

Area : -180
Bkgnd: 313
% Eff: 0.03360
% ABN: 0.200

SMPL CPM : -0.0300
BKGD CPM: 0.0522

Activity : -0.5855
Ct Unc: 0.68781
MDA : 0.276

RT
6/25/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610201
Sample # : F316000026
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 3 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 10:44 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G7
Aliquot : 206.05

Holding Time : 8

ROI Am-241

Area : -4
Bkgnd: 165
% Eff: 0.02490
% ABN: 0.360

SMPL CPM : -0.0007
BKGD CPM: 0.0275

Activity : -0.0097
Ct Unc: 0.00392
MDA : 0.152

RT
6/25/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610201
Sample # : F316000026
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 3 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 10:44 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G7
Aliquot : 206.05

Holding Time : 8

ROI Bi-207

Area : 4
Bkgnd: 51
% Eff: 0.01540
% ABN: 0.980

SMPL CPM : 0.0007
BKGD CPM: 0.0085

Activity : 0.00579
Ct Unc: 0.00042
MDA : 0.052

RT
6/25/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610201
Sample # : F316000026
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 3 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 10:44 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G7
Aliquot : 206.05

Holding Time : 8

ROI Bi-210m

Area : -2
Bkgnd: 90
% Eff: 0.03090
% ABN: 0.500

SMPL CPM : -0.0003
BKGD CPM: 0.0150

Activity : -0.0028
Ct Unc: 0.00036
MDA : 0.066

RT
6/25/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610201
Sample # : F316000026
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 3 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 10:44 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G7
Aliquot : 206.05

Holding Time : 8

ROI Co-60

Area : -2
Bkgnd: 15
% Eff: 0.00755
% ABN: 1.000

SMPL CPM : -0.0003
BKGD CPM: 0.0025

Activity : -0.0057
Ct Unc: 0.00025
MDA : 0.060

RDT 6/25/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610201
Sample # : F316000026
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 3 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 10:44 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G7
Aliquot : 206.05

Holding Time : 8

ROI Cs-137

Area : 3
Bkgnd: 25
% Eff: 0.01410
% ABN: 0.851

SMPL CPM : 0.0005
BKGD CPM: 0.0042

Activity : 0.00546
Ct Unc: 0.00025
MDA : 0.047

1

RJT 6/25/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610201
Sample # : F316000026
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 3 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 10:44 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G7
Aliquot : 206.05

Holding Time : 8

ROI K-40

Area : 314
Bkgnd: 18
% Eff: 0.00700
% ABN: 0.107

SMPL CPM : 0.0523
BKGD CPM: 0.0030

Activity : 9.16478
Ct Unc: 1.84131
MDA : 0.655

RT 6/25/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610201
Sample # : F316000026
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 3 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 10:44 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G7
Aliquot : 206.05

Holding Time : 8

ROI Ra-226

Area : 146
Bkgnd: 57
% Eff: 0.01501
% ABN: 0.463

SMPL CPM : 0.0243
BKGD CPM: 0.0095

Activity : 0.45926
Ct Unc: 0.22643
MDA : 0.119

RT
6/25/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610210
Sample # : F520000038
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 4 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 12:46 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G5
Aliquot : 195.66

Holding Time : 7

ROI **Ra-226**

Area : 207
Bkgnd: 31
% Eff: 0.01597
% ABN: 0.463

SMPL CPM : 0.0345
BKGD CPM: 0.0052

Activity : 0.64450
Ct Unc: 0.42002
MDA : 0.089

RJT 6/25/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610210
Sample # : F520000038
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 4 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 12:46 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G5
Aliquot : 195.66

Holding Time : 7

ROI K-40

Area : 332
Bkgnd: 18
% Eff: 0.00721
% ABN: 0.107

SMPL CPM : 0.0553
BKGD CPM: 0.0030

Activity : 9.90749
Ct Unc: 0.98302
MDA : 0.670

RJT
6/25/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610210
Sample # : F520000038
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 4 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 12:46 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G5
Aliquot : 195.66

Holding Time : 7

ROI Cs-137

Area : 332
Bkgnd: 18
% Eff: 0.00721
% ABN: 0.107

SMPL CPM : 0.0553
BKGD CPM: 0.0030

Activity : 9.90749
Ct Unc: 0.98302
MDA : 0.670

RJT
6/25/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610210
Sample # : F520000038
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 4 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 12:46 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G5
Aliquot : 195.66

Holding Time : 7

ROI **Co-60**

Area : 10
Bkgnd: 8
% Eff: 0.00778
% ABN: 1.000

SMPL CPM : 0.0017
BKGD CPM: 0.0013

Activity : 0.02959
Ct Unc: 0.00112
MDA : 0.047

RT 6/25/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610210
Sample # : F520000038
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 4 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 12:46 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G5
Aliquot : 195.66

Holding Time : 7

ROI **Bi-210m**

Area : 0
Bkgnd: 116
% Eff: 0.03290
% ABN: 0.500

SMPL CPM :
BKGD CPM: 0.0193

Activity : 0.00000
Ct Unc:
MDA : 0.074

RT
6/25/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610210
Sample # : F520000038
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 4 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 12:46 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G5
Aliquot : 195.66

Holding Time : 7

ROI Bi-207

Area : 12
Bkgnd: 41
% Eff: 0.01670
% ABN: 0.980

SMPL CPM : 0.0020
BKGD CPM: 0.0068

Activity : 0.01688
Ct Unc: 0.00101
MDA : 0.046

RT 6/25/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610210
Sample # : F520000038
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 4 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 12:46 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G5
Aliquot : 195.66

Holding Time : 7

ROI **Am-241**

Area : 23
Bkgnd: 219
% Eff: 0.05610
% ABN: 0.360

SMPL CPM : 0.0038
BKGD CPM: 0.0365

Activity : 0.02621
Ct Unc: 0.00658
MDA : 0.082

RT
6/25/97

GamaData **Rev. 1**

Case # : 8359A
Batch # : 70610210
Sample # : F520000038
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 844

Collect Date: 4 Jun 1997
Analysis Date: 11 Jun 1997
Aquire Time : 12:46 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G5
Aliquot : 195.66

Holding Time : 7

ROI **Ac-227**

Area : -255
Bkgnd: 405
% Eff: 0.03620
% ABN: 0.200

SMPL CPM : -0.0425
BKGD CPM: 0.0675

Activity : -0.8108
Ct Unc: 0.23400
MDA : 0.306

RST 6/25/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610301
Sample # : D101000018
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 9:16 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 150.17

Holding Time : 10

ROI **Ac-227**

Area : -150
Bkgnd: 275
% Eff: 0.03260
% ABN: 0.200

SMPL CPM : -0.0250
BKGD CPM: 0.0458

Activity : -0.6900
Ct Unc: -0.9945
MDA : 0.367

RJT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610301
Sample # : D101000018
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 9:16 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 150.17

Holding Time : 10

ROI Am-241

Area : -14
Bkgnd: 117
% Eff: 0.00703
% ABN: 0.360

SMPL CPM : -0.0023
BKGD CPM: 0.0195

Activity : -0.1659
Ct Unc: 0.23174
MDA : 0.628

RT 6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610301
Sample # : D101000018
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 9:16 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 150.17

Holding Time : 10

ROI Bi-207

Area : 10
Bkgnd: 33
% Eff: 0.01610
% ABN: 0.980

SMPL CPM : 0.0017
BKGD CPM: 0.0055

Activity : 0.01901
Ct Unc: 0.00124
MDA : 0.056

RT 6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610301
Sample # : D101000018
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 9:16 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 150.17

Holding Time : 10

ROI Bi-210m

Area : 4
Bkgnd: 57
% Eff: 0.03020
% ABN: 0.500

SMPL CPM : 0.0007
BKGD CPM: 0.0095

Activity : 0.00794
Ct Unc: 0.00090
MDA : 0.075

KT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610301
Sample # : D101000018
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 9:16 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 150.17

Holding Time : 10

ROI Co-60

Area : 5
Bkgnd: 13
% Eff: 0.00764
% ABN: 1.000

SMPL CPM : 0.0008
BKGD CPM: 0.0022

Activity : 0.01963
Ct Unc: 0.00107
MDA : 0.076

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610301
Sample # : D101000018
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 9:16 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 150.17

Holding Time : 10

ROI Cs-137

Area : 16
Bkgnd: 26
% Eff: 0.01440
% ABN: 0.850

SMPL CPM : 0.0027
BKGD CPM: 0.0043

Activity : 0.03921
Ct Unc: 0.00293
MDA : 0.065

RT 6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610301
Sample # : D101000018
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 9:16 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 150.17

Holding Time : 10

ROI K-40

Area : 183
Bkgnd: 6
% Eff: 0.00708
% ABN: 0.107

SMPL CPM : 0.0305
BKGD CPM: 0.0010

Activity : 7.24599
Ct Unc: 1.55000
MDA : 0.558

RT 6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610301
Sample # : D101000018
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 9:16 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 150.17

Holding Time : 10

ROI Ra-226

Area : 112
Bkgnd: 46
% Eff: 0.01536
% ABN: 0.463

SMPL CPM : 0.0187
BKGD CPM: 0.0077

Activity : 0.47239
Ct Unc: 0.24125
MDA : 0.144

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610305
Sample # : D701000004
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:20 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 203.44

Holding Time : 10

ROI Ra-226

Area : 198
Bkgnd: 84
% Eff: 0.01770
% ABN: 0.463

SMPL CPM : 0.0330
BKGD CPM: 0.0140

Activity : 0.53496
Ct Unc: 0.31087
MDA : 0.122

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610305
Sample # : D701000004
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:20 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 203.44

Holding Time : 10

ROI K-40

Area : 612
Bkgnd: 24
% Eff: 0.00824
% ABN: 0.107

SMPL CPM : 0.1020
BKGD CPM: 0.0040

Activity : 15.3691
Ct Unc: 2.36393
MDA : 0.640

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610305
Sample # : D701000004
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:20 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 203.44

Holding Time : 10

ROI Cs-137

Area : 74
Bkgnd: 77
% Eff: 0.01660
% ABN: 0.850

SMPL CPM : 0.0123
BKGD CPM: 0.0128

Activity : 0.11612
Ct Unc: 0.01946
MDA : 0.068

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610305
Sample # : D701000004
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:20 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 203.44

Holding Time : 10

ROI Co-60

Area : 1
Bkgnd: 23
% Eff: 0.00886
% ABN: 1.000

SMPL CPM : 0.0002
BKGD CPM: 0.0038

Activity : 0.00249
Ct Unc: 0.00014
MDA : 0.063

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610305
Sample # : D701000004
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:20 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 203.44

Holding Time : 10

ROI Bi-210m

Area : 7
Bkgnd: 147
% Eff: 0.03520
% ABN: 0.500

SMPL CPM : 0.0012
BKGD CPM: 0.0245

Activity : 0.00880
Ct Unc: 0.00163
MDA : 0.074

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610305
Sample # : D701000004
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:20 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 203.44

Holding Time : 10

ROI Bi-207

Area : -4
Bkgnd: 95
% Eff: 0.01850
% ABN: 0.980

SMPL CPM : -0.0007
BKGD CPM: 0.0158

Activity : -0.0048
Ct Unc: -0.0005
MDA : 0.059

RT 6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610305
Sample # : D701000004
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:20 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 203.44

Holding Time : 10

ROI Am-241

Area : -9
Bkgnd: 330
% Eff: 0.02210
% ABN: 0.360

SMPL CPM : -0.0015
BKGD CPM: 0.0550

Activity : -0.0250
Ct Unc: 0.02301
MDA : 0.243

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610305
Sample # : D701000004
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:20 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 203.44

Holding Time : 10

ROI **Ac-227**

Area : -724
Bkgnd: 1075
% Eff: 0.03800
% ABN: 0.200

SMPL CPM : -0.1207
BKGD CPM: 0.1792

Activity : -2.1092
Ct Unc: 0.96455
MDA : 0.452

RCT 6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610310
Sample # : C525000030
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 3 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:24 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G6
Aliquot : 199.51

Holding Time : 9

ROI **Ac-227**

Area : -49
Bkgnd: 178
% Eff: 0.03900
% ABN: 0.200

SMPL CPM : -0.0082
BKGD CPM: 0.0297

Activity : -0.1418
Ct Unc: 0.07579
MDA : 0.187

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610310
Sample # : C525000030
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 3 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:24 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G6
Aliquot : 199.51

Holding Time : 9

ROI Am-241

Area : -20
Bkgnd: 213
% Eff: 0.03030
% ABN: 0.360

SMPL CPM : -0.0033
BKGD CPM: 0.0355

Activity : -0.0413
Ct Unc: 0.01833
MDA : 0.146

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610310
Sample # : C525000030
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 3 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:24 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G6
Aliquot : 199.51

Holding Time : 9

ROI Bi-207

Area : -7
Bkgnd: 48
% Eff: 0.01770
% ABN: 0.980

SMPL CPM : -0.0012
BKGD CPM: 0.0080

Activity : -0.0091
Ct Unc: 0.00057
MDA : 0.045

RT 6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610310
Sample # : C525000030
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 3 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:24 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G6
Aliquot : 199.51

Holding Time : 9

ROI Bi-210m

Area : 9
Bkgnd: 108
% Eff: 0.03530
% ABN: 0.500

SMPL CPM : 0.0015
BKGD CPM: 0.0180

Activity : 0.01151
Ct Unc: 0.00159
MDA : 0.065

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610310
Sample # : C525000030
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 3 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:24 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G6
Aliquot : 199.51

Holding Time : 9

ROI Co-60

Area : -4
Bkgnd: 15
% Eff: 0.00823
% ABN: 1.000

SMPL CPM : -0.0007
BKGD CPM: 0.0025

Activity : -0.0109
Ct Unc: 0.00046
MDA : 0.057

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610310
Sample # : C525000030
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 3 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:24 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G6
Aliquot : 199.51

Holding Time : 9

ROI Cs-137

Area : -24
Bkgnd: 62
% Eff: 0.01540
% ABN: 0.850

SMPL CPM : -0.0040
BKGD CPM: 0.0103

Activity : -0.0413
Ct Unc: 0.00474
MDA : 0.068

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610310
Sample # : C525000030
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 3 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:24 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G6
Aliquot : 199.51

Holding Time : 9

ROI K-40

Area : 414
Bkgnd: 17
% Eff: 0.00760
% ABN: 0.107

SMPL CPM : 0.0690
BKGD CPM: 0.0028

Activity : 11.4943
Ct Unc: 1.32231
MDA : 0.608

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610310
Sample # : C525000030
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 3 Jun 1997
Analysis Date: 12 Jun 1997
Aquire Time : 11:24 am
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G6
Aliquot : 199.51

Holding Time : 9

ROI Ra-226

Area : 181
Bkgnd: 36
% Eff: 0.01660
% ABN: 0.463

SMPL CPM : 0.0302
BKGD CPM: 0.0060

Activity : 0.53170
Ct Unc: 0.28824
MDA : 0.090

RJ 6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610314
Sample # : B717000041
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 4 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 2:11 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 195.01

Holding Time : 9

ROI Ra-226

Area : 162
Bkgnd: 46
% Eff: 0.01540
% ABN: 0.463

SMPL CPM : 0.0270
BKGD CPM: 0.0077

Activity : 0.52481
Ct Unc: 0.28631
MDA : 0.111

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610314
Sample # : B717000041
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 4 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 2:11 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 195.01

Holding Time : 9

ROI K-40

Area : 447
Bkgnd: 23
% Eff: 0.00708
% ABN: 0.107

SMPL CPM : 0.0745
BKGD CPM: 0.0038

Activity : 13.6295
Ct Unc: 1.86009
MDA : 0.763

RT 6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610314
Sample # : B717000041
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 4 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 2:11 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 195.01

Holding Time : 9

ROI Cs-137

Area : 82
Bkgnd: 64
% Eff: 0.01441
% ABN: 0.851

SMPL CPM : 0.0137
BKGD CPM: 0.0107

Activity : 0.15445
Ct Unc: 0.03026
MDA : 0.075

RJT 6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610314
Sample # : B717000041
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 4 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 2:11 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 195.01

Holding Time : 9

ROI Co-60

Area : -2
Bkgnd: 25
% Eff: 0.00764
% ABN: 1.000

SMPL CPM : -0.0003
BKGD CPM: 0.0042

Activity : -0.0060
Ct Unc: 0.00045
MDA : 0.078

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610314
Sample # : B717000041
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 4 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 2:11 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 195.01

Holding Time : 9

ROI Bi-210m

Area : -3
Bkgnd: 125
% Eff: 0.03020
% ABN: 0.500

SMPL CPM : -0.0005
BKGD CPM: 0.0208

Activity : -0.0045
Ct Unc: 0.00087
MDA : 0.084

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610314
Sample # : B717000041
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 4 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 2:11 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 195.01

Holding Time : 9

ROI Bi-207

Area : 15
Bkgnd: 50
% Eff: 0.01610
% ABN: 0.980

SMPL CPM : 0.0025
BKGD CPM: 0.0083

Activity : 0.02195
Ct Unc: 0.00167
MDA : 0.052

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610314
Sample # : B717000041
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 4 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 2:11 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 195.01

Holding Time : 9

ROI **Am-241**

Area : -5
Bkgnd: 236
% Eff: 0.00703
% ABN: 0.360

SMPL CPM : -0.0008
BKGD CPM: 0.0393

Activity : -0.0456
Ct Unc: 0.09832
MDA : 0.677

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610314
Sample # : B717000041
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 4 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 2:11 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G3
Aliquot : 195.01

Holding Time : 9

ROI **Ac-227**

Area : -345
Bkgnd: 780
% Eff: 0.03260
% ABN: 0.200

SMPL CPM : -0.0575
BKGD CPM: 0.1300

Activity : -1.2222
Ct Unc: 0.36931
MDA : 0.470

RJ 6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610319
Sample # : C801000001
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 4:01 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 166.96

Holding Time : 11

ROI **Ac-227**

Area : -293
Bkgnd: 453
% Eff: 0.03800
% ABN: 0.200

SMPL CPM : -0.0488
BKGD CPM: 0.0755

Activity : -1.0401
Ct Unc: 0.99204
MDA : 0.361

RCT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610319
Sample # : C801000001
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 4:01 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 166.96

Holding Time : 11

ROI Am-241

Area : 13
Bkgnd: 183
% Eff: 0.02210
% ABN: 0.360

SMPL CPM : 0.0022
BKGD CPM: 0.0305

Activity : 0.04408
Ct Unc: 0.02742
MDA : 0.223

RT 6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610319
Sample # : C801000001
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 4:01 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 166.96

Holding Time : 11

ROI Bi-207

Area : -10
Bkgnd: 70
% Eff: 0.01850
% ABN: 0.980

SMPL CPM : -0.0017
BKGD CPM: 0.0117

Activity : -0.0148
Ct Unc: 0.00156
MDA : 0.062

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610319
Sample # : C801000001
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 4:01 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 166.96

Holding Time : 11

ROI Bi-210m

Area : -13
Bkgnd: 128
% Eff: 0.03520
% ABN: 0.500

SMPL CPM : -0.0022
BKGD CPM: 0.0213

Activity : -0.0199
Ct Unc: 0.00393
MDA : 0.085

RJT 6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610319
Sample # : C801000001
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 4:01 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 166.96

Holding Time : 11

ROI Co-60

Area : 7
Bkgnd: 19
% Eff: 0.00860
% ABN: 1.000

SMPL CPM : 0.0012
BKGD CPM: 0.0032

Activity : 0.02196
Ct Unc: 0.00139
MDA : 0.072

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610319
Sample # : C801000001
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 4:01 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 166.96

Holding Time : 11

ROI Cs-137

Area : 10
Bkgnd: 58
% Eff: 0.01660
% ABN: 0.851

SMPL CPM : 0.0017
BKGD CPM: 0.0097

Activity : 0.01909
Ct Unc: 0.00214
MDA : 0.073

RCT 6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610319
Sample # : C801000001
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 4:01 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 166.96

Holding Time : 11

ROI K-40

Area : 499
Bkgnd: 16
% Eff: 0.00824
% ABN: 0.107

SMPL CPM : 0.0832
BKGD CPM: 0.0027

Activity : 15.2694
Ct Unc: 2.33276
MDA : 0.652

RT
6/24/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610319
Sample # : C801000001
Matrix : soil

Entry Date : 24 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 802

Collect Date: 2 Jun 1997
Analysis Date: 13 Jun 1997
Aquire Time : 4:01 pm
Cnt Duration: 6000
Bkg Duration: 6000
Method Error:

Cnt Geometry : 100
Detector # : G1
Aliquot : 166.96

Holding Time : 11

ROI Ra-226

Area : 147
Bkgnd: 64
% Eff: 0.01767
% ABN: 0.463

SMPL CPM : 0.0245
BKGD CPM: 0.0107

Activity : 0.48476
Ct Unc: 0.25630
MDA : 0.132

RT
6/24/97

Weston-Mound

Batch # 8359-soil2
QLI # LCS-Cs
Iol Gamma K-40
Unique # 199
X Value 0.05

Method Spike Cs-137

Oserved Act. 1	0.488
Known Act. 1	0.453
Sigma Value 1	1.5453
Qual 1	V

Matrix Spike

Oserved Act. 2	N/A
Known Act. 2	
Sigma Value 2	ERR
Qual 2	

Lab Replicate K-40

Orig. Act. 1	7.26
Rep. Act. 1	7.7
Sigma Value 3	-1.1765
Qual 3	V

Lab Replicate Ra-226
~~Field Duplicate~~ RT 6/19/97

Orig. Act. 2	0.473
Rep. Act. 2	0.383
Sigma Value 4	4.2056
Qual 4	~~V~~ V

Blank K-40

Blank Act. 1	2.72
MDA 1	1.87
Qual 5	V

Sample and replicate activities are not sufficiently above their respective MDA to provide a good test of precision. No qualification is necessary. -RT 6/19/97

RT 6/12/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610401
Sample # : A500000021
Matrix : water

Entry Date : 23 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 790

Collect Date: 3 Jun 1997
Analysis Date: 10 Jun 1997
Aquire Time : 10:39 am
Cnt Duration: 12000
Bkg Duration: 12000
Method Error:

Cnt Geometry : 100G
Detector # : GE3
Aliquot : 0.50

Holding Time : 7

ROI Bi-207

Area : 3
Bkgnd: 50
% Eff: 0.01610
% ABN: 0.980

SMPL CPM : 0.0003
BKGD CPM: 0.0042

Activity : 0.85647
Ct Unc: 5.41000
MDA : 10.161

RT
6/23/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610401
Sample # : A500000021
Matrix : water

Entry Date : 23 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 790

Collect Date: 3 Jun 1997
Analysis Date: 10 Jun 1997
Aquire Time : 10:39 am
Cnt Duration: 12000
Bkg Duration: 12000
Method Error:

Cnt Geometry : 100G
Detector # : GE3
Aliquot : 0.50

Holding Time : 7

ROI Bi-210m

Area : -28
Bkgnd: 105
% Eff: 0.03020
% ABN: 0.500

SMPL CPM : -0.0023
BKGD CPM: 0.0088

Activity : -8.3527
Ct Unc: 8.26400
MDA : 15.022

R.T.
6/23/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610401
Sample # : A500000021
Matrix : water

Entry Date : 23 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 790

Collect Date: 3 Jun 1997
Analysis Date: 10 Jun 1997
Aquire Time : 10:39 am
Cnt Duration: 12000
Bkg Duration: 12000
Method Error:

Cnt Geometry : 100G
Detector # : GE3
Aliquot : 0.50

Holding Time : 7

ROI Co-60

Area : 14
Bkgnd: 20
% Eff: 0.00764
% ABN: 1.000

SMPL CPM : 0.0012
BKGD CPM: 0.0017

Activity : 8.25432
Ct Unc: 6.45400
MDA : 13.859

RT
6/23/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610401
Sample # : A500000021
Matrix : water

Entry Date : 23 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 790

Collect Date: 3 Jun 1997
Analysis Date: 10 Jun 1997
Aquire Time : 10:39 am
Cnt Duration: 12000
Bkg Duration: 12000
Method Error:

Cnt Geometry : 100G
Detector # : GE3
Aliquot : 0.50

Holding Time : 7

ROI Cs-137

Area : 5
Bkgnd: 40
% Eff: 0.01440
% ABN: 0.850

SMPL CPM : 0.0004
BKGD CPM: 0.0033

Activity : 1.84007
Ct Unc: 7.29781
MDA : 11.820

RT
6/23/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610401
Sample # : A500000021
Matrix : water

Entry Date : 23 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 790

Collect Date: 3 Jun 1997
Analysis Date: 10 Jun 1997
Aquire Time : 10:39 am
Cnt Duration: 12000
Bkg Duration: 12000
Method Error:

Cnt Geometry : 100G
Detector # : GE3
Aliquot : 0.50

Holding Time : 7

ROI K-40

Area : 22
Bkgnd: 23
% Eff: 0.00708
% ABN: 0.107

SMPL CPM : 0.0018
BKGD CPM: 0.0019

Activity : 130.813
Ct Unc: 136.500
MDA : 148.715

RT 6/23/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610402
Sample # : E80000005
Matrix : water

Entry Date : 23 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 790

Collect Date: 2 Jun 1997
Analysis Date: 10 Jun 1997
Aquire Time : 1:59 pm
Cnt Duration: 12000
Bkg Duration: 12000
Method Error:

Cnt Geometry : 100G
Detector # : GE5
Aliquot : 0.50

Holding Time : 8

ROI K-40

Area : 112
Bkgnd: 100
% Eff: 0.00721
% ABN: 0.107

SMPL CPM : 0.0093
BKGD CPM: 0.0083

Activity : 653.952
Ct Unc: 142.946
MDA : 287.330

RT
6/23/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610402
Sample # : E80000005
Matrix : water

Entry Date : 23 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 790

Collect Date: 2 Jun 1997
Analysis Date: 10 Jun 1997
Aquire Time : 1:59 pm
Cnt Duration: 12000
Bkg Duration: 12000
Method Error:

Cnt Geometry : 100G
Detector # : GE5
Aliquot : 0.50

Holding Time : 8

ROI Cs-137

Area : 17
Bkgnd: 35
% Eff: 0.01500
% ABN: 0.850

SMPL CPM : 0.0014
BKGD CPM: 0.0029

Activity : 6.00600
Ct Unc: 6.62563
MDA : 10.676

RT
6/23/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610402
Sample # : E80000005
Matrix : water

Entry Date : 23 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 790

Collect Date: 2 Jun 1997
Analysis Date: 10 Jun 1997
Aquire Time : 1:59 pm
Cnt Duration: 12000
Bkg Duration: 12000
Method Error:

Cnt Geometry : 100G
Detector # : GE5
Aliquot : 0.50

Holding Time : 8

ROI **Co-60**

Area : 11
Bkgnd: 12
% Eff: 0.00778
% ABN: 1.000

SMPL CPM : 0.0009
BKGD CPM: 0.0010

Activity : 6.36883
Ct Unc: 6.84350
MDA : 10.895

RT
6/23/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610402
Sample # : E80000005
Matrix : water

Entry Date : 23 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 790

Collect Date: 2 Jun 1997
Analysis Date: 10 Jun 1997
Aquire Time : 1:59 pm
Cnt Duration: 12000
Bkg Duration: 12000
Method Error:

Cnt Geometry : 100G
Detector # : GE5
Aliquot : 0.50

Holding Time : 8

ROI Bi-210m

Area : -4
Bkgnd: 140
% Eff: 0.03290
% ABN: 0.500

SMPL CPM : -0.0003
BKGD CPM: 0.0117

Activity : -1.0953
Ct Unc: 9.17559
MDA : 15.808

RT 6/23/97

GamaData **Rev. 1**

Case # : 8359
Batch # : 70610402
Sample # : E80000005
Matrix : water

Entry Date : 23 Jun 1997
QLI# :
Laboratory : QRIC
Unique # : 790

Collect Date: 2 Jun 1997
Analysis Date: 10 Jun 1997
Aquire Time : 1:59 pm
Cnt Duration: 12000
Bkg Duration: 12000
Method Error:

Cnt Geometry : 100G
Detector # : GE5
Aliquot : 0.50

Holding Time : 8

ROI Bi-207

Area : -30
Bkgnd: 73
% Eff: 0.01670
% ABN: 1.000

SMPL CPM : -0.0025
BKGD CPM: 0.0061

Activity : -8.0919
Ct Unc: 6.13115
MDA : 11.447

RT
6/23/97

Weston-Mound

Batch # 8359-water –/
QLI # LCS=Cs
Iol Gamma-K-40
Unique # 197
X Value 0.05

Method Spike

Oserved Act. 1	100
Known Act. 1	90.5
Sigma Value 1	2.0994
Qual 1	V

Matrix Spike

Oserved Act. 2	N/A
Known Act. 2	
Sigma Value 2	ERR
Qual 2	

Replicate

Orig. Act. 1	133
Rep. Act. 1	572
Sigma Value 3	-24.9078
Qual 3	~~V~~ V

No qualification is necessary. The original sample activity was less than the Total error @ 2σ. -RT 6/19/97

Field Duplicate

Orig. Act. 2	N/A
Rep. Act. 2	
Sigma Value 4	ERR
Qual 4	

Blank

Blank Act. 1	314
MDA 1	246
Qual 5	V

RT 6/19/97

Holding Time Summary
Alpha Isotopic Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-23-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra - Richland, WA	Collection Date: June 2-~~3~~ 4, 1997 6/24/97
QC Limits: None	

	Laboratory Sample ID	Mound Sample ID	Plutonium			Uranium			Thorium			Americium		
			Sample Date	Count Date	Days	Sample Date	Count Date	Days	Sample Date	Count Date	Days	Sample Date	Count Date	Days
water	70610401	A500000021	6-3-97	6-15-97	12	N/A	—	—	6-3-97	6-15-97	12	N/A	—	—
water	70610402	E800000005	6-2-97	6-15-97	12	N/A	—	—	6-2-97	6-15-97	12	N/A	—	—

Reviewer: _____

Holding Time Summary
Alpha Isotopic Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-24-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra-Richland, WA	Collection Date: June 2-4, 1997
QC Limits: None	

	Laboratory Sample ID	Mound Sample ID	Plutonium			Uranium			Thorium			Americium		
			Sample Date	Count Date	Days	Sample Date	Count Date	Days	Sample Date	Count Date	Days	Sample Date	Count Date	Days
Soil	70610301	D101000018	6-2-97	6-14-97	12	N/A	→	→	6-2-97	6-15-97	13	N/A	→	→
	2	E801000006	↓	↓	↓				↓	↓	↓			
	3	E701000008	↓	6-15-97	13				↓	6-15-97	13			
	4	E701000009	↓	↓	↓				↓	↓	↓			
	5	D701000004	↓	↓	↓				↓	↓	↓			
	6	D801000003	↓	↓	↓				↓	↓	↓			
	7	C203000042	6-4-97	↓	11				6-4-97	↓	11			
	8	C318000019	6-2-97	↓	13				6-2-97	↓	13			
	9	C421000013	↓	↓	↓				↓	↓	↓			

Reviewer: _____

Holding Time Summary
Alpha Isotopic Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-24-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra-Richland, WA	Collection Date: June 2-4, 1997

QC Limits: None

	Laboratory Sample ID	Mound Sample ID	Plutonium			Uranium			Thorium			Americium		
			Sample Date	Count Date	Days	Sample Date	Count Date	Days	Sample Date	Count Date	Days	Sample Date	Count Date	Days
soil	70610310	C525000030	6-3-97	6-15-97	12	N/A	→	→	6-3-97	6-15-97	12	N/A	→	→
	11	C625000032	↓	↓	↓				↓	↓	↓			
	12	A501000044	↓	↓	↓				↓	↓	↓			
	13	A501000023	↓	↓	12				↓	↓	12			
	14	B717000041	6-4-97	↓	11				6-4-97	↓	11			
	15	B625000031	6-3-97	↓	12				6-3-97	↓	12			
	16	B524000007	6-2-97	↓	13				6-2-97	↓	13			
	17	B420000010	↓	↓	↓				↓	↓	↓			
	18	B303000043	6-4-97	↓	11				6-4-97	↓	11			

Reviewer: _____

Holding Time Summary
Alpha Isotopic Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-24-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra - Richland, WA	Collection Date: June 2-4, 1997

QC Limits: None

	Laboratory Sample ID	Mound Sample ID	Plutonium			Uranium			Thorium			Americium		
			Sample Date	Count Date	Days	Sample Date	Count Date	Days	Sample Date	Count Date	Days	Sample Date	Count Date	Days
soil	70610319	C801000001	6-2-97	6-15-97	13	N/A	→	→	6-2-97	6-15-97	13	N/A	→	→
↓	70610320	C715000040	6-4-97	↓	11				6-4-97	↓	11			
	70610321	A614000002	6-2-97	↓	13				6-2-97	↓	13			

Reviewer: _____

Holding Time Summary
Alpha Isotopic Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-25-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra-Richland, WA	Collection Date: June 2-4, 1997

QC Limits: None

	Laboratory Sample ID	Mound Sample ID	Plutonium			Uranium			Thorium			Americium		
			Sample Date	Count Date	Days	Sample Date	Count Date	Days	Sample Date	Count Date	Days	Sample Date	Count Date	Days
Soil	70610201	F316000026	6-3-97	6-14-97	11	N/A	→	→	6-3-97	6-13-97	10	N/A	→	→
	2	F201000017	6-2-97		12				6-2-97		11			
	3	G601000012	↓		↓				↓		↓			
	4	G520000037	6-4-97		10				6-4-97		9			
	5	G415000036	↓		↓				↓		↓			
	6	G301000016	6-2-97		12				6-2-97		11			
	7	H501000015	↓		↓				↓		↓			
	8	H401000014	↓		↓				↓		↓			
	9	F417000035	6-4-97	↓	10				6-4-97	↓	9			

Reviewer: _____

Holding Time Summary
Alpha Isotopic Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-25-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra - Richland, WA	Collection Date: June 2-4, 1997

QC Limits: None

	Laboratory Sample ID	Mound Sample ID	Plutonium			Uranium			Thorium			Americium		
			Sample Date	Count Date	Days	Sample Date	Count Date	Days	Sample Date	Count Date	Days	Sample Date	Count Date	Days
soil	70610210	F520000038	6-4-97	6-14-97	10	N/A	→	→	6-4-97	6-13-97	9	N/A	→	→
	11	F601000011	6-2-97		12				6-2-97		11			
	12	E215000024	6-3-97		11				6-3-97		10			
	13	E320000022												
	14	E416000027												
	15	E525000034	6-4-97		10				6-4-97		9			
	16	E619000039												
	17	D627000033												
	18	D525000029	6-3-97		11				6-3-97		10			

Reviewer: _____

Holding Time Summary
Alpha Isotopic Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-25-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra- Richland, WA	Collection Date: June 2-4, 1997

QC Limits: None

	Laboratory Sample ID	Mound Sample ID	Plutonium			Uranium			Thorium			Americium		
			Sample Date	Count Date	Days	Sample Date	Count Date	Days	Sample Date	Count Date	Days	Sample Date	Count Date	Days
soil	70610219	D419000028	6-3-97	6-14-97	11	N/A	→	→	6-3-97	6-13-97	10	N/A	→	→
↓	220	D320000020	6-2-97	↓	12				6-2-97	↓	11			
↓	221	D215000025	↓	↓	↓				↓	↓	11			

Reviewer: _____

Check Source Summary
Alpha Isotopic Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-23-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra-Richland, WA	Collection Date: June 12-24/97 RCT 6/24/97

QC Limits: ± 3σ from mean value

Laboratory Sample ID	Mound Sample ID	Plutonium		Uranium		Thorium		Americium	
		Count Date	Comments	Count Date	Comments	Count Date	Comments	Count Date	Comments
water + soil None	were qualified								

Reviewer: _____

Background Summary
Alpha Isotopic Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-23-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quantera - Richland, WA	Collection Date: June 2-~~3~~4, 1997 ~~6/24/97~~

QC Limits: < MDA for the sample

Laboratory Sample ID	Mound Sample ID	Plutonium			Uranium			Thorium			Americium		
		Sample Count Date	Background Count Date	Comments	Sample Count Date	Background Count Date	Comments	Sample. Count Date	Background Count Date	Comments	Sample Count Date	Background Count Date	Comments
water + soil	None were qualified												

Reviewer: _____

Method Spike Summary
Alpha Isotopic Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-25-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra - Richland, WA	Collection Date: June 2-~~3~~4, 1997
QC Limits: ± 3σ of Known Value	

Laboratory Sample ID	Mound Sample ID	Plutonium (soil = pCi/g) Amt Added (water = pCi/L)	Amt Found (water = pCi/)	Difference Std Dev	Comment	Uranium Amt Added pCi/	Amt Found pCi/	Difference Std Dev	Comment
water + soil None	were qualified		for water or soil			N/A			

Reviewer: _____

Method Spike Summary
Alpha Isotopic Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-23-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra - Richland, WA	Collection Date: June 2-4, 1997

QC Limits: ± 3σ of Known Value

Laboratory Sample ID	Mound Sample ID	soil = pCi/g soil=pCi/g Thorium				Americium			
		Amt Added water=pCi/L	Amt Found water=pCi/L	Difference Std Dev	Comment	Amt Added pCi/	Amt Found pCi/	Difference Std Dev	Comment
None were qualified for water or soil						N/A →			

Reviewer: _____

Matrix Spike Summary
Alpha Isotopic Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-23-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra-Richland, WA	Collection Date: June 2-4, 1997 RCT 6/24/97
QC Limits: ± 3σ of Known Value	

Laboratory Sample ID	Mound Sample ID	Plutonium (soil = pCi/g; soil = pCi/g) Amt Added (water = pCi/L)	Amt Found (water = pCi/L)	Difference Std Dev	Comment	Uranium Amt Added pCi/	Amt Found pCi/	Difference Std Dev	Comment
water & soil	N/A for water				→	N/A			→
None were qualified for soil									

Reviewer: _____

Matrix Spike Summary
Alpha Isotopic Analyses

Prepared by:	Rich Thurman	WESTON Work Order:	
Date:	6-23-97	Mound Project Name:	
Laboratory Batch Number:	8359	Operable Unit: NA	
Laboratory Name/Location:	Quanterra-Richland, WA	Collection Date:	June 2-~~3~~ 4, 1997 ~~6/23/97~~

QC Limits: ± 3σ of Known Value

Laboratory Sample ID	Mound Sample ID	pCi/g = soil → Thorium				Americium			
		Amt Added water=pCi/L	Amt Found water=pCi/L	Difference Std Dev	Comment	Amt Added pCi/	Amt Found pCi/	Difference Std Dev	Comment
		N/A for water	→			N/A	for ~~6/23/97~~ water		→
None were qualified for soil									

Reviewer: _____

Yield Summary
Alpha Isotopic Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-23-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra - Richland, WA	Collection Date: June 2-~~3~~4, 1997
QC Limits: _____ %	

Laboratory Sample ID	Mound Sample ID	Plutonium		Uranium		Thorium		Americium	
		Yield	Comments	Yield	Comments	Yield	Comments	Yield	Comments
None	were qualified								

Reviewer: _____

Replicates Summary
Alpha Isotopic Analyses

Prepared by:	Rich Thurman	WESTON Work Order:	
Date:	6-23-97	Mound Project Name:	
Laboratory Batch Number:	8359	Operable Unit: NA	
Laboratory Name/Location:	Quanterra - Richland, WA	Collection Date:	June 2-~~3~~4, 1997 RT 6/24/97

QC Limits: ± 4σ of Normalized Range

	Laboratory Sample ID	Mound Sample ID	Plutonium-238 / Plutonium-239 Org Result pCi/g soil / pCi/L water	Rep Result pCi/g soil / pCi/L water	Difference Std Dev	Comment	Uranium Org Result pCi/	Rep Result pCi/	Difference Std Dev	Comment
water	70610401	A500000021	0.0418 / -0.027	0.00 / -0.004	20.0 / 15.3	No qualification necessary since the original and replicate activities are less than their MDAs. - RT 6-23-97	N/A			
			RT 6/24/97							
soil	70610301	D101000018	~~0.0083~~ 0.1811 / —	0.4104	7.75	Due to possible homogeneity problems in soil samples no action is necessary RT 6/24/97				
	70610201	F316000026	— / -0.0009	— / 0.0023	45.7	No qualification necessary since the original and replicate activities are less than their MDAs. - RT 6/25/97	N/A			

Reviewer: _____

Replicates Summary
Alpha Isotopic Analyses

Prepared by: Rich Thurman	WESTON Work Order:
Date: 6-23-97	Mound Project Name:
Laboratory Batch Number: 8359	Operable Unit: NA
Laboratory Name/Location: Quanterra - Richland, WA	Collection Date: June 2-~~3~~ 4, 1997 ~~RT 6/27/97~~

QC Limits: ± 4σ of Normalized Range

Laboratory Sample ID	Mound Sample ID	Thorium-228/Thorium-230/Thorium-232										Americium			
		Org Result pCi/g soil	pCi/L (water)		Rep Result pCi/			Difference Std Dev			Comment	Org Result pCi/	Rep Result pCi/	Difference Std Dev	Comment
70610401	A500000021	.067	.084	—	.207	-0.015	—	6.77	19.3	—	No qualification necessary since original sample/or replicate activities are < MDAs ~~RT~~ 6/23/97	N/A	→		

Reviewer: _____

Field Duplicate Summary
Alpha Isotopic Analyses

Prepared by:	WESTON Work Order:
Date:	Mound Project Name:
Laboratory Batch Number:	Operable Unit: NA
Laboratory Name/Location:	Collection Date:

QC Limits: ± 4σ of Normalized Range

Laboratory Sample ID	Mound Sample ID	Thorium				Americium			
		Org Result pCi/	Rep Result pCi/	Difference Std Dev	Comment	Org Result pCi/	Rep Result pCi/	Difference Std Dev	Comment
N/A									

Reviewer: _____

Field Duplicate Summary
Alpha Isotopic Analyses

Prepared by:	WESTON Work Order:
Date:	Mound Project Name:
Laboratory Batch Number:	Operable Unit: NA
Laboratory Name/Location:	Collection Date:

QC Limits: ± 4σ of Normalized Range

Laboratory Sample ID	Mound Sample ID	Plutonium				Uranium			
		Org Result pCi/	Rep Result pCi/	Difference Std Dev	Comment	Org Result pCi/	Rep Result pCi/	Difference Std Dev	Comment
N/A									

Reviewer: _____

Aspec-QC Revision 1

Case # : 8359-3 Entry Date: Jun 20, 1997

Laboratory : QRIC Unique # : 364

Lab Group # : soil-Pu and Th QLI # :

Laboratory Blanks (Ur,Pu)

Sample Matrix: soil Blank ID #: T061021B

U238 Act : U235 Act : U234 Act : Pu9 Act: 0.000 Pu8 Act : 0.001

U238 MDA : U235 MDA : U234 MDA : Pu9 MDA: 0.006 Pu8 MDA : 0.003

U238 Qual: V U235 Qual: V U234 Qual: V Pu9 Qual: V Pu8 Qual: V

Sample Matrix: Blank ID #:

U238 Act : U235 Act : U234 Act : Pu9 Act: Pu8 Act :

U238 MDA : U235 MDA : U234 MDA : Pu9 MDA: Pu8 MDA :

U238 Qual: U235 Qual: U234 Qual: Pu9 Qual: Pu8 Qual:

Laboratory Blanks (Th,Am)

Sample Matrix: soil Blank ID #: T061021B

T232 Act : 0.000 T230 Act : 0.016 T228 Act : -0.001 Am Act :

T232 MDA : 0.017 T230 MDA : 0.019 T228 MDA : 0.023 Am MDA :

T232 Qual: V T230 Qual: V T228 Qual: V Am Qual: V

Sample Matrix: Blank ID #:

T232 Act : T230 Act : T228 Act : Am Act :

T232 MDA : T230 MDA : T228 MDA : Am MDA :

T232 Qual: T230 Qual: T228 Qual: Am Qual:

Lab Control Samples (Ur,Pu)

Sample Matrix: soil LCS ID #: T061021S

	U238	U235	U234	Pu239	Pu238
Observed :		:	:	:0.103	:
Known :		:	:	:0.091	:
LCS Sig :	ERR	:ERR	:ERR	:1.319	:ERR
Qualifier:	V	:V	:V	:V	:V

Sample Matrix: soil LCS ID #: F417000035ms

	U238	U235	U234	Pu239	Pu238
Observed :		:	:	:0.063	:
Known :		:	:	:0.082	:
LCS Sig :	ERR	:ERR	:ERR	:2.317	:ERR
Qualifier:	V	:V	:V	:V	:V

KET 6/12/97

Lab Control Samples (Th,Am)

Sample Matrix: soil LCS ID #: T061021S

	T232	T230	T228	Am
Observed :		0.722		
Known :		0.910		
LCS Sig :	ERR	1.377	ERR	ERR
Qualifier:	V	V	V	V

Sample Matrix: soil LCS ID #: F417000035ms

	T232	T230	T228	Am
Observed :		0.779		
Known :		0.734		
LCS Sig :	ERR	0.409	ERR	ERR
Qualifier:	V	V	V	V

Replicates (Ur,Pu)

Sample Matrix: soil Relicate ID#: F316000026rep

No qualification necessary since original sample and replicate activities are less than their MDAs.
-RET 6/19/97

	U238	U235	U234	Pu239	Pu238
Org. Act.:				-0.0009	0.0023
Rep. Act.:				0.0023	0.0020
Rep. Sig.:	ERR	ERR	ERR	45.714	1.395
Qualifier:	V	V	V	~~V~~	V

Sample Matrix: Relicate ID#:

	U238	U235	U234	Pu239	Pu238
Org. Act.:					
Rep. Act.:					
Rep. Sig.:					
Qualifier:					

Replicates (Th,Am)

Sample Matrix: soil Relicate ID#: F316000026rep

	T232	T230	T228	Am
Org. Act.:	0.1096	0.2855	0.2302	
Rep. Act.:	0.1451	0.2743	0.1633	
Rep. Sig.:	1.858	0.267	2.267	ERR
Qualifier:	V	V	V	V

Sample Matrix: Relicate ID#:

	T232	T230	T228	Am
Org. Act.:				
Rep. Act.:				
Rep. Sig.:				
Qualifier:				

RET
6/18/97

URPUAM

Case # : 8359
Batch # : T061021B
Sample # : Blank
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 11, 1997
Sample Matrix : soil

Entry date: Jun 24, 1997
Laboratory: QRIC
Unique # : 9538

Pu-239		Pu-238	
Pu Det#:	17	Det#:	17
Pu Cts :	0	Cts :	1
Pu Bkg :	2	Bkg :	0
Pu Bk D:	1000	Bk D:	1000
Pu T Ct:	225	T Ct:	225
Pu T Bk:	0	T Bk:	0
Pu dpms:	5.0045	dpms:	5.0045
Pu Alq :	10	Alq :	10
Pu Eff :	0.267236	Eff :	0.26723
Pu Dur :	200	Dur :	200
Pu FWHM:		FWHM:	
Pu Tr E:		Tr E:	

Pu Assay: Jun 14, 1997 Assay: Jun 14, 1997

Percent Solids 1

Calculations

Pu CPMs :	0.0000	CPMs :	0.0050
Pu Bkg CPM:	0.0020	Bk CPM :	0.0000
Pu Tr CPM:	1.1250	Tr CPM :	1.1250
Pu TrB CPM:	0.0000	TB CPM :	0.0000
Pu Tr Err :	0.0075	Tr Err :	0.0075

Results

P239 Act:	**-0.000**	**239 Act:**	**0.0010**
Pu Error:	**0.0006**	**Error:**	**0.0020**
MDA Pu :	**0.0057**	**MDA :**	**0.0027**
Pu 0 Err:	0.0030	0 Err:	0.0030
Pu % C R:	84.119	% C R:	84.119
Pu % Res:	ERR	% Res:	ERR

Pu Holding Time: 3 Holding Time: 3

Notes

KT
6/25/97

URPUAM

Case #	: 8359	Entry date:	Jun 24, 1997
Batch #	: T061021S	Laboratory:	QRIC
Sample #	: LCS	Unique #	: 9538
Lab Group #	: TERRAN		
QLI #	:		
Collection Date:	Jun 11, 1997		
Sample Matrix	: soil		

Pu-239		Pu-238	
Pu Det#:	18	Det#:	18
Pu Cts :	88	Cts :	1
Pu Bkg :	0	Bkg :	0
Pu Bk D:	1000	Bk D:	1000
Pu T Ct:	193	T Ct:	193
Pu T Bk:	1	T Bk:	1
Pu dpms:	5.0073	dpms:	5.0073
Pu Alq :	10	Alq :	10
Pu Eff :	0.257532	Eff :	0.25753
Pu Dur :	200	Dur :	200
Pu FWHM:		FWHM:	
Pu Tr E:		Tr E:	
Pu Assay:	Jun 14, 1997	Assay:	Jun 14, 1997

Percent Solids 1

Calculations

Pu CPMs :	0.4400	CPMs :	0.0050
Pu Bkg CPM:	0.0000	Bk CPM :	0.0000
Pu Tr CPM:	0.9650	Tr CPM :	0.9650
Pu TrB CPM:	0.0010	TB CPM :	0.0010
Pu Tr Err :	0.0069	Tr Err :	0.0069

Results

P239 Act:	**0.1029**	**239 Act:**	**0.0012**
Pu Error:	**0.0215**	**Error:**	**0.0023**
MDA Pu :	**0.0032**	**MDA :**	**0.0032**
Pu 0 Err:	0.0035	0 Err:	0.0035
Pu % C R:	74.755	% C R:	74.755
Pu % Res:	ERR	% Res:	ERR

Pu Holding Time: 3 Holding Time: 3

Notes

RT
6/25/97

URPUAM

Case # : 8359
Batch # : 70610201
Sample # : F316000026
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 3, 1997
Sample Matrix : soil

Entry date: Jun 24, 1997
Laboratory: QRIC
Unique # : 9538

Pu-239		Pu-238	
Pu Det#:	19	Det#:	19
Pu Cts :	0	Cts :	2
Pu Bkg :	10	Bkg :	1
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	152	T Ct:	152
Pu T Bk:	7	T Bk:	7
Pu dpms:	5.0352	dpms:	5.0352
Pu Alq :	11.41	Alq :	11.41
Pu Eff :	0.261643	Eff :	0.26164
Pu Dur :	200	Dur :	200
Pu FWHM:		FWHM:	
Pu Tr E:		Tr E:	

Pu Assay: Jun 14, 1997 Assay: Jun 14, 1997

Percent Solids 0.896

Calculations

Pu CPMs :	0.0000	CPMs :	0.0100
Pu Bkg CPM:	0.0040	Bk CPM :	0.0004
Pu Tr CPM:	0.7600	Tr CPM :	0.7600
Pu TrB CPM:	0.0028	TB CPM :	0.0028
Pu Tr Err :	0.0062	Tr Err :	0.0062

Results

P239 Act:	**-0.000**	**239 Act:**	**0.0023**
Pu Error:	**0.0006**	**Error:**	**0.0033**
MDA Pu :	**0.0081**	**MDA :**	**0.0047**
Pu 0 Err:	0.0039	0 Err:	0.0039
Pu % C R:	57.475	% C R:	57.475
Pu % Res:	ERR	% Res:	ERR

Pu Holding Time: 11 Holding Time: 11

Notes

RT
6/25/97

URPUAM

Case #	: 8359	Entry date:	Jun 24, 1997
Batch #	: 70610211	Laboratory:	QRIC
Sample #	: F601000011	Unique #	: 9538
Lab Group #	: TERRAN		
QLI #	:		
Collection Date:	Jun 3, 1997		
Sample Matrix	: soil		

Pu-239		Pu-238	
Pu Det#:	56	Det#:	56
Pu Cts :	3	Cts :	167
Pu Bkg :	3	Bkg :	0
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	119	T Ct:	119
Pu T Bk:	3	T Bk:	3
Pu dpms:	5.0536	dpms:	5.0536
Pu Alq :	11.19	Alq :	11.19
Pu Eff :	0.256147	Eff :	0.25614
Pu Dur :	200	Dur :	200
Pu FWHM:		FWHM:	
Pu Tr E:		Tr E:	
Pu Assay:	Jun 14, 1997	Assay:	Jun 14, 1997

Percent Solids 0.87

Calculations

Pu CPMs :	0.0150	CPMs :	0.8350
Pu Bkg CPM:	0.0012	Bk CPM :	0.0000
Pu Tr CPM:	0.5950	Tr CPM :	0.5950
Pu TrB CPM:	0.0012	TB CPM :	0.0012
Pu Tr Err :	0.0055	Tr Err :	0.0055

Results

P239 Act:	**0.0041**	**239 Act:**	**0.2489**
Pu Error:	**0.0051**	**Error:**	**0.0377**
MDA Pu :	**0.0074**	**MDA :**	**0.0040**
Pu 0 Err:	0.0051	0 Err:	0.0051
Pu % C R:	45.872	% C R:	45.872
Pu % Res:	ERR	% Res:	ERR

Pu Holding Time: 11 Holding Time: 11

Notes

RT 6/25/97

URPUAM

Case # : 8359
Batch # : 70610216
Sample # : E619000039
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 4, 1997
Sample Matrix : soil

Entry date: Jun 24, 1997
Laboratory: QRIC
Unique # : 9538

Pu-239		Pu-238	
Pu Det#:	38	Det#:	38
Pu Cts :	2	Cts :	14
Pu Bkg :	6	Bkg :	0
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	125	T Ct:	125
Pu T Bk:	0	T Bk:	0
Pu dpms:	5.0557	dpms:	5.0557
Pu Alq :	10.5	Alq :	10.5
Pu Eff :	0.362187	Eff :	0.36218
Pu Dur :	200	Dur :	200
Pu FWHM:		FWHM:	
Pu Tr E:		Tr E:	
Pu Assay:	Jun 14, 1997	Assay:	Jun 14, 1997

Percent Solids 0.793

Calculations

Pu CPMs :	0.0100	CPMs :	0.0700
Pu Bkg CPM:	0.0024	Bk CPM :	0.0000
Pu Tr CPM:	0.6250	Tr CPM :	0.6250
Pu TrB CPM:	0.0000	TB CPM :	0.0000
Pu Tr Err :	0.0056	Tr Err :	0.0056

Results

P239 Act:	**0.0021**	**239 Act:**	**0.0193**
Pu Error:	**0.0039**	**Error:**	**0.0101**
MDA Pu :	**0.0082**	**MDA :**	**0.0037**
Pu 0 Err:	0.0052	0 Err:	0.0052
Pu % C R:	34.132	% C R:	34.132
Pu % Res:	ERR	% Res:	ERR

Pu Holding Time: 10 Holding Time: 10

Notes

KT 6/25/97

Thorium

Case # : 8359a
Batch # : T061021B
Sample # : Blank
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 11, 1997
Sample Matrix : soil

Entry date: Jun 24, 1997
Laboratory: QRIC
Unique # : 9152

	Th232	Th230	TH228
Detector # :	113		
T232 Counts:	0	T0 Ct: 4	T8 Ct: 0
Bkg Counts :	1	T0 Bk: 2	T8 Bk: 4
T Bkgd Dur :	2500		
T Tracer Ct:	533		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	2		
Efficiency :	0.27824		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 13, 1997		

Percent Solids 1

Calculations

T232 CPM : 0.0000 T230 : 0.0200 T228 : 0.0000
T232 BCPM: 0.0004 T230 : 0.0008 T228 : 0.0016
Tr CPM : 2.6650
Tr Bk CPM: 0.0000
Tr Err : 0.1154

Results

Th232 Activity: -0.000 T230: 0.0162 T228: -0.001
Counting Error: 0.0007 0 CE: 0.0166 8 CE: 0.0013
MDA T232 pCi/V: 0.0170 MDA0: 0.0193 MDA8: 0.0226
T232 0 Bkg Err: 0.012 0 0ER: 0.012 8 0ER: 0.012

Th % Chem Recov: 95.780
Th % Resolution: ERR

Th Holding Time: 2

RT 6/25/97

Thorium

Case # : 8359a
Batch # : T061021S
Sample # : LCS
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 11, 1997
Sample Matrix : soil

Entry date: Jun 24, 1997
Laboratory: QRIC
Unique # : 9152

	Th232	Th230	TH228
Detector # :	114		
T232 Counts:	1	T0 Ct: 168	T8 Ct: 3
Bkg Counts :	3	T0 Bk: 4	T8 Bk: 3

T Bkgd Dur : 2500
T Tracer Ct: 523
T Tr Bkg Ct: 0
Tracer dpms: 10
Th Aliquot : 2
Efficiency : 0.28538
Count Dur. : 200
FWHM (KeVs):
T Tr Energy:
T Assay Date: Jun 13, 1997

Percent Solids 1

Calculations

T232 CPM : 0.0050 T230 : 0.8400 T228 : 0.0150
T232 BCPM: 0.0012 T230 : 0.0016 T228 : 0.0012
Tr CPM : 2.6150
Tr Bk CPM: 0.0000
Tr Err : 0.1143

Results

Th232 Activity: 0.0033 T230: 0.7221 T228: 0.0119
Counting Error: 0.0085 0 CE: 0.1094 8 CE: 0.0147
MDA T232 pCi/V: 0.0215 MDA0: 0.0230 MDA8: 0.0215
T232 0 Bkg Err: 0.012 0 0ER: 0.012 8 0ER: 0.012

Th % Chem Recov: 91.629
Th % Resolution: ERR

Th Holding Time: 2

RT
6/25/97

Thorium

Case # : 8359a

Batch # : 70610216

Sample # : E619000039

Lab Group # : TERRAN

QLI # :

Collection Date: Jun 4, 1997

Sample Matrix : soil

Entry date: Jun 24, 1997

Laboratory: QRIC

Unique # : 9152

	Th232	Th230	TH228
Detector # :	103		
T232 Counts:	227	T0 Ct: 104	T8 Ct: 311
Bkg Counts :	2	T0 Bk: 1	T8 Bk: 15
T Bkgd Dur :	2500		
T Tracer Ct:	418		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	2.01		
Efficiency :	0.21729		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 13, 1997		

Percent Solids 0.793

Calculations

T232 CPM : 1.1350 T230 : 0.5200 T228 : 1.5550

T232 BCPM: 0.0008 T230 : 0.0004 T228 : 0.0060

Tr CPM : 2.0900

Tr Bk CPM: 0.0000

Tr Err : 0.1022

Results

Th232 Activity: 0.9644 T230: 0.4418 T228: 1.3171

Counting Error: 0.1256 0 CE: 0.0850 8 CE: 0.1470

MDA T232 pCi/V: 0.0194 MDA0: 0.0171 MDA8: 0.0332

T232 0 Bkg Err: 0.016 0 0ER: 0.016 8 0ER: 0.016

Th % Chem Recov: 96.181

Th % Resolution: ERR

Th Holding Time: 9

RT
6/25/97

Thorium

Case # : 8359a
Batch # : 70610211
Sample # : F601000011
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 2, 1997
Sample Matrix : soil

Entry date: Jun 24, 1997
Laboratory: QRIC
Unique # : 9152

	Th232	Th230	TH228
Detector # :	97		
T232 Counts:	73	T0 Ct: 68	T8 Ct: 59
Bkg Counts :	0	T0 Bk: 1	T8 Bk: 14
T Bkgd Dur :	2500		
T Tracer Ct:	395		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	2.03		
Efficiency :	0.21929		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 13, 1997		

Percent Solids 0.87

Calculations

T232 CPM : 0.3650 T230 : 0.3400 T228 : 0.2950
T232 BCPM: 0.0000 T230 : 0.0004 T228 : 0.0056
Tr CPM : 1.9750
Tr Bk CPM: 0.0000
Tr Err : 0.0994

Results

Th232 Activity: 0.3568 T230: 0.3319 T228: 0.2829
Counting Error: 0.0818 0 CE: 0.0790 8 CE: 0.0736
MDA T232 pCi/V: 0.0132 MDA0: 0.0197 MDA8: 0.0373
T232 0 Bkg Err: 0.016 0 0ER: 0.016 8 0ER: 0.016

Th % Chem Recov: 90.060
Th % Resolution: ERR

Th Holding Time: 11

RT 6/25/97

URPUAM

Case #	: 8359	Entry date:	Jun 23, 1997
Batch #	: T061031B	Laboratory:	QRIC
Sample #	: Blank	Unique #	: 9527
Lab Group #	: TERRAN		
QLI #	:		
Collection Date:	Jun 11, 1997		
Sample Matrix	: soil		

Pu-239		Pu-238	
Pu Det#:	45	Det#:	45
Pu Cts :	0	Cts :	0
Pu Bkg :	2	Bkg :	2
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	229	T Ct:	229
Pu T Bk:	6	T Bk:	6
Pu dpms:	5.0598	dpms:	5.0598
Pu Alq :	2	Alq :	2
Pu Eff :	0.280269	Eff :	0.28026
Pu Dur :	200	Dur :	200
Pu FWHM:	68	FWHM:	68
Pu Tr E:	4898	Tr E:	4898
Pu Assay:	Jun 14, 1997	Assay:	Jun 14, 1997

Calculations

Pu CPMs :	0.0000	CPMs :	0.0000
Pu Bkg CPM:	0.0008	Bk CPM :	0.0008
Pu Tr CPM:	1.1450	Tr CPM :	1.1450
Pu TrB CPM:	0.0024	TB CPM :	0.0024
Pu Tr Err :	0.0076	Tr Err :	0.0076

Results

P239 Act:	**-0.000**	**239 Act:**	**-0.000**
Pu Error:	**0.0011**	**Error:**	**0.0011**
MDA Pu :	**0.0228**	**MDA :**	**0.0228**
Pu 0 Err:	0.0149	0 Err:	0.0149
Pu % C R:	80.572	% C R:	80.572
Pu % Res:	1.388	% Res:	1.388

Pu Holding Time: 3 Holding Time: 3

Notes

RT 6/24/97

URPUAM

Case #	: 8359	Entry date:	Jun 23, 1997
Batch #	: T061031S	Laboratory:	QRIC
Sample #	: LCS	Unique #	: 9527
Lab Group #	: TERRAN		
QLI #	:		
Collection Date:	Jun 11, 1997		
Sample Matrix	: soil		

Pu-239		Pu-238	
Pu Det#:	48	Det#:	48
Pu Cts :	95	Cts :	0
Pu Bkg :	1	Bkg :	2
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	265	T Ct:	265
Pu T Bk:	2	T Bk:	2
Pu dpms:	5.0273	dpms:	5.0273
Pu Alq :	2	Alq :	2
Pu Eff :	0.264061	Eff :	0.26406
Pu Dur :	200	Dur :	200
Pu FWHM:	50	FWHM:	50
Pu Tr E:	4919	Tr E:	4919
Pu Assay:	Jun 14, 1997	Assay:	Jun 14, 1997

Calculations

Pu CPMs :	0.4750	CPMs :	0.0000
Pu Bkg CPM:	0.0004	Bk CPM :	0.0008
Pu Tr CPM:	1.3250	Tr CPM :	1.3250
Pu TrB CPM:	0.0008	TB CPM :	0.0008
Pu Tr Err :	0.0081	Tr Err :	0.0081

Results

P239 Act:	**0.4058**	**239 Act:**	**-0.000**
Pu Error:	**0.0817**	**Error:**	**0.0009**
MDA Pu :	**0.0172**	**MDA :**	**0.0195**
Pu 0 Err:	0.0128	0 Err:	0.0128
Pu % C R:	99.750	% C R:	99.750
Pu % Res:	1.016	% Res:	1.016

Pu Holding Time: 3 Holding Time: 3

Notes

RT
6/24/97

URPUAM

Case #	: 8359	Entry date:	Jun 23, 1997
Batch #	: 70610301	Laboratory:	QRIC
Sample #	: D101000018	Unique #	: 9527
Lab Group #	: TERRAN		
QLI #	:		
Collection Date:	Jun 2, 1997		
Sample Matrix	: soil		

Pu-239		Pu-238	
Pu Det#:	53	Det#:	53
Pu Cts :	1	Cts :	22
Pu Bkg :	0	Bkg :	1
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	103	T Ct:	103
Pu T Bk:	1	T Bk:	1
Pu dpms:	5.0679	dpms:	5.0679
Pu Alq :	2.46	Alq :	2.46
Pu Eff :	0.263019	Eff :	0.26301
Pu Dur :	200	Dur :	200
Pu FWHM:	90	FWHM:	90
Pu Tr E:	4901	Tr E:	4901
Pu Assay:	Jun 14, 1997	Assay:	Jun 14, 1997

Calculations

Pu CPMs :	0.0050	CPMs :	0.1100
Pu Bkg CPM:	0.0000	Bk CPM :	0.0004
Pu Tr CPM:	0.5150	Tr CPM :	0.5150
Pu TrB CPM:	0.0004	TB CPM :	0.0004
Pu Tr Err :	0.0051	Tr Err :	0.0051

Results

8 RT 6/24/97

P239 Act:	**0.0090**	**23~~9~~8 Act:**	**0.1976**
Pu Error:	**0.0177**	**Error:**	**0.0829**
MDA Pu :	**0.0244**	**MDA :**	**0.0363**
Pu 0 Err:	0.0270	0 Err:	0.0270
Pu % C R:	38.605	% C R:	38.606
Pu % Res:	1.836	% Res:	1.836

results x 0.916 (% solids)

Pu Holding Time: 12 Holding Time: 12

Notes

P239 = 0.0082 P238 = 0.181
+/- 0.016 +/- = .076
MDA = 0.022 MDA = .033

RT 6/24/97

URPUAM

Case # : 8359
Batch # : R0610301
Sample # : D101000018rep
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 2, 1997
Sample Matrix : soil

Entry date: Jun 23, 1997
Laboratory: QRIC
Unique # : 9527

Pu-239		Pu-238	
Pu Det#:	55	Det#:	55
Pu Cts :	1	Cts :	52
Pu Bkg :	1	Bkg :	4
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	117	T Ct:	117
Pu T Bk:	1	T Bk:	1
Pu dpms:	5.0393	dpms:	5.0393
Pu Alq :	2.24	Alq :	2.24
Pu Eff :	0.268312	Eff :	0.26831
Pu Dur :	200	Dur :	200
Pu FWHM:	67	FWHM:	67
Pu Tr E:	4911	Tr E:	4911
Pu Assay:	Jun 14, 1997	Assay:	Jun 14, 1997

Calculations

Pu CPMs :	0.0050	CPMs :	0.2600
Pu Bkg CPM:	0.0004	Bk CPM :	0.0016
Pu Tr CPM:	0.5850	Tr CPM :	0.5850
Pu TrB CPM:	0.0004	TB CPM :	0.0004
Pu Tr Err :	0.0054	Tr Err :	0.0054

Results

8 RT 6/24/97

P239 Act:	**0.0080**	**~~239~~ Act:**	**0.4479**
Pu Error:	**0.0170**	**Error:**	**0.1225**
MDA Pu :	**0.0349**	**MDA :**	**0.0463**
Pu 0 Err:	0.0260	0 Err:	0.0260
Pu % C R:	43.236	% C R:	43.236
Pu % Res:	1.364	% Res:	1.364

results x 0.916 (% solids)

Pu Holding Time: 12 Holding Time: 12

Notes Adjust soil sample results for multiplier(%solids)

P239 = 0.007 0.410
+/- 0.016 +/- 0.112
MDA = 0.032 MDA = 0.042

RT
6/24/97

URPUAM

Case #	: 8359	Entry date:	Jun 23, 1997
Batch #	: 70610305	Laboratory:	QRIC
Sample #	: D701000004	Unique #	: 9527
Lab Group #	: TERRAN		
QLI #	:		
Collection Date:	Jun 2, 1997		
Sample Matrix	: soil		

Pu-239		Pu-238	
Pu Det#:	19	Det#:	19
Pu Cts :	2	Cts :	55
Pu Bkg :	12	Bkg :	2
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	136	T Ct:	136
Pu T Bk:	7	T Bk:	7
Pu dpms:	5.0659	dpms:	5.0659
Pu Alq :	2.18	Alq :	2.18
Pu Eff :	0.261643	Eff :	0.26164
Pu Dur :	200	Dur :	200
Pu FWHM:	136	FWHM:	136
Pu Tr E:	4900	Tr E:	4900
Pu Assay:	Jun 15, 1997	Assay:	Jun 15, 1997

Calculations

Pu CPMs :	0.0100	CPMs :	0.2750
Pu Bkg CPM:	0.0048	Bk CPM :	0.0008
Pu Tr CPM:	0.6800	Tr CPM :	0.6800
Pu TrB CPM:	0.0028	TB CPM :	0.0028
Pu Tr Err :	0.0058	Tr Err :	0.0058

Results

8 RT 6/24/97

P239 Act:	**0.0080**	**~~239~~ 238 Act:**	**0.4238**
Pu Error:	**0.0218**	**Error:**	**0.1124**
MDA Pu :	**0.0562**	**MDA :**	**0.0353**
Pu 0 Err:	0.0231	0 Err:	0.0231
Pu % C R:	51.091	% C R:	51.091
Pu % Res:	2.776	% Res:	2.776

Pu Holding Time: 13 Holding Time: 13

Notes Adjust soil sample results for multiplier(%solids)

results x 0.864

P239 = 0.007 +/- 0.019 MDA = 0.049

P238 = 0.366 +/- 0.097 MDA = 0.030

RT 6/24/97

URPUAM

Case # : 8359
Batch # : 70610310
Sample # : C525000030
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 3, 1997
Sample Matrix : soil

Entry date: Jun 23, 1997
Laboratory: QRIC
Unique # : 9527

Pu-239		Pu-238	
Pu Det#:	42	Det#:	19
Pu Cts :	0	Cts :	122
Pu Bkg :	2	Bkg :	0
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	69	T Ct:	69
Pu T Bk:	2	T Bk:	2
Pu dpms:	5.0454	dpms:	5.0454
Pu Alq :	2.25	Alq :	2.25
Pu Eff :	0.355618	Eff :	0.35561
Pu Dur :	200	Dur :	200
Pu FWHM:	136	FWHM:	136
Pu Tr E:	4900	Tr E:	4900

Pu Assay: Jun 15, 1997 Assay: Jun 15, 1997

Calculations

Pu CPMs :	0.0000	CPMs :	0.6100
Pu Bkg CPM:	0.0008	Bk CPM :	0.0000
Pu Tr CPM:	0.3450	Tr CPM :	0.3450
Pu TrB CPM:	0.0008	TB CPM :	0.0008
Pu Tr Err :	0.0042	Tr Err :	0.0042

Results

8 RT 6/24/97

P239 Act:	**-0.002**	**23~~9~~ Act:**	**1.7901**
Pu Error:	**0.0033**	**Error:**	**0.3177**
MDA Pu :	**0.0671**	**MDA :**	**0.0398**
Pu 0 Err:	0.0440	0 Err:	0.0440
Pu % C R:	19.183	% C R:	19.183
Pu % Res:	2.776	% Res:	2.776

Pu Holding Time: 12 Holding Time: 12
Notes Adjust soil sample results for multiplier(%solids)

results x 0.828

P239 = -0.002
0.003
0.056

P238 = 1.482
.263
.033

RT 6/24/97

URPUAM

Case # : 8359
Batch # : 70610314
Sample # : B717000041
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 4, 1997
Sample Matrix : soil

Entry date: Jun 23, 1997
Laboratory: QRIC
Unique # : 9527

Pu-239		Pu-238	
Pu Det#:	48	Det#:	48
Pu Cts :	9	Cts :	96
Pu Bkg :	1	Bkg :	2
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	117	T Ct:	117
Pu T Bk:	0	T Bk:	0
Pu dpms:	5.0577	dpms:	5.0577
Pu Alq :	2.18	Alq :	2.18
Pu Eff :	0.264061	Eff :	0.26406
Pu Dur :	200	Dur :	200
Pu FWHM:	64	FWHM:	64
Pu Tr E:	4906	Tr E:	4906
Pu Assay:	Jun 15, 1997	Assay:	Jun 15, 1997

Calculations

Pu CPMs :	0.0450	CPMs :	0.4800
Pu Bkg CPM:	0.0004	Bk CPM :	0.0008
Pu Tr CPM:	0.5850	Tr CPM :	0.5850
Pu TrB CPM:	0.0000	TB CPM :	0.0000
Pu Tr Err :	0.0054	Tr Err :	0.0054

Results

8 RT 6/24/97

P239 Act:	**0.0797**	**239 Act:**	**0.8561**
Pu Error:	**0.0525**	**Error:**	**0.1715**
MDA Pu :	**0.0360**	**MDA :**	**0.0408**
Pu 0 Err:	0.0267	0 Err:	0.0267
Pu % C R:	43.802	% C R:	43.802
Pu % Res:	1.305	% Res:	1.305

Pu Holding Time: 11 Holding Time: 11
Notes Adjust soil sample results for multiplier(%solids)

results × 0.85

P239 = .068 +/- .045 MDA: .031

P238 = 0.728 +/- 0.146 MDA = 0.035

RT 6/24/97

URPUAM

Case # : 8359
Batch # : 70610319
Sample # : C801000001
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 2, 1997
Sample Matrix : soil

Entry date: Jun 23, 1997
Laboratory: QRIC
Unique # : 9527

Pu-239		Pu-238	
Pu Det#:	39	Det#:	39
Pu Cts :	1	Cts :	309
Pu Bkg :	1	Bkg :	0
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	155	T Ct:	155
Pu T Bk:	1	T Bk:	1
Pu dpms:	5.0638	dpms:	5.0638
Pu Alq :	2.32	Alq :	2.32
Pu Eff :	0.378787	Eff :	0.37878
Pu Dur :	200	Dur :	200
Pu FWHM:	155	FWHM:	155
Pu Tr E:	4914	Tr E:	4914
Pu Assay:	Jun 15, 1997	Assay:	Jun 15, 1997

Calculations

Pu CPMs :	0.0050	CPMs :	1.5450
Pu Bkg CPM:	0.0004	Bk CPM :	0.0000
Pu Tr CPM:	0.7750	Tr CPM :	0.7750
Pu TrB CPM:	0.0004	TB CPM :	0.0004
Pu Tr Err :	0.0062	Tr Err :	0.0062

Results

8 RT 6/24/97

P239 Act:	**0.0058**	**23~~9~~8 Act:**	**1.9610**
Pu Error:	**0.0125**	**Error:**	**0.2187**
MDA Pu :	**0.0255**	**MDA :**	**0.0172**
Pu 0 Err:	0.0190	0 Err:	0.0190
Pu % C R:	40.383	% C R:	40.383
Pu % Res:	3.154	% Res:	3.154

Pu Holding Time: 13 Holding Time: 13
Notes Adjust soil sample results for multiplier(%solids)

results X 0.888

P239 = 0.005
+/- 0.011
MDA = .023

P238 = 1.741
+/- .194
MDA = .015

RT 6/24/97

Thorium

Case # : 8359
Batch # : T061031B
Sample # : Blank
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 11, 1997
Sample Matrix : soil

Entry date: Jun 24, 1997
Laboratory: QRIC
Unique # : 9143

	Th232	Th230	TH228
Detector # :	114		
T232 Counts:	0	T0 Ct: 4	T8 Ct: 0
Bkg Counts :	3	T0 Bk: 2	T8 Bk: 3
T Bkgd Dur :	2500		
T Tracer Ct:	530		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	2		
Efficiency :	0.28538		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 15, 1997		

Percent Solids 1

Calculations

T232 CPM : 0.0000 T230 : 0.0200 T228 : 0.0000
T232 BCPM: 0.0012 T230 : 0.0008 T228 : 0.0012
Tr CPM : 2.6500
Tr Bk CPM: 0.0000
Tr Err : 0.1151

Results

Th232 Activity: -0.001 T230: 0.0163 T228: -0.001
Counting Error: 0.0012 0 CE: 0.0167 8 CE: 0.0012
MDA T232 pCi/V: 0.0212 MDA0: 0.0194 MDA8: 0.0212
T232 0 Bkg Err: 0.012 0 0ER: 0.012 8 0ER: 0.012

Th % Chem Recov: 92.856
Th % Resolution: ERR

Th Holding Time: 4

1

RT
6/24/97

Thorium

Case # : 8359

Batch # : T061031S

Sample # : LCS

Lab Group # : TERRAN

QLI # :

Collection Date: Jun 11, 1997

Sample Matrix : soil

Entry date: Jun 24, 1997

Laboratory: QRIC

Unique # : 9143

	Th232	Th230	TH228
Detector # :	115		
T232 Counts:	0	T0 Ct: 190	T8 Ct: 2
Bkg Counts :	2	T0 Bk: 1	T8 Bk: 6
T Bkgd Dur :	2500		
T Tracer Ct:	511		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	2		
Efficiency :	0.29717		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 15, 1997		

Percent Solids 1

Calculations

T232 CPM : 0.0000 T230 : 0.9500 T228 : 0.0100

T232 BCPM: 0.0008 T230 : 0.0004 T228 : 0.0024

Tr CPM : 2.5550

Tr Bk CPM: 0.0000

Tr Err : 0.1130

Results

Th232 Activity: -0.000 T230: 0.8371 T228: 0.0067

Counting Error: 0.0010 0 CE: 0.1191 8 CE: 0.0123

MDA T232 pCi/V: 0.0201 MDA0: 0.0177 MDA8: 0.0261

T232 0 Bkg Err: 0.013 0 0ER: 0.013 8 0ER: 0.013

Th % Chem Recov: 85.975

Th % Resolution: ERR

Th Holding Time: 4

RT
6/24/97

Thorium

Case # : 8359

Batch # : 70610301

Sample # : D101000018

Lab Group # : TERRAN

QLI # :

Collection Date: Jun 2, 1997

Sample Matrix : soil

Entry date: Jun 24, 1997

Laboratory: QRIC

Unique # : 9143

	Th232	Th230	TH228
Detector # :	116		
T232 Counts:	53	T0 Ct: 104	T8 Ct: 70
Bkg Counts :	1	T0 Bk: 4	T8 Bk: 11
T Bkgd Dur :	2500		
T Tracer Ct:	491		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	2.46		
Efficiency :	0.29717		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 15, 1997		

Percent Solids 0.916

Calculations

T232 CPM : 0.2650 T230 : 0.5200 T228 : 0.3500

T232 BCPM: 0.0004 T230 : 0.0016 T228 : 0.0044

Tr CPM : 2.4550

Tr Bk CPM: 0.0000

Tr Err : 0.1108

Results

Th232 Activity: 0.1808 T230: 0.3542 T228: 0.2361

Counting Error: 0.0487 0 CE: 0.0683 8 CE: 0.0560

MDA T232 pCi/V: 0.0138 MDA0: 0.0182 MDA8: 0.0242

T232 0 Bkg Err: 0.011 0 0ER: 0.011 8 0ER: 0.011

Th % Chem Recov: 82.610

Th % Resolution: ERR

Th Holding Time: 13

RT
6/24/97

Thorium

Case # : 8359
Batch # : R0610301
Sample # : D101000018rep
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 2, 1997
Sample Matrix : soil

Entry date: Jun 24, 1997
Laboratory: QRIC
Unique # : 9143

	Th232	Th230	TH228
Detector # :	117		
T232 Counts:	52	T0 Ct: 95	T8 Ct: 51
Bkg Counts :	1	T0 Bk: 1	T8 Bk: 8
T Bkgd Dur :	2500		
T Tracer Ct:	535		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	2.24		
Efficiency :	0.28785		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 15, 1997		

Percent Solids 0.916

Calculations

T232 CPM : 0.2600 T230 : 0.4750 T228 : 0.2550
T232 BCPM: 0.0004 T230 : 0.0004 T228 : 0.0032
Tr CPM : 2.6750
Tr Bk CPM: 0.0000
Tr Err : 0.1157

Results

Th232 Activity: 0.1788 T230: 0.3268 T228: 0.1734
Counting Error: 0.0487 0 CE: 0.0658 8 CE: 0.0482
MDA T232 pCi/V: 0.0139 MDA0: 0.0139 MDA8: 0.0221
T232 0 Bkg Err: 0.011 0 0ER: 0.011 8 0ER: 0.011

Th % Chem Recov: 92.929
Th % Resolution: ERR

Th Holding Time: 13

RT 6/24/97

Thorium

Case # : 8359
Batch # : 70610305
Sample # : D701000004
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 2, 1997
Sample Matrix : soil

Entry date: Jun 24, 1997
Laboratory: QRIC
Unique # : 9143

	Th232	Th230	TH228
Detector # :	98		
T232 Counts:	129	T0 Ct: 95	T8 Ct: 126
Bkg Counts :	0	T0 Bk: 0	T8 Bk: 22
T Bkgd Dur :	2500		
T Tracer Ct:	395		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	2.18		
Efficiency :	0.21399		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 15, 1997		

Percent Solids 0.864

Calculations

T232 CPM : 0.6450 T230 : 0.4750 T228 : 0.6300
T232 BCPM: 0.0000 T230 : 0.0000 T228 : 0.0088
Tr CPM : 1.9750
Tr Bk CPM: 0.0000
Tr Err : 0.0994

Results

Th232 Activity: 0.5830 T230: 0.4294 T228: 0.5615
Counting Error: 0.1006 0 CE: 0.0863 8 CE: 0.0995
MDA T232 pCi/V: 0.0122 MDA0: 0.0122 MDA8: 0.0401
T232 0 Bkg Err: 0.015 0 0ER: 0.015 8 0ER: 0.015

Th % Chem Recov: 92.291
Th % Resolution: ERR

Th Holding Time: 13

RCT 6/24/97

Thorium

Case # : 8359
Batch # : 70610310
Sample # : C525000030
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 3, 1997
Sample Matrix : soil

Entry date: Jun 24, 1997
Laboratory: QRIC
Unique # : 9143

	Th232	Th230	TH228
Detector # :	104		
T232 Counts:	40	T0 Ct: 80	T8 Ct: 60
Bkg Counts :	1	T0 Bk: 1	T8 Bk: 17
T Bkgd Dur :	2500		
T Tracer Ct:	390		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	2.25		
Efficiency :	0.21715		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 15, 1997		

Percent Solids 0.828

Calculations

T232 CPM : 0.2000 T230 : 0.4000 T228 : 0.3000
T232 BCPM: 0.0004 T230 : 0.0004 T228 : 0.0068
Tr CPM : 1.9500
Tr Bk CPM: 0.0000
Tr Err : 0.0987

Results

Th232 Activity: 0.1697 T230: 0.3397 T228: 0.2492
Counting Error: 0.0527 0 CE: 0.0745 8 CE: 0.0646
MDA T232 pCi/V: 0.0171 MDA0: 0.0171 MDA8: 0.0346
T232 0 Bkg Err: 0.015 0 0ER: 0.015 8 0ER: 0.015

Th % Chem Recov: 89.797
Th % Resolution: ERR

Th Holding Time: 12

RT 6/24/97

Thorium

Case # : 8359
Batch # : 70610314
Sample # : B717000041
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 4, 1997
Sample Matrix : soil

Entry date: Jun 24, 1997
Laboratory: QRIC
Unique # : 9143

	Th232	Th230	TH228
Detector # :	116		
T232 Counts:	109	T0 Ct: 84	T8 Ct: 101
Bkg Counts :	1	T0 Bk: 4	T8 Bk: 11
T Bkgd Dur :	2500		
T Tracer Ct:	473		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	2.18		
Efficiency :	0.26990		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 15, 1997		

Percent Solids 0.85

Calculations

T232 CPM : 0.5450 T230 : 0.4200 T228 : 0.5050
T232 BCPM: 0.0004 T230 : 0.0016 T228 : 0.0044
Tr CPM : 2.3650
Tr Bk CPM: 0.0000
Tr Err : 0.1087

Results

Th232 Activity: 0.4044 T230: 0.3107 T228: 0.3718
Counting Error: 0.0760 0 CE: 0.0667 8 CE: 0.0732
MDA T232 pCi/V: 0.0149 MDA0: 0.0198 MDA8: 0.0263
T232 0 Bkg Err: 0.013 0 0ER: 0.013 8 0ER: 0.013

Th % Chem Recov: 87.623
Th % Resolution: ERR

Th Holding Time: 11

RT
6/24/97

Thorium

Case # : 8359
Batch # : 70610315
Sample # : B625000031
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 3, 1997
Sample Matrix : soil

Entry date: Jun 24, 1997
Laboratory: QRIC
Unique # : 9143

	Th232	Th230	TH228
Detector # :	98		
T232 Counts:	109	T0 Ct: 65	T8 Ct: 132
Bkg Counts :	0	T0 Bk: 0	T8 Bk: 25
T Bkgd Dur :	2500		
T Tracer Ct:	370		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	2.32		
Efficiency :	0.21399		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 15, 1997		

Percent Solids 0.888

Calculations

T232 CPM : 0.5450 T230 : 0.3250 T228 : 0.6600
T232 BCPM: 0.0000 T230 : 0.0000 T228 : 0.0100
Tr CPM : 1.8500
Tr Bk CPM: 0.0000
Tr Err : 0.0962

Results

Th232 Activity: 0.5079 T230: 0.3029 T228: 0.6058
Counting Error: 0.0954 0 CE: 0.0736 8 CE: 0.1050
MDA T232 pCi/V: 0.0126 MDA0: 0.0126 MDA8: 0.0433
T232 0 Bkg Err: 0.015 0 0ER: 0.015 8 0ER: 0.015

Th % Chem Recov: 86.450
Th % Resolution: ERR

Th Holding Time: 12

RT 6/24/97

Aspec-QC | Revision 1

Case # : 8359 -2 | Entry Date: Jun 19, 1997

Laboratory : QRIC | Unique # : 362

Lab Group # : Pu and Th in soil | QLI # :

Laboratory Blanks (Ur,Pu)

Sample Matrix: soil Blank ID #: T061031B

U238 Act :	U235 Act :	U234 Act :	Pu9 Act: -0.001	Pu8 Act : -0.008
U238 MDA :	U235 MDA :	U234 MDA :	Pu9 MDA: 0.023	Pu8 MDA : 0.023
U238 Qual: V	U235 Qual: V	U234 Qual: V	Pu9 Qual: V	Pu8 Qual: V

Sample Matrix: Blank ID #:

U238 Act :	U235 Act :	U234 Act :	Pu9 Act:	Pu8 Act :
U238 MDA :	U235 MDA :	U234 MDA :	Pu9 MDA:	Pu8 MDA :
U238 Qual:	U235 Qual:	U234 Qual:	Pu9 Qual:	Pu8 Qual:

Laboratory Blanks (Th,Am)

Sample Matrix: soil Blank ID #: T061061B

T232 Act : -1.020	T230 Act : 0.016	T228 Act : -0.001	Am Act :
T232 MDA : 0.021	T230 MDA : 0.019	T228 MDA : 0.021	Am MDA :
T232 Qual: V	T230 Qual: V	T228 Qual: V	Am Qual: V

Sample Matrix: Blank ID #:

T232 Act :	T230 Act :	T228 Act :	Am Act :
T232 MDA :	T230 MDA :	T228 MDA :	Am MDA :
T232 Qual:	T230 Qual:	T228 Qual:	Am Qual:

Lab Control Samples (Ur,Pu)

Sample Matrix: soil LCS ID #: T061031S

	U238	U235	U234	Pu239	Pu238
Observed :		:	:	:0.406	:
Known :		:	:	:0.453	:
LCS Sig :	ERR	:ERR	:ERR	:1.038	:ERR
Qualifier:	V	:V	:V	:V	:V

Sample Matrix: LCS ID #:

	U238	U235	U234	Pu239	Pu238
Observed :		:	:	:	:
Known :		:	:	:	:
LCS Sig :		:	:	:	:
Qualifier:		:	:	:	:

RT 6/12/97

Lab Control Samples (Th,Am)

Sample Matrix: soil LCS ID #: T061031S

	T232	T230	T228	Am
Observed :		0.837		
Known :		0.910		
LCS Sig :	ERR	0.535	ERR	ERR
Qualifier:	V	V	V	V

Sample Matrix: LCS ID #:

	T232	T230	T228	Am
Observed :				
Known :				
LCS Sig :				
Qualifier:				

Replicates (Ur,Pu)

Sample Matrix: soil Relicate ID#: D101000018rep

	U238	U235	U234	Pu239	Pu238
Org. Act.:				0.0083	0.1811
Rep. Act.:				0.0073	0.4104
Rep. Sig.:	ERR	ERR	ERR	1.282	7.753
Qualifier:	V	V	V	V	~~J~~ V

Due to homogeneity problems with soil samples analyzed for isotopic plutonium, no action is necessary! -RT 6/19/97

Sample Matrix: Relicate ID#:

	U238	U235	U234	Pu239	Pu238
Org. Act.:					
Rep. Act.:					
Rep. Sig.:					
Qualifier:					

Replicates (Th,Am)

Sample Matrix: soil Relicate ID#: D101000018rep

	T232	T230	T228	Am
Org. Act.:	0.1808	0.3543	0.2392	
Rep. Act.:	0.1788	0.3269	0.1756	
Rep. Sig.:	0.074	0.536	2.044	ERR
Qualifier:	V	V	V	V

Sample Matrix: Relicate ID#:

	T232	T230	T228	Am
Org. Act.:				
Rep. Act.:				
Rep. Sig.:				
Qualifier:				

RT 6/19/97

URPUAM

Case #	: 8359	Entry date:	Jun 23, 1997
Batch #	: 70610401	Laboratory:	QRIC
Sample #	: A500000021	Unique #	: 9521
Lab Group #	: TERRAN		
QLI #	:		
Collection Date:	Jun 3, 1997		
Sample Matrix	: water		

Pu-239		Pu-238	
Pu Det#:	38	Det#:	38
Pu Cts :	0	Cts :	1
Pu Bkg :	8	Bkg :	0
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	270	T Ct:	270
Pu T Bk:	1	T Bk:	1
Pu dpms:	5.0239	dpms:	5.0239
Pu Alq :	0.2	Alq :	0.2
Pu Eff :	0.362187	Eff :	0.36218
Pu Dur :	200	Dur :	200
Pu FWHM:	71	FWHM:	71
Pu Tr E:	4899	Tr E:	4899
Pu Assay:	Jun 15, 1997	Assay:	Jun 15, 1997

Calculations

Pu CPMs :	0.0000	CPMs :	0.0050
Pu Bkg CPM:	0.0032	Bk CPM :	0.0000
Pu Tr CPM:	1.3500	Tr CPM :	1.3500
Pu TrB CPM:	0.0004	TB CPM :	0.0004
Pu Tr Err :	0.0082	Tr Err :	0.0082

Results

P239 Act:	**-0.026**	**239 Act:**	**0.0419**
Pu Error:	**0.0186**	**Error:**	**0.0822**
MDA Pu :	**0.2695**	**MDA :**	**0.1136**
Pu 0 Err:	0.1257	0 Err:	0.1257
Pu % C R:	74.170	% C R:	74.170
Pu % Res:	1.449	% Res:	1.449

Pu Holding Time: 12 Holding Time: 12

Notes

RT 6-23-97

URPUAM

Case # : 8359

Batch # : 70610402

Sample # : E800000005

Lab Group # : TERRAN

QLI # :

Collection Date: Jun 2, 1997

Sample Matrix : water

Entry date: Jun 23, 1997

Laboratory: QRIC

Unique # : 9521

Pu-239		Pu-238	
Pu Det#:	40	Det#:	40
Pu Cts :	0	Cts :	0
Pu Bkg :	2	Bkg :	3
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	296	T Ct:	296
Pu T Bk:	2	T Bk:	2
Pu dpms:	5.0442	dpms:	5.0442
Pu Alq :	0.2	Alq :	0.2
Pu Eff :	0.368731	Eff :	0.36873
Pu Dur :	200	Dur :	200
Pu FWHM:	77	FWHM:	77
Pu Tr E:	4900	Tr E:	4900
Pu Assay:	Jun 15, 1997	Assay:	Jun 15, 1997

Calculations

Pu CPMs :	0.0000	CPMs :	0.0000
Pu Bkg CPM:	0.0008	Bk CPM :	0.0012
Pu Tr CPM:	1.4800	Tr CPM :	1.4800
Pu TrB CPM:	0.0008	TB CPM :	0.0008
Pu Tr Err :	0.0086	Tr Err :	0.0086

Results

P239 Act:	**-0.006**	**239 Act:**	**-0.009**
Pu Error:	**0.0085**	**Error:**	**0.0104**
MDA Pu :	**0.1755**	**MDA :**	**0.1915**
Pu 0 Err:	0.1152	0 Err:	0.1152
Pu % C R:	79.528	% C R:	79.528
Pu % Res:	1.571	% Res:	1.571

Pu Holding Time: 13 Holding Time: 13

Notes

RT
6/23/97

URPUAM

Case # : 8359
Batch # : R0610401
Sample # : A500000021rep
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 3, 1997
Sample Matrix : water

Entry date: Jun 23, 1997
Laboratory: QRIC
Unique # : 9521

Pu-239		Pu-238	
Pu Det#:	39	Det#:	39
Pu Cts :	0	Cts :	0
Pu Bkg :	1	Bkg :	0
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	252	T Ct:	252
Pu T Bk:	1	T Bk:	1
Pu dpms:	5.0361	dpms:	5.0361
Pu Alq :	0.2	Alq :	0.2
Pu Eff :	0.378787	Eff :	0.37878
Pu Dur :	200	Dur :	200
Pu FWHM:	58	FWHM:	58
Pu Tr E:	4906	Tr E:	4906
Pu Assay:	Jun 15, 1997	Assay:	Jun 15, 1997

Calculations

Pu CPMs :	0.0000	CPMs :	0.0000
Pu Bkg CPM:	0.0004	Bk CPM :	0.0000
Pu Tr CPM:	1.2600	Tr CPM :	1.2600
Pu TrB CPM:	0.0004	TB CPM :	0.0004
Pu Tr Err :	0.0079	Tr Err :	0.0079

Results

P239 Act:	**-0.003**	**239 Act:**	**0.0000**
Pu Error:	**0.0071**	**Error:**	
MDA Pu :	**0.1812**	**MDA :**	**0.1220**
Pu 0 Err:	0.1350	0 Err:	0.1350
Pu % C R:	66.030	% C R:	66.030
Pu % Res:	1.182	% Res:	1.182

Pu Holding Time: 12 Holding Time: 12

Notes

RT
6/23/97

URPUAM

Case # : 8359
Batch # : T0610541B
Sample # : Blank
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 3, 1997
Sample Matrix : water

Entry date: Jun 23, 1997
Laboratory: QRIC
Unique # : 9524

Pu-239		Pu-238	
Pu Det#:	A55	Det#:	A55
Pu Cts :	9	Cts :	2
Pu Bkg :	2	Bkg :	4
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	193	T Ct:	193
Pu T Bk:	2	T Bk:	2
Pu dpms:	5.0442	dpms:	5.0442
Pu Alq :	0.2	Alq :	0.2
Pu Eff :	0.268312	Eff :	0.26831
Pu Dur :	200	Dur :	200
Pu FWHM:	73	FWHM:	73
Pu Tr E:	4903	Tr E:	4903

Pu Assay: Jun 15, 1997 Assay: Jun 15, 1997

Calculations

Pu CPMs :	0.0450	CPMs :	0.0100
Pu Bkg CPM:	0.0008	Bk CPM :	0.0016
Pu Tr CPM:	0.9650	Tr CPM :	0.9650
Pu TrB CPM:	0.0008	TB CPM :	0.0008
Pu Tr Err :	0.0069	Tr Err :	0.0069

Results

P239 Act:	**0.5208**	**239 Act:**	**0.0990**
Pu Error:	**0.3467**	**Error:**	**0.1643**
MDA Pu :	**0.2692**	**MDA :**	**0.3146**
Pu 0 Err:	0.1767	0 Err:	0.1767
Pu % C R:	71.241	% C R:	71.241
Pu % Res:	1.489	% Res:	1.489

Pu Holding Time: 12 Holding Time: 12

Notes

RT
6/23/97

URPUAM

Case #	: 8359	Entry date:	Jun 23, 1997
Batch #	: T0610541S	Laboratory:	QRIC
Sample #	: LCS	Unique #	: 9524
Lab Group #	: TERRAN		
QLI #	:		
Collection Date:	Jun 3, 1997		
Sample Matrix	: water		

Pu-239		Pu-238	
Pu Det#:	A56	Det#:	A56
Pu Cts :	59	Cts :	0
Pu Bkg :	3	Bkg :	0
Pu Bk D:	2500	Bk D:	2500
Pu T Ct:	202	T Ct:	202
Pu T Bk:	4	T Bk:	2
Pu dpms:	5.0333	dpms:	5.0333
Pu Alq :	0.2	Alq :	0.2
Pu Eff :	0.256147	Eff :	0.25614
Pu Dur :	200	Dur :	200
Pu FWHM:	77	FWHM:	77
Pu Tr E:	4897	Tr E:	4897
Pu Assay:	Jun 15, 1997	Assay:	Jun 15, 1997

Calculations

Pu CPMs :	0.2950	CPMs :	0.0000
Pu Bkg CPM:	0.0012	Bk CPM :	0.0000
Pu Tr CPM:	1.0100	Tr CPM :	1.0100
Pu TrB CPM:	0.0016	TB CPM :	0.0008
Pu Tr Err :	0.0071	Tr Err :	0.0071

Results

P239 Act:	**3.3028**	**239 Act:**	**0.0000**
Pu Error:	**0.8464**	**Error:**	
MDA Pu :	**0.2804**	**MDA :**	**0.1522**
Pu 0 Err:	0.1686	0 Err:	0.1684
Pu % C R:	78.215	% C R:	78.277
Pu % Res:	1.572	% Res:	1.572

Pu Holding Time: 12 Holding Time: 12

Notes

RT 6/23/97

Thorium

Case # : 8359

Batch # : T061041B

Sample # : Blank

Lab Group # : TERRAN

QLI # :

Collection Date: Jun 9, 1997

Sample Matrix : water

Entry date: Jun 23, 1997

Laboratory: QRIC

Unique # : 9138

	Th232	Th230	TH228
Detector # :	113		
T232 Counts:	0	T0 Ct: 1	T8 Ct: 1
Bkg Counts :	1	T0 Bk: 2	T8 Bk: 4
T Bkgd Dur :	2500		
T Tracer Ct:	457		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	0.2		
Efficiency :	0.2782		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 15, 1997		

Calculations

T232 CPM : 0.0000 T230 : 0.0050 T228 : 0.0050

T232 BCPM: 0.0004 T230 : 0.0008 T228 : 0.0016

Tr CPM : 2.2850

Tr Bk CPM: 0.0000

Tr Err : 0.1069

Results

Th232 Activity: -0.003 T230: 0.0414 T228: 0.0335

Counting Error: 0.0077 0 CE: 0.0972 8 CE: 0.0978

MDA T232 pCi/V: 0.1984 MDA0: 0.2252 MDA8: 0.2632

T232 0 Bkg Err: 0.147 0 0ER: 0.147 8 0ER: 0.147

Th % Chem Recov: 82.135

Th % Resolution: ERR

Th Holding Time: 6

RT
6/23/97

Thorium

Case # : 8359

Batch # : T061041S

Sample # : LCS

Lab Group # : TERRAN

QLI # :

Collection Date: Jun 9, 1997

Sample Matrix : water

Entry date: Jun 23, 1997

Laboratory: QRIC

Unique # : 9138

	Th232	Th230	TH228
Detector # :	114		
T232 Counts:	0	T0 Ct: 177	T8 Ct: 1
Bkg Counts :	3	T0 Bk: 5	T8 Bk: 3
T Bkgd Dur :	2500		
T Tracer Ct:	466		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	0.2		
Efficiency :	0.2854		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 15, 1997		

Calculations

T232 CPM :	0.0000	T230 :	0.8850	T228 :	0.0050
T232 BCPM:	0.0012	T230 :	0.0020	T228 :	0.0012
Tr CPM :	2.3300				
Tr Bk CPM:	0.0000				
Tr Err :	0.1079				

Results

Th232 Activity:	-0.011	T230:	8.5354	T228:	0.0367
Counting Error:	0.0131	0 CE:	1.2604	8 CE:	0.0956
MDA T232 pCi/V:	0.2411	MDA0:	0.2731	MDA8:	0.2411
T232 0 Bkg Err:	0.144	0 0ER:	0.144	8 0ER:	0.144

Th % Chem Recov: 81.639

Th % Resolution: ERR

Th Holding Time: 6

RT 6/23/97

Thorium

Case # : 8359
Batch # : 70610401
Sample # : A5000000021
Lab Group # : TERRAN
QLI # :
Collection Date: Jun 3, 1997
Sample Matrix : water

Entry date: Jun 23, 1997
Laboratory: QRIC
Unique # : 9138

	Th232	Th230	TH228
Detector # :	115		
T232 Counts:	0	T0 Ct: 2	T8 Ct: 2
Bkg Counts :	2	T0 Bk: 1	T8 Bk: 6
T Bkgd Dur :	2500		
T Tracer Ct:	514		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	0.2		
Efficiency :	0.2972		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 15, 1997		

Calculations

T232 CPM :	0.0000	T230 :	0.0100	T228 :	0.0100
T232 BCPM:	0.0008	T230 :	0.0004	T228 :	0.0024
Tr CPM :	2.5700				
Tr Bk CPM:	0.0000				
Tr Err :	0.1134				

Results

Th232 Activity:	-0.007	T230:	0.0841	T228:	0.0666
Counting Error:	0.0097	0 CE:	0.1217	8 CE:	0.1226
MDA T232 pCi/V:	0.2002	MDA0:	0.1764	MDA8:	0.2599
T232 0 Bkg Err:	0.131	0 0ER:	0.131	8 0ER:	0.131

Th % Chem Recov: 86.473
Th % Resolution: ERR

Th Holding Time: 12

RT
6/23/97

Thorium

Case # : 8359

Batch # : R0610401

Sample # : A5000000021rep

Lab Group # : TERRAN

QLI # :

Collection Date: Jun 3, 1997

Sample Matrix : water

Entry date: Jun 23, 1997

Laboratory: QRIC

Unique # : 9138

	Th232	Th230	TH228
Detector # :	116		
T232 Counts:	0	T0 Ct: 0	T8 Ct: 5
Bkg Counts :	1	T0 Bk: 4	T8 Bk: 9
T Bkgd Dur :	2500		
T Tracer Ct:	472		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	0.2		
Efficiency :	0.2699		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 15, 1997		

Calculations

T232 CPM : 0.0000 T230 : 0.0000 T228 : 0.0250

T232 BCPM: 0.0004 T230 : 0.0016 T228 : 0.0036

Tr CPM : 2.3600

Tr Bk CPM: 0.0000

Tr Err : 0.1086

Results

Th232 Activity: -0.003 T230: -0.015 T228: 0.2042

Counting Error: 0.0075 0 CE: 0.0150 8 CE: 0.2103

MDA T232 pCi/V: 0.1921 MDA0: 0.2548 MDA8: 0.3176

T232 0 Bkg Err: 0.143 0 0ER: 0.143 8 0ER: 0.143

Th % Chem Recov: 87.439

Th % Resolution: ERR

Th Holding Time: 12

RT 6/23/9

Thorium

Case # : 8359

Batch # : 70610402

Sample # : E80000005

Lab Group # : TERRAN

QLI # :

Collection Date: Jun 2, 1997

Sample Matrix : water

Entry date: Jun 23, 1997

Laboratory: QRIC

Unique # : 9138

	Th232	Th230	TH228
Detector # :	117		
T232 Counts:	0	T0 Ct: 1	T8 Ct: 0
Bkg Counts :	1	T0 Bk: 1	T8 Bk: 6
T Bkgd Dur :	2500		
T Tracer Ct:	489		
T Tr Bkg Ct:	0		
Tracer dpms:	10		
Th Aliquot :	0.2		
Efficiency :	0.2879		
Count Dur. :	200		
FWHM (KeVs):			
T Tr Energy:			
T Assay Date:	Jun 15, 1997		

Calculations

T232 CPM : 0.0000 T230 : 0.0050 T228 : 0.0000

T232 BCPM: 0.0004 T230 : 0.0004 T228 : 0.0024

Tr CPM : 2.4450

Tr Bk CPM: 0.0000

Tr Err : 0.1106

Results

Th232 Activity: -0.003 T230: 0.0424 T228: -0.022

Counting Error: 0.0072 0 CE: 0.0906 8 CE: 0.0177

MDA T232 pCi/V: 0.1854 MDA0: 0.1854 MDA8: 0.2732

T232 0 Bkg Err: 0.138 0 0ER: 0.138 8 0ER: 0.138

Th % Chem Recov: 84.925

Th % Resolution: ERR

Th Holding Time: 13

RT 6/23/97

Aspec-QC | Revision 1

Case # : 8359 —1 | Entry Date: Jun 19, 1997

Laboratory : QRIC | Unique # : 361

Lab Group # : Pu-Th only water | QLI # :

Blank Criterion : Blk act. ≤ 2x Blk MDA

MDA x 2 = 0.538

Comment 1: ^{239}Pu blank is borderline high. However, the reporting limit for water is 1.0 pCi/L No qualification is necessary. -RT 6/19/97

Comment 2: The isotopic Plutonium results for all samples analyzed for alpha spectrometry ~~and the isotopic thorium & plutonium results for sample T061031B~~ in this SDG are reported as less than their respective MDAs. -RT 6/19/97

Laboratory Blanks (Ur,Pu)

Sample Matrix: water | Blank ID #: T061041B

U238 Act :	U235 Act :	U234 Act :	Pu9 Act: 0.521	Pu8 Act : 0.099
U238 MDA :	U235 MDA :	U234 MDA :	Pu9 MDA: 0.269	Pu8 MDA : 0.315
U238 Qual: V	U235 Qual: V	U234 Qual: V	Pu9 Qual: V	Pu8 Qual: V

Sample Matrix: | Blank ID #:

U238 Act :	U235 Act :	U234 Act :	Pu9 Act:	Pu8 Act :
U238 MDA :	U235 MDA :	U234 MDA :	Pu9 MDA:	Pu8 MDA :
U238 Qual:	U235 Qual:	U234 Qual:	Pu9 Qual:	Pu8 Qual:

Laboratory Blanks (Th,Am)

Sample Matrix: water | Blank ID #: T061041B

T232 Act : -0.004	T230 Act : 0.041	T228 Act : 0.034	Am Act :
T232 MDA : 0.198	T230 MDA : 0.225	T228 MDA : 0.265	Am MDA :
T232 Qual: V	T230 Qual: V	T228 Qual: V	Am Qual: V

Sample Matrix: | Blank ID #:

T232 Act :	T230 Act :	T228 Act :	Am Act :
T232 MDA :	T230 MDA :	T228 MDA :	Am MDA :
T232 Qual:	T230 Qual:	T228 Qual:	Am Qual:

Lab Control Samples (Ur,Pu)

Sample Matrix: water | LCS ID #: T061041S

	U238	U235	U234	Pu239	Pu238
Observed :		:	:	:3.303	:
Known :		:	:	:4.553	:
LCS Sig :	ERR	:ERR	:ERR	:2.745	:ERR
Qualifier:	V	:V	:V	:V	:V

Sample Matrix: | LCS ID #:

	U238	U235	U234	Pu239	Pu238
Observed :		:	:	:	:
Known :		:	:	:	:
LCS Sig :		:	:	:	:
Qualifier:		:	:	:	:

RT 6/12/97

Lab Control Samples (Th,Am)

Sample Matrix: water LCS ID #: T061041S

	T232	T230	T228	Am
Observed :		8.535		
Known :		9.083		
LCS Sig :	ERR	0.402	ERR	ERR
Qualifier:	V	V	V	V

Sample Matrix: LCS ID #:

	T232	T230	T228	Am
Observed :				
Known :				
LCS Sig :				
Qualifier:				

Replicates (Ur,Pu)

Sample Matrix: water Relicate ID#: A500000021rep

	U238	U235	U234	Pu239	Pu238
Org. Act.:				-0.0268	0.0419
Rep. Act.:				-0.0036	0.0000
Rep. Sig.:	ERR	ERR	ERR	15.263	20.000
Qualifier:	V	V	V	~~V~~	~~V~~

No qualification is necessary since the sample and replicate activities are less than their MDAs.
-RT 6/19/97

Sample Matrix: Relicate ID#:

	U238	U235	U234	Pu239	Pu238
Org. Act.:					
Rep. Act.:					
Rep. Sig.:					
Qualifier:					

Replicates (Th,Am)

Sample Matrix: water Relicate ID#: A500000021rep

	T232	T230	T228	Am
Org. Act.:	-0.0070	0.0841	0.0674	
Rep. Act.:	-0.0038	-0.0153	0.2067	
Rep. Sig.:	3.951	19.264	6.776	ERR
Qualifier:	V	~~V~~	~~V~~	V

No qualification is necessary since either sample or the replicate activity is less tha the respective MDA.
-RT 6/19/97

Sample Matrix: Relicate ID#:

	T232	T230	T228	Am
Org. Act.:				
Rep. Act.:				
Rep. Sig.:				
Qualifier:				

RT
6/19/97

ATTACHMENT II

GLOSSARY OF DATA QUALIFIER CODES

GLOSSARY OF DATA QUALIFIER CODES

ORGANICS AND INORGANICS

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

J - The associated numerical value is an estimated quantity.

R - The data are unusable (compound may or may not be present). Resampling and reanalysis is not necessary for verification.

N - Presumptive evidence of presence of material.

NJ - Presumptive evidence of the presence of the material at an estimated quantity.

UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

SUB-QUALIFIER CODES

ORGANICS

D - Duplicates
B - Qualified due to blank
C - Qualified due to calibration
H - Holding time exceeded
K - Qualified due to surrogate recovery
L - Qualified due to Laboratory Control Sample
S - Qualified due to matrix spike recovery
I - Qualified due to internal standard
N - Tentative identification (only for TICs)
(+) - Positive bias (added after subqualifier)
(-) - Negative bias (added after subqualifier)

INORGANICS

D - Duplicates
B - Qualified due to blank
C - Qualified due to calibration
H - Holding time exceeded
L - Qualified due to Laboratory Control Sample
S - Qualified due to matrix spike recovery
I - Qualified due to interference
(+) - Positive bias (added after subqualifier)
(-) - Negative bias (added after subqualifier)

ATTACHMENT III

QUALIFIED DATA SUMMARY REPORTS

FORM 1s

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 4:10:00 PM
LAB SAMPLE ID:	70610301	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	D101000018	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.39E-01	5.8E-02	6.5E-02	2.45E-02	pCi/g	91.00%	(9.8)	(4.1)	6/15/97	2.46	G	ALPHA-SPEC	RICHRC5011
TH-230	3.54E-01	7.0E-02	8.2E-02	1.82E-02	pCi/g	91.00%	(19.4)	(5.1)	6/15/97	2.46	G	ALPHA-SPEC	RICHRC5011
TH-232	1.81E-01	5.0E-02	5.5E-02	1.37E-02	pCi/g	91.00%	(13.2)	(3.6)	6/15/97	2.46	G	ALPHA-SPEC	RICHRC5011
PU-238	1.81E-01	7.8E-02	8.7E-02	3.32E-02	pCi/g	38.60%	(5.5)	(2.3)	6/14/97	2.46	G	ALPHA-SPEC	RICHRC5010
PU239/40	2.24E-02U	1.7E-02	1.7E-02	2.24E-02	pCi/g	38.60%	0.37	0.5	6/14/97	2.46	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.83E-01U	3.3E-01	3.5E-01	3.83E-01	pCi/g	N/A	-(3.2)	-(3.7)	6/12/97	150.17	G	GAMMA	RICHRC5017
AM-241	5.38E-01U	3.5E-01	3.5E-01	5.38E-01	pCi/g	N/A	-0.3	-0.46	6/12/97	150.17	G	GAMMA	RICHRC5017
BI-207.	6.15E-02U	3.3E-02	3.3E-02	6.15E-02	pCi/g	N/A	0.31	0.57	6/12/97	150.17	G	GAMMA	RICHRC5017
BI-210M.	7.46E-02U	4.3E-02	4.3E-02	7.46E-02	pCi/g	N/A	0.11	0.18	6/12/97	150.17	G	GAMMA	RICHRC5017
CO-60.	8.56E-02U	4.3E-02	4.3E-02	8.56E-02	pCi/g	N/A	0.21	0.41	6/12/97	150.17	G	GAMMA	RICHRC5017
CS-137DA.	7.96E-02U	4.0E-02	4.0E-02	7.96E-02	pCi/g	N/A	0.5	0.99	6/12/97	150.17	G	GAMMA	RICHRC5017
K-40.	7.26E+00	1.2E+00	1.4E+00	N/A	pCi/g	N/A	N/A	(6.)	6/12/97	150.17	G	GAMMA	RICHRC5017
RA-226DA.	4.73E-01	1.2E-01	1.3E-01	2.56E-01	pCi/g	N/A	(1.9)	(3.9)	6/12/97	150.17	G	GAMMA	RICHRC5017

Number of Results: 13

9000

Comments:

KET 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 11:00:00 AM
LAB SAMPLE ID:	70610302	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	E801000006	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	6.11E-01	9.6E-02	1.2E-01	2.24E-02	pCi/g	93.20%	(27.2)	(6.3)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5011
TH-230	3.32E-01	7.0E-02	8.1E-02	1.70E-02	pCi/g	93.20%	(19.5)	(4.7)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5011
TH-232	5.82E-01	9.3E-02	1.2E-01	1.50E-02	pCi/g	93.20%	(38.8)	(6.2)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5011
PU-238	1.84E+00	2.6E-01	4.7E-01	2.44E-02	pCi/g	40.60%	(75.4)	(7.1)	6/14/97	2.18	G	ALPHA-SPEC	RICHRC5010
PU239/40	4.49E-02U	2.5E-03	2.5E-03	4.49E-02	pCi/g	40.60%	-0.05	-0.87	6/14/97	2.18	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	4.14E-01U	3.6E-01	4.3E-01	4.14E-01	pCi/g	N/A	-(5.8)	-(6.6)	6/12/97	153.67	G	GAMMA	RICHRC5017
AM-241	9.79E-02U	5.9E-02	5.9E-02	9.79E-02	pCi/g	N/A	0.05	0.09	6/12/97	153.67	G	GAMMA	RICHRC5017
BI-207.	6.58E-02U	3.2E-02	3.3E-02	6.58E-02	pCi/g	N/A	0.84	(1.7)	6/12/97	153.67	G	GAMMA	RICHRC5017
BI-210M.	9.02E-02U	5.2E-02	5.2E-02	9.02E-02	pCi/g	N/A	0.04	0.07	6/12/97	153.67	G	GAMMA	RICHRC5017
CO-60.	7.78E-02U	4.1E-02	4.1E-02	7.78E-02	pCi/g	N/A	0.05	0.09	6/12/97	153.67	G	GAMMA	RICHRC5017
CS-137DA.	8.30E-02U	5.1E-02	5.1E-02	8.30E-02	pCi/g	N/A	-0.26	-0.43	6/12/97	153.67	G	GAMMA	RICHRC5017
K-40.	1.45E+01	1.7E+00	2.3E+00	N/A	pCi/g	N/A	N/A	(8.4)	6/12/97	153.67	G	GAMMA	RICHRC5017
RA-226DA.	6.46E-01	1.2E-01	1.4E-01	2.70E-01	pCi/g	N/A	(2.4)	(5.2)	6/12/97	153.67	G	GAMMA	RICHRC5017

Number of Results: 13

0007

Comments:

KT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 11:21:00 AM
LAB SAMPLE ID:	70610303	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	E701000008	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	6.00E-01	9.4E-02	1.2E-01	2.94E-02	pCi/g	88.60%	(20.4)	(6.4)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5011
TH-230	3.31E-01	6.9E-02	8.1E-02	9.84E-03	pCi/g	88.60%	(33.6)	(4.8)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5011
TH-232	4.11E-01	7.7E-02	9.2E-02	1.46E-02	pCi/g	88.60%	(28.1)	(5.3)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5011
PU-238	1.43E+00	2.2E-01	3.7E-01	2.29E-02	pCi/g	40.20%	(62.5)	(6.5)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5010
PU239/40	4.77E-02U	4.8E-03	4.8E-03	4.77E-02	pCi/g	40.20%	-0.07	-0.71	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.45E-01U	2.4E-01	2.5E-01	3.45E-01	pCi/g	N/A	-(2.2)	-(3.2)	6/12/97	156.96	G	GAMMA	RICHRC5017
AM-241	1.57E-01U	9.7E-02	9.7E-02	1.57E-01	pCi/g	N/A	-0.09	-0.15	6/12/97	156.96	G	GAMMA	RICHRC5017
BI-207.	4.71E-02U	2.6E-02	2.6E-02	4.71E-02	pCi/g	N/A	-0.01	-0.01	6/12/97	156.96	G	GAMMA	RICHRC5017
BI-210M.	7.08E-02U	4.7E-02	4.8E-02	7.08E-02	pCi/g	N/A	-0.85	-(1.3)	6/12/97	156.96	G	GAMMA	RICHRC5017
CO-60.	6.81E-02U	3.5E-02	3.5E-02	6.81E-02	pCi/g	N/A	0.08	0.15	6/12/97	156.96	G	GAMMA	RICHRC5017
CS-137DA.	8.05E-02U	4.3E-02	4.3E-02	8.05E-02	pCi/g	N/A	0.31	0.59	6/12/97	156.96	G	GAMMA	RICHRC5017
K-40.	1.69E+01	1.9E+00	2.5E+00	N/A	pCi/g	N/A	N/A	(9.1)	6/12/97	156.96	G	GAMMA	RICHRC5017
RA-226DA.	4.99E-01	1.4E-01	1.5E-01	N/A	pCi/g	N/A	N/A	(3.6)	6/12/97	156.96	G	GAMMA	RICHRC5017

Number of Results: 13

8000 0008

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 8:00:00 AM
LAB SAMPLE ID:	70610304	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	E701000009	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	4.54E-01	9.2E-02	1.1E-01	3.55E-02	pCi/g	85.30%	(12.8)	(5.)	6/15/97	2.34	G	ALPHA-SPEC	RICHRC5011
TH-230	2.47E-01	6.7E-02	7.4E-02	1.81E-02	pCi/g	85.30%	(13.7)	(3.7)	6/15/97	2.34	G	ALPHA-SPEC	RICHRC5011
TH-232	3.86E-01	8.3E-02	9.8E-02	1.22E-02	pCi/g	85.30%	(31.8)	(4.6)	6/15/97	2.34	G	ALPHA-SPEC	RICHRC5011
PU-238	1.31E+00	2.2E-01	3.7E-01	2.47E-02	pCi/g	35.70%	(52.8)	(6.)	6/15/97	2.34	G	ALPHA-SPEC	RICHRC5010
PU239/40	2.74E-02	3.2E-02	3.2E-02	2.47E-02	pCi/g	35.70%	(1.1)	0.87	6/15/97	2.34	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.77E-01U	3.7E-01	4.5E-01	3.77E-01	pCi/g	N/A	-(6.7)	-(6.8)	6/12/97	154.22	G	GAMMA	RICHRC5017
AM-241	1.99E-01U	1.2E-01	1.2E-01	1.99E-01	pCi/g	N/A	0.22	0.37	6/12/97	154.22	G	GAMMA	RICHRC5017
BI-207.	6.08E-02U	3.6E-02	3.7E-02	6.08E-02	pCi/g	N/A	-0.35	-0.58	6/12/97	154.22	G	GAMMA	RICHRC5017
BI-210M.	8.43E-02U	4.7E-02	4.7E-02	8.43E-02	pCi/g	N/A	0.52	0.93	6/12/97	154.22	G	GAMMA	RICHRC5017
CO-60.	9.93E-02U	5.4E-02	5.4E-02	9.93E-02	pCi/g	N/A	0.08	0.14	6/12/97	154.22	G	GAMMA	RICHRC5017
CS-137DA.	8.67E-02U	4.5E-02	4.5E-02	8.67E-02	pCi/g	N/A	0.63	(1.2)	6/12/97	154.22	G	GAMMA	RICHRC5017
K-40.	1.98E+01	1.9E+00	2.7E+00	N/A	pCi/g	N/A	N/A	(10.5)	6/12/97	154.22	G	GAMMA	RICHRC5017
RA-226DA.	4.02E-01	1.5E-01	1.5E-01	N/A	pCi/g	N/A	N/A	(2.7)	6/12/97	154.22	G	GAMMA	RICHRC5017

Number of Results: 13

6000

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 10:32:00 AM
LAB SAMPLE ID:	70610305	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	D701000004	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	5.69E-01	1.0E-01	1.3E-01	4.07E-02	pCi/g	92.30%	(14.)	(5.5)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5011
TH-230	4.29E-01	8.8E-02	1.0E-01	1.22E-02	pCi/g	92.30%	(35.1)	(4.9)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5011
TH-232	5.83E-01	1.0E-01	1.3E-01	1.22E-02	pCi/g	92.30%	(47.7)	(5.7)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5011
PU-238	3.66E-01	9.9E-02	1.2E-01	3.05E-02	pCi/g	51.10%	(12.)	(3.7)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5010
PU239/40	4.85E-02U	1.9E-02	1.9E-02	4.85E-02	pCi/g	51.10%	0.14	0.36	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	4.58E-01U	3.9E-01	5.4E-01	4.58E-01	pCi/g	N/A	-(8.1)	-(9.6)	6/12/97	203.44	G	GAMMA	RICHRC5017
AM-241	2.36E-01U	1.4E-01	1.4E-01	2.36E-01	pCi/g	N/A	-0.11	-0.18	6/12/97	203.44	G	GAMMA	RICHRC5017
BI-207.	5.67E-02U	3.3E-02	3.3E-02	5.67E-02	pCi/g	N/A	-0.08	-0.13	6/12/97	203.44	G	GAMMA	RICHRC5017
BI-210M.	7.32E-02U	4.4E-02	4.4E-02	7.32E-02	pCi/g	N/A	0.11	0.19	6/12/97	203.44	G	GAMMA	RICHRC5017
CO-60.	6.35E-02U	3.4E-02	3.4E-02	6.35E-02	pCi/g	N/A	0.06	0.11	6/12/97	203.44	G	GAMMA	RICHRC5017
CS-137DA.	1.16E-01	4.7E-02	4.9E-02	9.36E-02	pCi/g	N/A	(1.2)	(2.5)	6/12/97	203.44	G	GAMMA	RICHRC5017
K-40.	1.54E+01	1.4E+00	2.1E+00	N/A	pCi/g	N/A	N/A	(10.9)	6/12/97	203.44	G	GAMMA	RICHRC5017
RA-226DA.	5.36E-01	1.0E-01	1.2E-01	2.17E-01	pCi/g	N/A	(2.5)	(5.2)	6/12/97	203.44	G	GAMMA	RICHRC5017

Number of Results: 13

0010

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 10:05:00 AM
LAB SAMPLE ID:	70610306	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	D801000003	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228.	1.04E+00	1.4E-01	2.0E-01	3.76E-02	pCi/g	90.30%	(27.7)	(7.7)	6/15/97	2.6	G	ALPHA-SPEC	RICHRC5011
TH-230	4.18E-01	8.5E-02	1.0E-01	1.17E-02	pCi/g	90.30%	(35.8)	(4.9)	6/15/97	2.6	G	ALPHA-SPEC	RICHRC5011
TH-232	7.98E-01	1.2E-01	1.6E-01	1.17E-02	pCi/g	90.30%	(68.4)	(6.8)	6/15/97	2.6	G	ALPHA-SPEC	RICHRC5011
PU-238	9.77E-01	2.2E-01	3.3E-01	5.89E-02	pCi/g	24.70%	(16.6)	(4.5)	6/15/97	2.6	G	ALPHA-SPEC	RICHRC5010
PU239/40	3.20E-02U	0.0E+00	3.5E-02	3.20E-02	pCi/g	24.70%	0.	N/A	6/15/97	2.6	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	4.98E-01U	3.6E-01	3.9E-01	4.98E-01	pCi/g	N/A	-(3.)	-(4.1)	6/12/97	170.68	G	GAMMA	RICHRC5017
AM-241	3.93E-01U	2.5E-01	2.5E-01	3.93E-01	pCi/g	N/A	-0.27	-0.43	6/12/97	170.68	G	GAMMA	RICHRC5017
BI-207.	7.40E-02U	4.0E-02	4.0E-02	7.40E-02	pCi/g	N/A	0.53	1.	6/12/97	170.68	G	GAMMA	RICHRC5017
BI-210M.	8.97E-02U	5.2E-02	5.2E-02	8.97E-02	pCi/g	N/A	0.08	0.13	6/12/97	170.68	G	GAMMA	RICHRC5017
CO-60.	8.69E-02U	4.7E-02	4.7E-02	8.69E-02	pCi/g	N/A	0.	0.	6/12/97	170.68	G	GAMMA	RICHRC5017
CS-137DA.	1.35E-01	5.2E-02	5.4E-02	1.07E-01	pCi/g	N/A	(1.3)	(2.6)	6/12/97	170.68	G	GAMMA	RICHRC5017
K-40.	1.23E+01	1.5E+00	2.0E+00	N/A	pCi/g	N/A	N/A	(8.1)	6/12/97	170.68	G	GAMMA	RICHRC5017
RA-226DA.	5.06E-01	1.2E-01	1.3E-01	2.55E-01	pCi/g	N/A	(2.)	(4.2)	6/12/97	170.68	G	GAMMA	RICHRC5017

Number of Results: 13

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Comments:

RT 6/19/97

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Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/4/1997 6:15:00 PM
LAB SAMPLE ID:	70610307	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	C203000042	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.87E+00	2.2E-01	4.4E-01	3.88E-02	pCi/g	93.40%	(74.)	(12.9)	6/15/97	2.45	G	ALPHA-SPEC	RICHRC5011
TH-230	5.88E-01	1.0E-01	1.3E-01	1.71E-02	pCi/g	93.40%	(34.3)	(5.9)	6/15/97	2.45	G	ALPHA-SPEC	RICHRC5011
TH-232	2.49E+00	2.1E-01	3.9E-01	1.71E-02	pCi/g	93.40%	(145.2)	(12.1)	6/15/97	2.45	G	ALPHA-SPEC	RICHRC5011
PU-238	3.35E-01	9.1E-02	1.1E-01	1.68E-02	pCi/g	38.00%	(20.)	(3.7)	6/15/97	2.45	G	ALPHA-SPEC	RICHRC5010
PU239/40	3.99E-02U	2.2E-02	2.2E-02	3.99E-02	pCi/g	38.00%	0.37	0.68	6/15/97	2.45	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	5.70E-01U	7.2E-01	1.6E+00	5.70E-01	pCi/g	N/A	-(24.2)	-(19.)	6/12/97	188.08	G	GAMMA	RICHRC5017
AM-241	2.74E-01U	1.7E-01	1.7E-01	2.74E-01	pCi/g	N/A	-0.15	-0.23	6/12/97	188.08	G	GAMMA	RICHRC5017
BI-207.	8.16E-02U	5.0E-02	5.0E-02	8.16E-02	pCi/g	N/A	-0.4	-0.66	6/12/97	188.08	G	GAMMA	RICHRC5017
BI-210M.	9.82E-02U	5.9E-02	5.9E-02	9.82E-02	pCi/g	N/A	0.06	0.1	6/12/97	188.08	G	GAMMA	RICHRC5017
CO-60.	8.06E-02U	4.6E-02	4.6E-02	8.06E-02	pCi/g	N/A	-0.07	-0.13	6/12/97	188.08	G	GAMMA	RICHRC5017
CS-137DA.	1.08E-01U	6.2E-02	6.3E-02	1.08E-01	pCi/g	N/A	0.33	0.57	6/12/97	188.08	G	GAMMA	RICHRC5017
K-40.	9.40E+00	1.3E+00	1.6E+00	N/A	pCi/g	N/A	N/A	(7.2)	6/12/97	188.08	G	GAMMA	RICHRC5017
RA-226DA.	5.22E-01	1.3E-01	1.4E-01	2.62E-01	pCi/g	N/A	(2.)	(4.)	6/12/97	188.08	G	GAMMA	RICHRC5017

Number of Results: 13

0012

Comments:

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Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 4:20:00 PM
LAB SAMPLE ID:	70610308	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	C318000019	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.30E-01	6.8E-02	7.5E-02	3.84E-02	pCi/g	94.10%	(6.)	(3.4)	6/15/97	2.02	G	ALPHA-SPEC	RICHRC5011
TH-230	4.17E-01	9.0E-02	1.1E-01	2.22E-02	pCi/g	94.10%	(18.8)	(4.6)	6/15/97	2.02	G	ALPHA-SPEC	RICHRC5011
TH-232	2.13E-01	6.4E-02	7.0E-02	1.95E-02	pCi/g	94.10%	(10.9)	(3.3)	6/15/97	2.02	G	ALPHA-SPEC	RICHRC5011
PU-238	1.47E-02U	1.1E-02	1.1E-02	1.47E-02	pCi/g	46.80%	0.37	0.5	6/15/97	2.02	G	ALPHA-SPEC	RICHRC5010
PU239/40	2.18E-02U	1.1E-02	1.1E-02	2.18E-02	pCi/g	46.80%	0.23	0.46	6/15/97	2.02	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.45E-01U	3.3E-01	4.0E-01	3.45E-01	pCi/g	N/A	-(6.5)	-(6.8)	6/12/97	199.67	G	GAMMA	RICHRC5017
AM-241	3.27E-01U	2.0E-01	2.0E-01	3.27E-01	pCi/g	N/A	-0.06	-0.09	6/12/97	199.67	G	GAMMA	RICHRC5017
BI-207.	5.24E-02U	3.1E-02	3.1E-02	5.24E-02	pCi/g	N/A	0.25	0.42	6/12/97	199.67	G	GAMMA	RICHRC5017
BI-210M.	7.27E-02U	4.3E-02	4.3E-02	7.27E-02	pCi/g	N/A	0.35	0.59	6/12/97	199.67	G	GAMMA	RICHRC5017
CO-60.	7.55E-02U	4.0E-02	4.0E-02	7.55E-02	pCi/g	N/A	0.24	0.45	6/12/97	199.67	G	GAMMA	RICHRC5017
CS-137DA.	6.27E-02U	3.7E-02	3.7E-02	6.27E-02	pCi/g	N/A	-0.15	-0.26	6/12/97	199.67	G	GAMMA	RICHRC5017
K-40.	1.11E+01	1.3E+00	1.7E+00	N/A	pCi/g	N/A	N/A	(8.3)	6/12/97	199.67	G	GAMMA	RICHRC5017
RA-226DA.	9.42E-01	1.8E-01	2.1E-01	N/A	pCi/g	N/A	N/A	(5.2)	6/12/97	199.67	G	GAMMA	RICHRC5017

Number of Results: 13

0013

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 1:50:00 PM
LAB SAMPLE ID:	70610309	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	C421000013	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	3.36E-01	6.5E-02	7.9E-02	2.43E-02	pCi/g	92.70%	(13.8)	(5.2)	6/15/97	2.94	G	ALPHA-SPEC	RICHRC5011
TH-230	3.78E-01	6.8E-02	8.4E-02	1.24E-02	pCi/g	92.70%	(30.6)	(5.5)	6/15/97	2.94	G	ALPHA-SPEC	RICHRC5011
TH-232	3.11E-01	6.2E-02	7.4E-02	1.24E-02	pCi/g	92.70%	(25.1)	(5.)	6/15/97	2.94	G	ALPHA-SPEC	RICHRC5011
PU-238	2.27E-02U	1.8E-02	1.9E-02	2.27E-02	pCi/g	37.00%	0.75	0.94	6/15/97	2.94	G	ALPHA-SPEC	RICHRC5010
PU239/40	2.08E-02U	1.0E-03	1.0E-03	2.08E-02	pCi/g	37.00%	-0.04	-0.71	6/15/97	2.94	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	4.42E-01U	3.7E-01	4.2E-01	4.42E-01	pCi/g	N/A	-(4.6)	-(5.5)	6/12/97	209.32	G	GAMMA	RICHRC5017
AM-241	5.53E-01U	3.4E-01	3.4E-01	5.53E-01	pCi/g	N/A	0.28	0.45	6/12/97	209.32	G	GAMMA	RICHRC5017
BI-207.	4.95E-02U	3.0E-02	3.0E-02	4.95E-02	pCi/g	N/A	-0.18	-0.29	6/12/97	209.32	G	GAMMA	RICHRC5017
BI-210M.	7.17E-02U	4.9E-02	5.0E-02	7.17E-02	pCi/g	N/A	-(1.2)	-(1.7)	6/12/97	209.32	G	GAMMA	RICHRC5017
CO-60.	5.61E-02U	3.2E-02	3.2E-02	5.61E-02	pCi/g	N/A	-0.18	-0.31	6/12/97	209.32	G	GAMMA	RICHRC5017
CS-137DA.	6.07E-02U	3.4E-02	3.4E-02	6.07E-02	pCi/g	N/A	0.06	0.11	6/12/97	209.32	G	GAMMA	RICHRC5017
K-40.	1.39E+01	1.4E+00	2.0E+00	N/A	pCi/g	N/A	N/A	(9.8)	6/12/97	209.32	G	GAMMA	RICHRC5017
RA-226DA.	6.16E-01	1.3E-01	1.5E-01	N/A	pCi/g	N/A	N/A	(4.7)	6/12/97	209.32	G	GAMMA	RICHRC5017

Number of Results: 13

C014

Comments:

6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/3/1997 11:35:00 AM
LAB SAMPLE ID:	70610310	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	C525000030	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.52E-01	6.7E-02	7.5E-02	3.50E-02	pCi/g	89.80%	(7.2)	(3.8)	6/15/97	2.25	G	ALPHA-SPEC	RICHRC5011
TH-230	3.40E-01	7.6E-02	8.8E-02	1.71E-02	pCi/g	89.80%	(19.9)	(4.5)	6/15/97	2.25	G	ALPHA-SPEC	RICHRC5011
TH-232	1.70E-01	5.4E-02	5.8E-02	1.71E-02	pCi/g	89.80%	(9.9)	(3.2)	6/15/97	2.25	G	ALPHA-SPEC	RICHRC5011
PU-238	1.48E+00	2.7E-01	4.6E-01	3.29E-02	pCi/g	19.20%	(45.1)	(5.5)	6/15/97	2.25	G	ALPHA-SPEC	RICHRC5010
PU239/40	5.55E-02U	2.7E-03	2.8E-03	5.55E-02	pCi/g	19.20%	-0.04	-0.71	6/15/97	2.25	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	2.86E-01U	1.8E-01	1.8E-01	2.86E-01	pCi/g	N/A	-0.87	-(1.4)	6/12/97	199.51	G	GAMMA	RICHRC5017
AM-241	1.32E-01U	8.4E-02	8.4E-02	1.32E-01	pCi/g	N/A	-0.31	-0.49	6/12/97	199.51	G	GAMMA	RICHRC5017
BI-207.	4.18E-02U	2.5E-02	2.5E-02	4.18E-02	pCi/g	N/A	-0.22	-0.38	6/12/97	199.51	G	GAMMA	RICHRC5017
BI-210M.	6.38E-02U	3.8E-02	3.8E-02	6.38E-02	pCi/g	N/A	0.17	0.28	6/12/97	199.51	G	GAMMA	RICHRC5017
CO-60.	4.79E-02U	2.8E-02	2.8E-02	4.79E-02	pCi/g	N/A	-0.25	-0.42	6/12/97	199.51	G	GAMMA	RICHRC5017
CS-137DA.	5.45E-02U	3.5E-02	3.5E-02	5.45E-02	pCi/g	N/A	-0.77	-(1.2)	6/12/97	199.51	G	GAMMA	RICHRC5017
K-40.	1.15E+01	1.4E+00	1.8E+00	N/A	pCi/g	N/A	N/A	(8.5)	6/12/97	199.51	G	GAMMA	RICHRC5017
RA-226DA.	5.31E-01	1.2E-01	1.3E-01	N/A	pCi/g	N/A	N/A	(4.3)	6/12/97	199.51	G	GAMMA	RICHRC5017

Number of Results: 13

0015

Comments:

KT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/3/1997 11:35:00 AM
LAB SAMPLE ID:	70610311	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	C625000032	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	3.68E+00	2.2E-01	5.0E-01	2.44E-02	pCi/g	97.00%	(150.7)	(16.5)	6/15/97	2.31	G	ALPHA-SPEC	RICHRC5011
TH-230	8.05E-01	1.0E-01	1.4E-01	1.65E-02	pCi/g	97.00%	(48.7)	(7.8)	6/15/97	2.31	G	ALPHA-SPEC	RICHRC5011
TH-232	4.51E+00	2.4E-01	6.0E-01	1.33E-02	pCi/g	97.00%	(338.1)	(18.4)	6/15/97	2.31	G	ALPHA-SPEC	RICHRC5011
PU-238	2.77E-02U	1.5E-03	1.6E-03	2.77E-02	pCi/g	57.90%	-0.05	-0.87	6/15/97	2.31	G	ALPHA-SPEC	RICHRC5010
PU239/40	1.50E-02U	0.0E+00	1.7E-02	1.50E-02	pCi/g	57.90%	0.	N/A	6/15/97	2.31	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	8.90E-01U	9.8E-01	2.5E+00	8.90E-01	pCi/g	N/A	-(25.3)	-(23.)	6/12/97	151.22	G	GAMMA	RICHRC5017
AM-241	2.00E-01U	1.3E-01	1.3E-01	2.00E-01	pCi/g	N/A	-0.39	-0.63	6/12/97	151.22	G	GAMMA	RICHRC5017
BI-207.	1.05E-01U	6.4E-02	6.4E-02	1.05E-01	pCi/g	N/A	0.18	0.29	6/12/97	151.22	G	GAMMA	RICHRC5017
BI-210M.	1.36E-01U	8.1E-02	8.1E-02	1.36E-01	pCi/g	N/A	-0.15	-0.26	6/12/97	151.22	G	GAMMA	RICHRC5017
CO-60.	9.74E-02U	4.7E-02	4.7E-02	9.74E-02	pCi/g	N/A	0.39	0.81	6/12/97	151.22	G	GAMMA	RICHRC5017
CS-137DA.	1.21E-01U	7.3E-02	7.3E-02	1.21E-01	pCi/g	N/A	-0.07	-0.11	6/12/97	151.22	G	GAMMA	RICHRC5017
K-40.	9.71E+00	1.6E+00	1.8E+00	N/A	pCi/g	N/A	N/A	(6.2)	6/12/97	151.22	G	GAMMA	RICHRC5017
RA-226DA.	6.41E-01	1.6E-01	1.7E-01	3.16E-01	pCi/g	N/A	(2.)	(4.)	6/12/97	151.22	G	GAMMA	RICHRC5017

Number of Results: 13

0016

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/3/1997 7:00:00 AM
LAB SAMPLE ID:	70610312	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	A501000044	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	3.06E-01	6.0E-02	7.0E-02	1.36E-02	pCi/g	99.90%	(22.5)	(5.1)	6/15/97	2.45	G	ALPHA-SPEC	RICHRC5011
TH-230	3.78E-01	6.7E-02	8.1E-02	1.57E-02	pCi/g	99.90%	(24.1)	(5.7)	6/15/97	2.45	G	ALPHA-SPEC	RICHRC5011
TH-232	2.02E-01	4.9E-02	5.4E-02	1.46E-02	pCi/g	99.90%	(13.8)	(4.1)	6/15/97	2.45	G	ALPHA-SPEC	RICHRC5011
PU-238	4.20E-02	3.5E-02	3.6E-02	2.86E-02	pCi/g	44.70%	(1.5)	(1.2)	6/15/97	2.45	G	ALPHA-SPEC	RICHRC5010
PU239/40	3.79E-02U	2.3E-03	2.3E-03	3.79E-02	pCi/g	44.70%	-0.06	-1.	6/15/97	2.45	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.76E-01U	2.8E-01	3.1E-01	3.76E-01	pCi/g	N/A	-(3.4)	-(4.6)	6/13/97	163.63	G	GAMMA	RICHRC5017
AM-241	2.11E-01U	1.2E-01	1.2E-01	2.11E-01	pCi/g	N/A	0.21	0.36	6/13/97	163.63	G	GAMMA	RICHRC5017
BI-207.	5.50E-02U	3.0E-02	3.0E-02	5.50E-02	pCi/g	N/A	0.18	0.33	6/13/97	163.63	G	GAMMA	RICHRC5017
BI-210M.	7.80E-02U	4.8E-02	4.8E-02	7.80E-02	pCi/g	N/A	-0.12	-0.19	6/13/97	163.63	G	GAMMA	RICHRC5017
CO-60.	7.16E-02U	3.9E-02	3.9E-02	7.16E-02	pCi/g	N/A	-0.01	-0.03	6/13/97	163.63	G	GAMMA	RICHRC5017
CS-137DA.	6.54E-02U	4.0E-02	4.0E-02	6.54E-02	pCi/g	N/A	-0.34	-0.57	6/13/97	163.63	G	GAMMA	RICHRC5017
K-40.	1.05E+01	1.3E+00	1.7E+00	N/A	pCi/g	N/A	N/A	(7.9)	6/13/97	163.63	G	GAMMA	RICHRC5017
RA-226DA.	5.75E-01	1.2E-01	1.3E-01	2.51E-01	pCi/g	N/A	(2.3)	(4.8)	6/13/97	163.63	G	GAMMA	RICHRC5017

Number of Results: 13

0017

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/3/1997 8:20:00 AM
LAB SAMPLE ID:	70610313	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	A501000023	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.14E-01	5.3E-02	5.9E-02	2.11E-02	pCi/g	96.10%	(10.2)	(4.)	6/15/97	2.22	G	ALPHA-SPEC	RICHRC5011
TH-230	4.27E-01	7.4E-02	9.0E-02	1.30E-02	pCi/g	96.10%	(32.8)	(5.7)	6/15/97	2.22	G	ALPHA-SPEC	RICHRC5011
TH-232	2.13E-01	5.3E-02	5.8E-02	1.48E-02	pCi/g	96.10%	(14.4)	(4.1)	6/15/97	2.22	G	ALPHA-SPEC	RICHRC5011
PU-238	2.34E-01	8.7E-02	1.0E-01	3.26E-02	pCi/g	40.70%	(7.2)	(2.7)	6/15/97	2.22	G	ALPHA-SPEC	RICHRC5010
PU239/40	3.70E-02U	1.6E-02	1.6E-02	3.70E-02	pCi/g	40.70%	0.18	0.42	6/15/97	2.22	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.78E-01U	3.7E-01	4.3E-01	3.78E-01	pCi/g	N/A	-(5.8)	-(6.)	6/13/97	161.72	G	GAMMA	RICHRC5017
AM-241	3.61E-01U	2.2E-01	2.2E-01	3.61E-01	pCi/g	N/A	0.21	0.35	6/13/97	161.72	G	GAMMA	RICHRC5017
BI-207.	5.34E-02U	3.0E-02	3.0E-02	5.34E-02	pCi/g	N/A	0.23	0.41	6/13/97	161.72	G	GAMMA	RICHRC5017
BI-210M.	7.66E-02U	4.9E-02	4.9E-02	7.66E-02	pCi/g	N/A	0.02	0.03	6/13/97	161.72	G	GAMMA	RICHRC5017
CO-60.	7.36E-02U	3.7E-02	3.7E-02	7.36E-02	pCi/g	N/A	0.21	0.41	6/13/97	161.72	G	GAMMA	RICHRC5017
CS-137DA.	7.52E-02U	4.2E-02	4.2E-02	7.52E-02	pCi/g	N/A	0.2	0.36	6/13/97	161.72	G	GAMMA	RICHRC5017
K-40.	1.11E+01	1.4E+00	1.8E+00	N/A	pCi/g	N/A	N/A	(7.7)	6/13/97	161.72	G	GAMMA	RICHRC5017
RA-226DA.	5.42E-01	1.1E-01	1.3E-01	2.45E-01	pCi/g	N/A	(2.2)	(4.8)	6/13/97	161.72	G	GAMMA	RICHRC5017

Number of Results: 13

0018

Comments:

RET 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/4/1997 6:00:00 PM
LAB SAMPLE ID:	70610314	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	B717000041	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	3.76E-01	7.5E-02	8.9E-02	2.65E-02	pCi/g	87.60%	(14.2)	(5.)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5011
TH-230	3.11E-01	6.8E-02	7.8E-02	1.98E-02	pCi/g	87.60%	(15.7)	(4.6)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5011
TH-232	4.05E-01	7.8E-02	9.3E-02	1.49E-02	pCi/g	87.60%	(27.1)	(5.2)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5011
PU-238	7.28E-01	1.5E-01	2.1E-01	3.47E-02	pCi/g	43.80%	(21.)	(4.9)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5010
PU239/40	6.77E-02	4.6E-02	4.8E-02	3.05E-02	pCi/g	43.80%	(2.2)	(1.5)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	5.19E-01U	4.4E-01	4.9E-01	5.19E-01	pCi/g	N/A	-(4.2)	-(5.)	6/13/97	195.01	G	GAMMA	RICHRC5017
AM-241	5.80E-01U	4.0E-01	4.0E-01	5.80E-01	pCi/g	N/A	-0.07	-0.11	6/13/97	195.01	G	GAMMA	RICHRC5017
BI-207.	5.68E-02U	3.1E-02	3.2E-02	5.68E-02	pCi/g	N/A	0.4	0.72	6/13/97	195.01	G	GAMMA	RICHRC5017
BI-210M.	7.94E-02U	4.8E-02	4.8E-02	7.94E-02	pCi/g	N/A	-0.05	-0.08	6/13/97	195.01	G	GAMMA	RICHRC5017
CO-60.	7.12E-02U	4.2E-02	4.2E-02	7.12E-02	pCi/g	N/A	-0.09	-0.14	6/13/97	195.01	G	GAMMA	RICHRC5017
CS-137DA.	1.55E-01	8.2E-02	8.4E-02	N/A	pCi/g	N/A	N/A	(1.9)	6/13/97	195.01	G	GAMMA	RICHRC5017
K-40.	1.37E+01	1.5E+00	2.0E+00	N/A	pCi/g	N/A	N/A	(9.)	6/13/97	195.01	G	GAMMA	RICHRC5017
RA-226DA.	5.27E-01	1.0E-01	1.2E-01	2.25E-01	pCi/g	N/A	(2.3)	(5.1)	6/13/97	195.01	G	GAMMA	RICHRC5017

Number of Results: 13

0019

Comments:

RCT 6/18/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/3/1997 1:30:00 PM
LAB SAMPLE ID:	70610315	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	B625000031	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	8.08E-01	1.0E-01	1.4E-01	2.16E-02	pCi/g	93.60%	(37.5)	(8.)	6/15/97	2.37	G	ALPHA-SPEC	RICHRC5011
TH-230	4.96E-01	7.9E-02	9.9E-02	1.25E-02	pCi/g	93.60%	(39.8)	(6.3)	6/15/97	2.37	G	ALPHA-SPEC	RICHRC5011
TH-232	6.92E-01	9.3E-02	1.2E-01	1.42E-02	pCi/g	93.60%	(48.8)	(7.5)	6/15/97	2.37	G	ALPHA-SPEC	RICHRC5011
PU-238	2.30E-02U	1.1E-02	1.2E-02	2.30E-02	pCi/g	55.70%	0.23	0.46	6/15/97	2.37	G	ALPHA-SPEC	RICHRC5010
PU239/40	1.55E-02U	1.1E-02	1.1E-02	1.55E-02	pCi/g	55.70%	0.37	0.5	6/15/97	2.37	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.29E-01U	2.3E-01	2.3E-01	3.29E-01	pCi/g	N/A	-(1.7)	-(2.5)	6/13/97	202.13	G	GAMMA	RICHRC5017
AM-241	2.78E-01U	1.7E-01	1.7E-01	2.78E-01	pCi/g	N/A	-0.14	-0.22	6/13/97	202.13	G	GAMMA	RICHRC5017
BI-207.	4.75E-02U	2.7E-02	2.7E-02	4.75E-02	pCi/g	N/A	0.08	0.13	6/13/97	202.13	G	GAMMA	RICHRC5017
BI-210M.	6.54E-02U	3.9E-02	3.9E-02	6.54E-02	pCi/g	N/A	-0.11	-0.19	6/13/97	202.13	G	GAMMA	RICHRC5017
CO-60.	5.52E-02U	3.8E-02	3.9E-02	5.52E-02	pCi/g	N/A	-0.8	-(1.2)	6/13/97	202.13	G	GAMMA	RICHRC5017
CS-137DA.	7.46E-02	3.4E-02	3.5E-02	7.16E-02	pCi/g	N/A	(1.)	(2.2)	6/13/97	202.13	G	GAMMA	RICHRC5017
K-40.	1.10E+01	1.3E+00	1.7E+00	N/A	pCi/g	N/A	N/A	(8.4)	6/13/97	202.13	G	GAMMA	RICHRC5017
RA-226DA.	5.65E-01	1.1E-01	1.2E-01	2.39E-01	pCi/g	N/A	(2.4)	(5.1)	6/13/97	202.13	G	GAMMA	RICHRC5017

Number of Results: 13

0020

Comments:

RT 6/12/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 11:00:00 AM
LAB SAMPLE ID:	70610316	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	B524000007	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	5.67E-01	7.9E-02	1.1E-01	1.62E-02	pCi/g	91.50%	(35.)	(7.2)	6/15/97	2.94	G	ALPHA-SPEC	RICHRC5011
TH-230	3.56E-01	6.2E-02	7.6E-02	1.23E-02	pCi/g	91.50%	(28.9)	(5.7)	6/15/97	2.94	G	ALPHA-SPEC	RICHRC5011
TH-232	3.53E-01	6.2E-02	7.6E-02	1.08E-02	pCi/g	91.50%	(32.6)	(5.7)	6/15/97	2.94	G	ALPHA-SPEC	RICHRC5011
PU-238	3.24E-02U	1.2E-02	1.2E-02	3.24E-02	pCi/g	40.90%	0.13	0.34	6/15/97	2.94	G	ALPHA-SPEC	RICHRC5010
PU239/40	2.44E-02U	9.7E-04	9.7E-04	2.44E-02	pCi/g	40.90%	-0.02	-0.5	6/15/97	2.94	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.29E-01U	2.8E-01	3.4E-01	3.29E-01	pCi/g	N/A	-(5.5)	-(6.4)	6/13/97	199.32	G	GAMMA	RICHRC5017
AM-241	9.18E-02U	5.4E-02	5.4E-02	9.18E-02	pCi/g	N/A	0.49	0.84	6/13/97	199.32	G	GAMMA	RICHRC5017
BI-207.	4.69E-02U	2.5E-02	2.5E-02	4.69E-02	pCi/g	N/A	0.24	0.45	6/13/97	199.32	G	GAMMA	RICHRC5017
BI-210M.	6.36E-02U	3.8E-02	3.8E-02	6.36E-02	pCi/g	N/A	-0.18	-0.31	6/13/97	199.32	G	GAMMA	RICHRC5017
CO-60.	6.16E-02U	3.4E-02	3.4E-02	6.16E-02	pCi/g	N/A	-0.07	-0.13	6/13/97	199.32	G	GAMMA	RICHRC5017
CS-137DA.	6.30E-02U	3.3E-02	3.3E-02	6.30E-02	pCi/g	N/A	0.34	0.64	6/13/97	199.32	G	GAMMA	RICHRC5017
K-40.	9.64E+00	1.2E+00	1.5E+00	N/A	pCi/g	N/A	N/A	(8.)	6/13/97	199.32	G	GAMMA	RICHRC5017
RA-226DA.	6.43E-01	1.3E-01	1.5E-01	N/A	pCi/g	N/A	N/A	(4.8)	6/13/97	199.32	G	GAMMA	RICHRC5017

Number of Results: 13

0021

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 11:39:00 AM
LAB SAMPLE ID:	70610317	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	B420000010	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	1.94E-01	5.4E-02	5.9E-02	2.19E-02	pCi/g	84.00%	(8.9)	(3.6)	6/15/97	2.37	G	ALPHA-SPEC	RICHRC5011
TH-230	3.86E-01	7.5E-02	8.9E-02	9.85E-03	pCi/g	84.00%	(39.2)	(5.1)	6/15/97	2.37	G	ALPHA-SPEC	RICHRC5011
TH-232	2.14E-01	5.6E-02	6.2E-02	1.46E-02	pCi/g	84.00%	(14.6)	(3.8)	6/15/97	2.37	G	ALPHA-SPEC	RICHRC5011
PU-238	1.89E-02U	0.0E+00	2.1E-02	1.89E-02	pCi/g	48.10%	0.	N/A	6/15/97	2.37	G	ALPHA-SPEC	RICHRC5010
PU239/40	3.48E-02U	1.9E-03	2.0E-03	3.48E-02	pCi/g	48.10%	-0.05	-0.87	6/15/97	2.37	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	2.87E-01U	2.1E-01	2.3E-01	2.87E-01	pCi/g	N/A	-(2.6)	-(3.6)	6/13/97	208.52	G	GAMMA	RICHRC5017
AM-241	1.26E-01U	7.5E-02	7.5E-02	1.26E-01	pCi/g	N/A	-0.24	-0.4	6/13/97	208.52	G	GAMMA	RICHRC5017
BI-207.	4.62E-02U	2.5E-02	2.5E-02	4.62E-02	pCi/g	N/A	0.32	0.58	6/13/97	208.52	G	GAMMA	RICHRC5017
BI-210M.	5.59E-02U	3.1E-02	3.1E-02	5.59E-02	pCi/g	N/A	0.44	0.79	6/13/97	208.52	G	GAMMA	RICHRC5017
CO-60.	5.06E-02U	2.6E-02	2.6E-02	5.06E-02	pCi/g	N/A	0.13	0.26	6/13/97	208.52	G	GAMMA	RICHRC5017
CS-137DA.	4.45E-02U	2.4E-02	2.4E-02	4.45E-02	pCi/g	N/A	0.06	0.1	6/13/97	208.52	G	GAMMA	RICHRC5017
K-40.	9.84E+00	1.2E+00	1.6E+00	N/A	pCi/g	N/A	N/A	(8.2)	6/13/97	208.52	G	GAMMA	RICHRC5017
RA-226DA.	6.67E-01	1.3E-01	1.4E-01	N/A	pCi/g	N/A	N/A	(5.3)	6/13/97	208.52	G	GAMMA	RICHRC5017

Number of Results: 13

0022

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/4/1997 6:39:00 PM
LAB SAMPLE ID:	70610318	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	B303000043	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	1.04E+00	1.5E-01	2.0E-01	3.91E-02	pCi/g	84.40%	(26.7)	(7.1)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5011
TH-230	4.35E-01	9.4E-02	1.1E-01	2.04E-02	pCi/g	84.40%	(21.4)	(4.6)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5011
TH-232	8.41E-01	1.3E-01	1.7E-01	1.37E-02	pCi/g	84.40%	(61.3)	(6.4)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5011
PU-238	1.44E-01	6.8E-02	7.4E-02	2.16E-02	pCi/g	32.40%	(6.7)	(2.1)	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5010
PU239/40	4.73E-02U	1.6E-02	1.6E-02	4.73E-02	pCi/g	32.40%	0.09	0.26	6/15/97	2.18	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	5.43E-01U	5.4E-01	7.1E-01	5.43E-01	pCi/g	N/A	-(8.4)	-(8.4)	6/13/97	126.63	G	GAMMA	RICHRC5017
AM-241	2.57E-01U	1.6E-01	1.6E-01	2.57E-01	pCi/g	N/A	-0.01	-0.01	6/13/97	126.63	G	GAMMA	RICHRC5017
BI-207.	8.24E-02U	5.2E-02	5.2E-02	8.24E-02	pCi/g	N/A	-0.24	-0.38	6/13/97	126.63	G	GAMMA	RICHRC5017
BI-210M.	1.07E-01U	6.6E-02	6.6E-02	1.07E-01	pCi/g	N/A	-0.05	-0.09	6/13/97	126.63	G	GAMMA	RICHRC5017
CO-60.	9.50E-02U	5.4E-02	5.4E-02	9.50E-02	pCi/g	N/A	-0.26	-0.45	6/13/97	126.63	G	GAMMA	RICHRC5017
CS-137DA.	1.11E-01U	5.4E-02	5.4E-02	1.11E-01	pCi/g	N/A	0.84	(1.7)	6/13/97	126.63	G	GAMMA	RICHRC5017
K-40.	1.40E+01	1.8E+00	2.3E+00	N/A	pCi/g	N/A	N/A	(7.9)	6/13/97	126.63	G	GAMMA	RICHRC5017
RA-226DA.	5.81E-01	1.5E-01	1.6E-01	3.13E-01	pCi/g	N/A	(1.9)	(3.9)	6/13/97	126.63	G	GAMMA	RICHRC5017

Number of Results: 13

0023

RT 6/19/97

Comments:

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 9:40:00 AM
LAB SAMPLE ID:	70610319	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	C801000001	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	6.14E-01	1.1E-01	1.4E-01	4.38E-02	pCi/g	86.50%	(14.)	(5.7)	6/15/97	2.32	G	ALPHA-SPEC	RICHRC5011
TH-230	3.03E-01	7.5E-02	8.5E-02	1.26E-02	pCi/g	86.50%	(24.)	(4.)	6/15/97	2.32	G	ALPHA-SPEC	RICHRC5011
TH-232	5.08E-01	9.7E-02	1.2E-01	1.26E-02	pCi/g	86.50%	(40.3)	(5.2)	6/15/97	2.32	G	ALPHA-SPEC	RICHRC5011
PU-238	1.74E+00	2.0E-01	3.7E-01	1.53E-02	pCi/g	40.40%	(114.2)	(8.8)	6/15/97	2.32	G	ALPHA-SPEC	RICHRC5010
PU239/40	2.27E-02U	1.1E-02	1.1E-02	2.27E-02	pCi/g	40.40%	0.23	0.46	6/15/97	2.32	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.87E-01U	3.1E-01	3.6E-01	3.87E-01	pCi/g	N/A	-(4.7)	-(5.9)	6/13/97	166.96	G	GAMMA	RICHRC5017
AM-241	2.27E-01U	1.3E-01	1.3E-01	2.27E-01	pCi/g	N/A	0.19	0.33	6/13/97	166.96	G	GAMMA	RICHRC5017
BI-207.	5.72E-02U	3.4E-02	3.4E-02	5.72E-02	pCi/g	N/A	-0.26	-0.44	6/13/97	166.96	G	GAMMA	RICHRC5017
BI-210M.	7.51E-02U	4.8E-02	4.8E-02	7.51E-02	pCi/g	N/A	-0.26	-0.4	6/13/97	166.96	G	GAMMA	RICHRC5017
CO-60.	7.96E-02U	4.1E-02	4.1E-02	7.96E-02	pCi/g	N/A	0.26	0.5	6/13/97	166.96	G	GAMMA	RICHRC5017
CS-137DA.	7.65E-02U	4.3E-02	4.3E-02	7.65E-02	pCi/g	N/A	0.24	0.43	6/13/97	166.96	G	GAMMA	RICHRC5017
K-40.	1.53E+01	1.5E+00	2.2E+00	N/A	pCi/g	N/A	N/A	(10.)	6/13/97	166.96	G	GAMMA	RICHRC5017
RA-226DA.	4.68E-01	1.1E-01	1.2E-01	2.24E-01	pCi/g	N/A	(2.1)	(4.5)	6/13/97	166.96	G	GAMMA	RICHRC5017

Number of Results: 13

0024

Comments:

RET 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/4/1997 5:53:00 PM
LAB SAMPLE ID:	70610320	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	C715000040	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	4.49E-01	9.2E-02	1.1E-01	4.00E-02	pCi/g	91.30%	(11.2)	(4.9)	6/15/97	2.32	G	ALPHA-SPEC	RICHRC5011
TH-230	2.58E-01	6.9E-02	7.7E-02	1.25E-02	pCi/g	91.30%	(20.7)	(3.7)	6/15/97	2.32	G	ALPHA-SPEC	RICHRC5011
TH-232	2.86E-01	7.3E-02	8.2E-02	1.25E-02	pCi/g	91.30%	(22.9)	(3.9)	6/15/97	2.32	G	ALPHA-SPEC	RICHRC5011
PU-238	2.51E-01	7.8E-02	9.1E-02	3.00E-02	pCi/g	37.50%	(8.4)	(3.2)	6/15/97	2.32	G	ALPHA-SPEC	RICHRC5010
PU239/40	2.75E-02U	1.4E-03	1.4E-03	2.75E-02	pCi/g	37.50%	-0.04	-0.71	6/15/97	2.32	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	2.93E-01U	1.9E-01	1.9E-01	2.93E-01	pCi/g	N/A	-0.93	-(1.4)	6/13/97	195.83	G	GAMMA	RICHRC5017
AM-241	2.50E-01U	1.4E-01	1.4E-01	2.50E-01	pCi/g	N/A	0.28	0.48	6/13/97	195.83	G	GAMMA	RICHRC5017
BI-207.	4.99E-02U	2.8E-02	2.8E-02	4.99E-02	pCi/g	N/A	0.07	0.13	6/13/97	195.83	G	GAMMA	RICHRC5017
BI-210M.	5.92E-02U	3.6E-02	3.6E-02	5.92E-02	pCi/g	N/A	-0.41	-0.67	6/13/97	195.83	G	GAMMA	RICHRC5017
CO-60.	6.61E-02U	3.9E-02	3.9E-02	6.61E-02	pCi/g	N/A	-0.36	-0.62	6/13/97	195.83	G	GAMMA	RICHRC5017
CS-137DA.	6.35E-02U	3.6E-02	3.6E-02	6.35E-02	pCi/g	N/A	0.09	0.15	6/13/97	195.83	G	GAMMA	RICHRC5017
K-40.	1.32E+01	1.4E+00	1.9E+00	N/A	pCi/g	N/A	N/A	(9.2)	6/13/97	195.83	G	GAMMA	RICHRC5017
RA-226DA.	3.95E-01	8.6E-02	9.5E-02	1.94E-01	pCi/g	N/A	(2.)	(4.6)	6/13/97	195.83	G	GAMMA	RICHRC5017

Number of Results: 13

0025

KT 6/19/97

Comments:

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 10:00:00 AM
LAB SAMPLE ID:	70610321	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	A614000002	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	4.48E-01	8.4E-02	1.0E-01	3.42E-02	pCi/g	91.60%	(13.1)	(5.3)	6/15/97	2.53	G	ALPHA-SPEC	RICHRC5011
TH-230	2.78E-01	6.5E-02	7.5E-02	1.53E-02	pCi/g	91.60%	(18.1)	(4.3)	6/15/97	2.53	G	ALPHA-SPEC	RICHRC5011
TH-232	3.73E-01	7.5E-02	9.0E-02	1.53E-02	pCi/g	91.60%	(24.3)	(4.9)	6/15/97	2.53	G	ALPHA-SPEC	RICHRC5011
PU-238	2.42E-02U	1.7E-02	1.7E-02	2.42E-02	pCi/g	35.00%	0.48	0.68	6/15/97	2.53	G	ALPHA-SPEC	RICHRC5010
PU239/40	2.74E-02U	1.7E-02	1.7E-02	2.74E-02	pCi/g	35.00%	0.4	0.65	6/15/97	2.53	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.06E-01U	3.2E-01	4.0E-01	3.06E-01	pCi/g	N/A	-(8.1)	-(7.8)	6/13/97	205.77	G	GAMMA	RICHRC5017
AM-241	2.83E-01U	1.8E-01	1.8E-01	2.83E-01	pCi/g	N/A	-0.07	-0.11	6/13/97	205.77	G	GAMMA	RICHRC5017
BI-207.	4.64E-02U	2.5E-02	2.5E-02	4.64E-02	pCi/g	N/A	0.33	0.61	6/13/97	205.77	G	GAMMA	RICHRC5017
BI-210M.	6.25E-02U	4.2E-02	4.2E-02	6.25E-02	pCi/g	N/A	-0.47	-0.7	6/13/97	205.77	G	GAMMA	RICHRC5017
CO-60.	7.38E-02U	4.1E-02	4.1E-02	7.38E-02	pCi/g	N/A	-0.04	-0.07	6/13/97	205.77	G	GAMMA	RICHRC5017
CS-137DA.	7.50E-02U	4.0E-02	4.0E-02	7.50E-02	pCi/g	N/A	0.54	(1.)	6/13/97	205.77	G	GAMMA	RICHRC5017
K-40.	1.06E+01	1.3E+00	1.7E+00	N/A	pCi/g	N/A	N/A	(8.2)	6/13/97	205.77	G	GAMMA	RICHRC5017
RA-226DA.	4.45E-01	1.5E-01	1.5E-01	N/A	pCi/g	N/A	N/A	(3.)	6/13/97	205.77	G	GAMMA	RICHRC5017

Number of Results: 13

0026

Comments:

RT 6/19/97

FORM II

Date: 6/17/1997

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 4:10:00 PM
LAB SA ID/ORIG ID:	R0610301 / 70610301	REPORT NBR:	3024	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	D101000018	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	ORIG RESULT	RPD	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	1.76E-01	5.0E-02	5.4E-02	2.24E-02	pCi/g	92.90%	2.39E-01	30.64%	6/15/97	2.24	G	ALPHA-SPEC	RICHRC5011
TH-230	3.27E-01	6.7E-02	7.8E-02	1.39E-02	pCi/g	92.90%	3.54E-01	8.04%	6/15/97	2.24	G	ALPHA-SPEC	RICHRC5011
TH-232	1.79E-01	5.0E-02	5.4E-02	1.39E-02	pCi/g	92.90%	1.81E-01	1.12%	6/15/97	2.24	G	ALPHA-SPEC	RICHRC5011
PU-238	4.10E-01	1.1E-01	1.4E-01	4.24E-02	pCi/g	43.20%	1.81E-01	77.52%	6/14/97	2.24	G	ALPHA-SPEC	RICHRC5010
PU239/40	3.19E-02U	1.6E-02	1.6E-02	3.19E-02	pCi/g	43.20%	8.26E-03	12.30%	6/14/97	2.24	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.00E-01U	1.9E-01	1.9E-01	3.00E-01	pCi/g	N/A	-1.21E+00	166.94%	6/12/97	152.73	G	GAMMA	RICHRC5017
AM-241	2.82E-01U	1.7E-01	1.7E-01	2.82E-01	pCi/g	N/A	-1.62E-01	183.82%	6/12/97	152.73	G	GAMMA	RICHRC5017
BI-207.	6.70E-02U	3.4E-02	3.4E-02	6.70E-02	pCi/g	N/A	1.91E-02	76.82%	6/12/97	152.73	G	GAMMA	RICHRC5017
BI-210M.	6.28E-02U	3.7E-02	3.7E-02	6.28E-02	pCi/g	N/A	7.95E-03	638.85%	6/12/97	152.73	G	GAMMA	RICHRC5017
CO-60.	6.00E-02U	3.1E-02	3.1E-02	6.00E-02	pCi/g	N/A	1.77E-02	172.86%	6/12/97	152.73	G	GAMMA	RICHRC5017
CS-137DA.	7.73E-02U	4.5E-02	4.5E-02	7.73E-02	pCi/g	N/A	3.99E-02	180.34%	6/12/97	152.73	G	GAMMA	RICHRC5017
K-40.	7.70E+00	1.3E+00	1.5E+00	N/A	pCi/g	N/A	7.26E+00	5.86%	6/12/97	152.73	G	GAMMA	RICHRC5017
RA-226DA.	3.83E-01	1.1E-01	1.2E-01	2.36E-01	pCi/g	N/A	4.73E-01	21.15%	6/12/97	152.73	G	GAMMA	RICHRC5017

Number of Results: 13

0027

Comments:

JET 6/19/97

FORM II

Date: 6/17/1997

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG: 8359 ORDER NBR:

LAB SAMPLE ID: T061031B REPORT NBR: 3024 MATRIX: SOIL

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.13E-02U	1.2E-03	1.2E-03	2.13E-02	pCi/g	92.90%	-0.05	-0.87	6/15/97	2.0	G	ALPHA-SPEC	RICHRC5011
TH-230	1.94E-02U	1.7E-02	1.7E-02	1.94E-02	pCi/g	92.90%	0.84	0.96	6/15/97	2.0	G	ALPHA-SPEC	RICHRC5011
TH-232	2.12E-02U	1.2E-03	1.2E-03	2.12E-02	pCi/g	92.90%	-0.05	-0.87	6/15/97	2.0	G	ALPHA-SPEC	RICHRC5011
PU-238	2.28E-02U	1.1E-03	1.1E-03	2.28E-02	pCi/g	80.60%	-0.04	-0.71	6/14/97	2.0	G	ALPHA-SPEC	RICHRC5010
PU239/40	2.28E-02U	1.1E-03	1.1E-03	2.28E-02	pCi/g	80.60%	-0.04	-0.71	6/14/97	2.0	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.68E-01U	2.2E-01	2.2E-01	3.68E-01	pCi/g	N/A	-0.24	-0.41	6/12/97	100.0	G	GAMMA	RICHRC5017
AM-241	2.56E-01U	1.4E-01	1.4E-01	2.56E-01	pCi/g	N/A	0.24	0.43	6/12/97	100.0	G	GAMMA	RICHRC5017
BI-207.	7.54E-02U	4.4E-02	4.4E-02	7.54E-02	pCi/g	N/A	-0.17	-0.28	6/12/97	100.0	G	GAMMA	RICHRC5017
BI-210M.	9.89E-02U	5.7E-02	5.7E-02	9.89E-02	pCi/g	N/A	0.14	0.25	6/12/97	100.0	G	GAMMA	RICHRC5017
CO-60.	8.25E-02U	6.1E-02	6.2E-02	8.25E-02	pCi/g	N/A	-(1.1)	-(1.5)	6/12/97	100.0	G	GAMMA	RICHRC5017
CS-137DA.	7.36E-02U	4.0E-02	4.0E-02	7.36E-02	pCi/g	N/A	-0.09	-0.16	6/12/97	100.0	G	GAMMA	RICHRC5017
K-40.	2.72E+00	7.5E-01	7.9E-01	1.87E+00	pCi/g	N/A	(1.5)	(3.6)	6/12/97	100.0	G	GAMMA	RICHRC5017
RA-226DA.	1.84E-01U	8.4E-02	8.5E-02	1.84E-01	pCi/g	N/A	0.9	(2.)	6/12/97	100.0	G	GAMMA	RICHRC5017

Number of Results: 13

0028

Comments:

RT 6/19/97

FORM II

Date: 6/17/1997

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: 8359 ORDER NBR:

LAB SAMPLE ID: T061031S REPORT NBR: 3024 MATRIX: SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	Expected	Expected Uncert	Recovery	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-230	8.37E-01	1.2E-01	1.6E-01	1.77E-02	pCi/g	86.00%	9.10E-01	0.0E+00	92.03%	6/15/97	2.0	G	ALPHA-SPEC	RICHRC5011
PU239/40	4.06E-01	8.3E-02	1.0E-01	1.72E-02	pCi/g	99.80%	4.53E-01	0.0E+00	89.66%	6/14/97	2.0	G	ALPHA-SPEC	RICHRC5010
CS-137DA.	4.88E-01	1.1E-01	1.2E-01	N/A	pCi/g	N/A	4.53E-01	0.0E+00	107.68%	6/12/97	100.0	G	GAMMA	RICHRC5017

Number of Results: 3

0029

Comments:

RCT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/3/1997 9:25:00 AM
LAB SAMPLE ID:	70610201	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	F316000026	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.30E-01	5.7E-02	6.3E-02	2.39E-02	pCi/g	96.70%	(9.6)	(4.)	6/13/97	2.04	G	ALPHA-SPEC	RICHRC5011
TH-230	2.85E-01	6.3E-02	7.1E-02	1.38E-02	pCi/g	96.70%	(20.6)	(4.6)	6/13/97	2.04	G	ALPHA-SPEC	RICHRC5011
TH-232	1.10E-01	3.9E-02	4.1E-02	1.57E-02	pCi/g	96.70%	(7.)	(2.8)	6/13/97	2.04	G	ALPHA-SPEC	RICHRC5011
PU-238	4.73E-03U	3.3E-03	3.4E-03	4.73E-03	pCi/g	57.50%	0.48	0.68	6/14/97	11.41	G	ALPHA-SPEC	RICHRC5010
PU239/40	8.08E-03U	6.0E-04	6.2E-04	8.08E-03	pCi/g	57.50%	-0.12	-(1.6)	6/14/97	11.41	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	2.93E-01U	2.4E-01	2.6E-01	2.93E-01	pCi/g	N/A	-(3.5)	-(4.3)	6/11/97	206.05	G	GAMMA	RICHRC5017
AM-241	1.45E-01U	8.8E-02	8.8E-02	1.45E-01	pCi/g	N/A	-0.07	-0.11	6/11/97	206.05	G	GAMMA	RICHRC5017
BI-207.	5.20E-02U	2.9E-02	2.9E-02	5.20E-02	pCi/g	N/A	0.11	0.19	6/11/97	206.05	G	GAMMA	RICHRC5017
BI-210M.	6.40E-02U	3.8E-02	3.8E-02	6.40E-02	pCi/g	N/A	-0.04	-0.07	6/11/97	206.05	G	GAMMA	RICHRC5017
CO-60.	5.54E-02U	3.1E-02	3.1E-02	5.54E-02	pCi/g	N/A	-0.12	-0.22	6/11/97	206.05	G	GAMMA	RICHRC5017
CS-137DA.	4.70E-02U	2.7E-02	2.7E-02	4.70E-02	pCi/g	N/A	0.1	0.18	6/11/97	206.05	G	GAMMA	RICHRC5017
K-40.	9.19E+00	1.2E+00	1.5E+00	N/A	pCi/g	N/A	N/A	(7.4)	6/11/97	206.05	G	GAMMA	RICHRC5017
RA-226DA.	4.60E-01	1.4E-01	1.5E-01	N/A	pCi/g	N/A	N/A	(3.3)	6/11/97	206.05	G	GAMMA	RICHRC5017

Number of Results: 13

000006

Comments:

RT 6/18/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 3:40:00 PM
LAB SAMPLE ID:	70610202	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	F201000017	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.15E-01	4.9E-02	5.6E-02	1.97E-02	pCi/g	96.40%	(10.9)	(4.4)	6/13/97	2.62	G	ALPHA-SPEC	RICHRC5011
TH-230	2.89E-01	5.7E-02	6.6E-02	1.11E-02	pCi/g	96.40%	(26.1)	(5.1)	6/13/97	2.62	G	ALPHA-SPEC	RICHRC5011
TH-232	2.12E-01	4.8E-02	5.5E-02	1.11E-02	pCi/g	96.40%	(19.1)	(4.4)	6/13/97	2.62	G	ALPHA-SPEC	RICHRC5011
PU-238	3.29E-03U	2.4E-03	2.4E-03	3.29E-03	pCi/g	45.40%	0.37	0.5	6/14/97	10.05	G	ALPHA-SPEC	RICHRC5010
PU239/40	7.20E-03U	4.8E-04	4.9E-04	7.20E-03	pCi/g	45.40%	-0.08	-(1.2)	6/14/97	10.05	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.24E-01U	3.1E-01	3.8E-01	3.24E-01	pCi/g	N/A	-(6.4)	-(6.6)	6/11/97	208.8	G	GAMMA	RICHRC5017
AM-241	2.80E-01U	1.7E-01	1.7E-01	2.80E-01	pCi/g	N/A	0.05	0.07	6/11/97	208.8	G	GAMMA	RICHRC5017
BI-207.	4.93E-02U	2.8E-02	2.8E-02	4.93E-02	pCi/g	N/A	0.03	0.06	6/11/97	208.8	G	GAMMA	RICHRC5017
BI-210M.	6.22E-02U	3.9E-02	3.9E-02	6.22E-02	pCi/g	N/A	-0.03	-0.05	6/11/97	208.8	G	GAMMA	RICHRC5017
CO-60.	6.71E-02U	3.4E-02	3.4E-02	6.71E-02	pCi/g	N/A	0.5	1.	6/11/97	208.8	G	GAMMA	RICHRC5017
CS-137DA.	5.15E-02U	3.3E-02	3.3E-02	5.15E-02	pCi/g	N/A	-0.36	-0.56	6/11/97	208.8	G	GAMMA	RICHRC5017
K-40.	1.16E+01	1.3E+00	1.8E+00	N/A	pCi/g	N/A	N/A	(8.6)	6/11/97	208.8	G	GAMMA	RICHRC5017
RA-226DA.	7.03E-01	1.1E-01	1.3E-01	N/A	pCi/g	N/A	N/A	(6.5)	6/11/97	208.8	G	GAMMA	RICHRC5017

Number of Results: 13

00007

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 1:30:00 PM
LAB SAMPLE ID:	70610203	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	G601000012	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	4.35E-01	7.8E-02	9.4E-02	1.96E-02	pCi/g	93.40%	(22.2)	(5.6)	6/13/97	2.39	G	ALPHA-SPEC	RICHRC5011
TH-230	3.11E-01	6.5E-02	7.6E-02	1.56E-02	pCi/g	93.40%	(19.9)	(4.8)	6/13/97	2.39	G	ALPHA-SPEC	RICHRC5011
TH-232	3.11E-01	6.5E-02	7.6E-02	1.38E-02	pCi/g	93.40%	(22.6)	(4.8)	6/13/97	2.39	G	ALPHA-SPEC	RICHRC5011
PU-238	2.26E-01	4.2E-02	6.4E-02	5.24E-03	pCi/g	27.60%	(43.2)	(5.4)	6/14/97	10.17	G	ALPHA-SPEC	RICHRC5010
PU239/40	7.78E-03U	3.9E-03	3.9E-03	7.78E-03	pCi/g	27.60%	0.23	0.46	6/14/97	10.17	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	2.89E-01U	2.5E-01	3.0E-01	2.89E-01	pCi/g	N/A	-(5.3)	-(6.)	6/11/97	200.24	G	GAMMA	RICHRC5017
AM-241	1.37E-01U	8.4E-02	8.4E-02	1.37E-01	pCi/g	N/A	-0.18	-0.29	6/11/97	200.24	G	GAMMA	RICHRC5017
BI-207.	4.57E-02U	2.6E-02	2.6E-02	4.57E-02	pCi/g	N/A	-0.14	-0.24	6/11/97	200.24	G	GAMMA	RICHRC5017
BI-210M.	6.04E-02U	3.6E-02	3.6E-02	6.04E-02	pCi/g	N/A	0.36	0.61	6/11/97	200.24	G	GAMMA	RICHRC5017
CO-60.	5.30E-02U	3.7E-02	3.8E-02	5.30E-02	pCi/g	N/A	-0.76	-(1.1)	6/11/97	200.24	G	GAMMA	RICHRC5017
CS-137DA.	6.53E-02U	3.3E-02	3.3E-02	6.53E-02	pCi/g	N/A	0.88	(1.8)	6/11/97	200.24	G	GAMMA	RICHRC5017
K-40.	1.27E+01	1.5E+00	1.9E+00	N/A	pCi/g	N/A	N/A	(8.6)	6/11/97	200.24	G	GAMMA	RICHRC5017
RA-226DA.	4.80E-01	8.9E-02	1.0E-01	1.99E-01	pCi/g	N/A	(2.4)	(5.4)	6/11/97	200.24	G	GAMMA	RICHRC5017

Number of Results: 13

00008

Comments:

RT 6/9/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/4/1997 3:00:00 PM
LAB SAMPLE ID:	70610204	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	G520000037	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.42E-01	6.1E-02	6.7E-02	2.33E-02	pCi/g	96.80%	(10.4)	(4.)	6/13/97	2.01	G	ALPHA-SPEC	RICHRC5011
TH-230	3.32E-01	7.0E-02	8.1E-02	1.01E-02	pCi/g	96.80%	(32.9)	(4.7)	6/13/97	2.01	G	ALPHA-SPEC	RICHRC5011
TH-232	3.20E-01	6.9E-02	7.9E-02	1.50E-02	pCi/g	96.80%	(21.4)	(4.6)	6/13/97	2.01	G	ALPHA-SPEC	RICHRC5011
PU-238	6.09E-03U	3.4E-04	3.4E-04	6.09E-03	pCi/g	43.80%	-0.05	-0.87	6/14/97	10.34	G	ALPHA-SPEC	RICHRC5010
PU239/40	5.58E-03U	2.5E-03	2.5E-03	5.58E-03	pCi/g	43.80%	0.18	0.42	6/14/97	10.34	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	4.01E-01U	3.7E-01	4.8E-01	4.01E-01	pCi/g	N/A	-(7.8)	-(8.5)	6/11/97	176.33	G	GAMMA	RICHRC5017
AM-241	1.01E-01U	6.0E-02	6.0E-02	1.01E-01	pCi/g	N/A	0.08	0.14	6/11/97	176.33	G	GAMMA	RICHRC5017
BI-207.	5.10E-02U	3.3E-02	3.3E-02	5.10E-02	pCi/g	N/A	-0.6	-0.92	6/11/97	176.33	G	GAMMA	RICHRC5017
BI-210M.	7.58E-02U	4.6E-02	4.6E-02	7.58E-02	pCi/g	N/A	0.07	0.11	6/11/97	176.33	G	GAMMA	RICHRC5017
CO-60.	8.23E-02U	3.6E-02	3.7E-02	8.23E-02	pCi/g	N/A	0.61	(1.4)	6/11/97	176.33	G	GAMMA	RICHRC5017
CS-137DA.	6.76E-02U	4.1E-02	4.1E-02	6.76E-02	pCi/g	N/A	-0.45	-0.74	6/11/97	176.33	G	GAMMA	RICHRC5017
K-40.	7.24E+00	1.3E+00	1.5E+00	N/A	pCi/g	N/A	N/A	(5.4)	6/11/97	176.33	G	GAMMA	RICHRC5017
RA-226DA.	6.95E-01	1.2E-01	1.3E-01	2.56E-01	pCi/g	N/A	(2.7)	(6.)	6/11/97	176.33	G	GAMMA	RICHRC5017

Number of Results: 13

00009

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/4/1997 2:15:00 PM
LAB SAMPLE ID:	70610205	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	G415000036	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.08E-01	5.3E-02	5.8E-02	1.87E-02	pCi/g	96.70%	(11.1)	(3.9)	6/13/97	2.16	G	ALPHA-SPEC	RICHRC5011
TH-230	2.56E-01	5.8E-02	6.6E-02	1.50E-02	pCi/g	96.70%	(17.)	(4.4)	6/13/97	2.16	G	ALPHA-SPEC	RICHRC5011
TH-232	1.81E-01	4.9E-02	5.3E-02	1.32E-02	pCi/g	96.70%	(13.7)	(3.7)	6/13/97	2.16	G	ALPHA-SPEC	RICHRC5011
PU-238	6.39E-03U	5.5E-03	5.6E-03	6.39E-03	pCi/g	29.00%	0.73	0.84	6/14/97	11.68	G	ALPHA-SPEC	RICHRC5010
PU239/40	7.25E-03U	3.6E-04	3.6E-04	7.25E-03	pCi/g	29.00%	-0.04	-0.71	6/14/97	11.68	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	2.34E-01U	2.0E-01	2.3E-01	2.34E-01	pCi/g	N/A	-(5.1)	-(5.9)	6/11/97	286.12	G	GAMMA	RICHRC5017
AM-241	1.29E-01U	7.5E-02	7.5E-02	1.29E-01	pCi/g	N/A	0.38	0.66	6/11/97	286.12	G	GAMMA	RICHRC5017
BI-207.	3.44E-02U	1.9E-02	1.9E-02	3.44E-02	pCi/g	N/A	0.29	0.53	6/11/97	286.12	G	GAMMA	RICHRC5017
BI-210M.	4.15E-02U	2.3E-02	2.3E-02	4.15E-02	pCi/g	N/A	0.37	0.68	6/11/97	286.12	G	GAMMA	RICHRC5017
CO-60.	4.75E-02U	2.4E-02	2.4E-02	4.75E-02	pCi/g	N/A	0.29	0.56	6/11/97	286.12	G	GAMMA	RICHRC5017
CS-137DA.	4.07E-02U	2.6E-02	2.6E-02	4.07E-02	pCi/g	N/A	-0.38	-0.6	6/11/97	286.12	G	GAMMA	RICHRC5017
K-40.	7.44E+00	8.7E-01	1.1E+00	N/A	pCi/g	N/A	N/A	(8.5)	6/11/97	286.12	G	GAMMA	RICHRC5017
RA-226DA.	3.92E-01	7.0E-02	8.0E-02	1.51E-01	pCi/g	N/A	(2.6)	(5.6)	6/11/97	286.12	G	GAMMA	RICHRC5017

Number of Results: 13

00010

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 3:15:00 PM
LAB SAMPLE ID:	70610206	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	G301000016	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	1.47E-01	4.8E-02	5.1E-02	1.95E-02	pCi/g	89.70%	(7.6)	(3.1)	6/13/97	2.07	G	ALPHA-SPEC	RICHRC5011
TH-230	3.08E-01	6.9E-02	7.9E-02	2.06E-02	pCi/g	89.70%	(14.9)	(4.5)	6/13/97	2.07	G	ALPHA-SPEC	RICHRC5011
TH-232	2.19E-01	5.8E-02	6.4E-02	1.93E-02	pCi/g	89.70%	(11.4)	(3.8)	6/13/97	2.07	G	ALPHA-SPEC	RICHRC5011
PU-238	9.19E-02	2.3E-02	2.9E-02	6.97E-03	pCi/g	43.60%	(13.2)	(4.)	6/14/97	12.04	G	ALPHA-SPEC	RICHRC5010
PU239/40	3.78E-03U	2.8E-03	2.8E-03	3.78E-03	pCi/g	43.60%	0.37	0.5	6/14/97	12.04	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	2.96E-01U	1.9E-01	1.9E-01	2.96E-01	pCi/g	N/A	-0.61	-0.97	6/11/97	166.14	G	GAMMA	RICHRC5017
AM-241	2.72E-01U	1.5E-01	1.5E-01	2.72E-01	pCi/g	N/A	0.46	0.85	6/11/97	166.14	G	GAMMA	RICHRC5017
BI-207.	4.82E-02U	2.6E-02	2.6E-02	4.82E-02	pCi/g	N/A	0.2	0.37	6/11/97	166.14	G	GAMMA	RICHRC5017
BI-210M.	5.50E-02U	3.3E-02	3.3E-02	5.50E-02	pCi/g	N/A	-0.21	-0.35	6/11/97	166.14	G	GAMMA	RICHRC5017
CO-60.	6.97E-02U	3.5E-02	3.5E-02	6.97E-02	pCi/g	N/A	0.08	0.15	6/11/97	166.14	G	GAMMA	RICHRC5017
CS-137DA.	7.14E-02U	3.7E-02	3.8E-02	7.14E-02	pCi/g	N/A	0.34	0.64	6/11/97	166.14	G	GAMMA	RICHRC5017
K-40.	8.14E+00	1.3E+00	1.6E+00	N/A	pCi/g	N/A	N/A	(6.1)	6/11/97	166.14	G	GAMMA	RICHRC5017
RA-226DA.	5.18E-01	1.1E-01	1.2E-01	2.44E-01	pCi/g	N/A	(2.1)	(4.7)	6/11/97	166.14	G	GAMMA	RICHRC5017

Number of Results: 13

00011

Comments:

KCT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 2:25:00 PM
LAB SAMPLE ID:	70610207	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	H501000015	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	3.84E-01	7.3E-02	8.6E-02	2.42E-02	pCi/g	91.20%	(15.9)	(5.3)	6/13/97	2.24	G	ALPHA-SPEC	RICHRC5011
TH-230	2.06E-01	5.3E-02	5.8E-02	1.36E-02	pCi/g	91.20%	(15.1)	(3.9)	6/13/97	2.24	G	ALPHA-SPEC	RICHRC5011
TH-232	2.70E-01	6.1E-02	6.9E-02	1.55E-02	pCi/g	91.20%	(17.5)	(4.5)	6/13/97	2.24	G	ALPHA-SPEC	RICHRC5011
PU-238	1.29E-01	3.3E-02	4.3E-02	8.26E-03	pCi/g	35.60%	(15.6)	(4.)	6/14/97	10.66	G	ALPHA-SPEC	RICHRC5010
PU239/40	1.10E-02U	4.2E-03	4.2E-03	1.10E-02	pCi/g	35.60%	0.13	0.34	6/14/97	10.66	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.38E-01U	3.2E-01	3.6E-01	3.38E-01	pCi/g	N/A	-(4.9)	-(5.3)	6/11/97	152.67	G	GAMMA	RICHRC5017
AM-241	1.83E-01U	1.0E-01	1.1E-01	1.83E-01	pCi/g	N/A	0.49	0.86	6/11/97	152.67	G	GAMMA	RICHRC5017
BI-207.	6.72E-02U	3.5E-02	3.5E-02	6.72E-02	pCi/g	N/A	0.4	0.77	6/11/97	152.67	G	GAMMA	RICHRC5017
BI-210M.	7.98E-02U	4.5E-02	4.5E-02	7.98E-02	pCi/g	N/A	0.28	0.49	6/11/97	152.67	G	GAMMA	RICHRC5017
CO-60.	8.02E-02U	4.0E-02	4.0E-02	8.02E-02	pCi/g	N/A	0.17	0.34	6/11/97	152.67	G	GAMMA	RICHRC5017
CS-137DA.	6.94E-02U	4.0E-02	4.0E-02	6.94E-02	pCi/g	N/A	-0.1	-0.17	6/11/97	152.67	G	GAMMA	RICHRC5017
K-40.	1.26E+01	1.6E+00	2.1E+00	N/A	pCi/g	N/A	N/A	(7.7)	6/11/97	152.67	G	GAMMA	RICHRC5017
RA-226DA.	5.21E-01	1.1E-01	1.3E-01	2.55E-01	pCi/g	N/A	(2.)	(4.6)	6/11/97	152.67	G	GAMMA	RICHRC5017

Number of Results: 13

00012

Comments:

RET 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 2:00:00 PM
LAB SAMPLE ID:	70610208	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	H401000014	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	1.16E-01	4.2E-02	4.4E-02	2.48E-02	pCi/g	92.60%	(4.7)	(2.8)	6/13/97	2.2	G	ALPHA-SPEC	RICHRC5011
TH-230	1.60E-01	4.8E-02	5.2E-02	1.91E-02	pCi/g	92.60%	(8.4)	(3.3)	6/13/97	2.2	G	ALPHA-SPEC	RICHRC5011
TH-232	1.03E-01	3.8E-02	4.1E-02	1.44E-02	pCi/g	92.60%	(7.2)	(2.7)	6/13/97	2.2	G	ALPHA-SPEC	RICHRC5011
PU-238	3.33E-01	5.2E-02	9.4E-02	9.34E-03	pCi/g	29.20%	(35.7)	(6.4)	6/14/97	11.77	G	ALPHA-SPEC	RICHRC5010
PU239/40	9.33E-03U	8.2E-03	8.4E-03	9.33E-03	pCi/g	29.20%	0.84	0.96	6/14/97	11.77	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.79E-01U	4.2E-01	5.4E-01	3.79E-01	pCi/g	N/A	-(9.)	-(8.)	6/11/97	152.46	G	GAMMA	RICHRC5017
AM-241	3.84E-01U	2.3E-01	2.3E-01	3.84E-01	pCi/g	N/A	0.58	0.98	6/11/97	152.46	G	GAMMA	RICHRC5017
BI-207.	6.14E-02U	3.4E-02	3.4E-02	6.14E-02	pCi/g	N/A	0.12	0.21	6/11/97	152.46	G	GAMMA	RICHRC5017
BI-210M.	7.55E-02U	4.9E-02	4.9E-02	7.55E-02	pCi/g	N/A	-0.41	-0.62	6/11/97	152.46	G	GAMMA	RICHRC5017
CO-60.	8.44E-02U	5.0E-02	5.0E-02	8.44E-02	pCi/g	N/A	-0.11	-0.18	6/11/97	152.46	G	GAMMA	RICHRC5017
CS-137DA.	1.01E-01	6.5E-02	6.6E-02	N/A	pCi/g	N/A	N/A	(1.6)	6/11/97	152.46	G	GAMMA	RICHRC5017
K-40.	1.15E+01	1.5E+00	1.9E+00	N/A	pCi/g	N/A	N/A	(7.6)	6/11/97	152.46	G	GAMMA	RICHRC5017
RA-226DA.	6.00E-01	1.2E-01	1.4E-01	2.68E-01	pCi/g	N/A	(2.2)	(4.9)	6/11/97	152.46	G	GAMMA	RICHRC5017

Number of Results: 13

00013

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/4/1997 1:50:00 PM
LAB SAMPLE ID:	70610209	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	F417000035	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	1.68E-01	4.6E-02	5.0E-02	2.20E-02	pCi/g	98.80%	(7.7)	(3.6)	6/13/97	2.32	G	ALPHA-SPEC	RICHRC5011
TH-230	2.28E-01	5.3E-02	6.0E-02	1.24E-02	pCi/g	98.80%	(18.4)	(4.3)	6/13/97	2.32	G	ALPHA-SPEC	RICHRC5011
TH-232	1.29E-01	4.0E-02	4.3E-02	1.41E-02	pCi/g	98.80%	(9.2)	(3.2)	6/13/97	2.32	G	ALPHA-SPEC	RICHRC5011
PU-238	8.80E-03U	4.4E-04	4.4E-04	8.80E-03	pCi/g	36.70%	-0.04	-0.71	6/14/97	10.89	G	ALPHA-SPEC	RICHRC5010
PU239/40	7.75E-03U	3.1E-04	3.1E-04	7.75E-03	pCi/g	36.70%	-0.02	-0.5	6/14/97	10.89	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.60E-01U	3.3E-01	3.8E-01	3.60E-01	pCi/g	N/A	-(4.9)	-(5.3)	6/11/97	198.62	G	GAMMA	RICHRC5017
AM-241	5.20E-01U	3.2E-01	3.2E-01	5.20E-01	pCi/g	N/A	0.24	0.39	6/11/97	198.62	G	GAMMA	RICHRC5017
BI-207.	4.32E-02U	2.6E-02	2.6E-02	4.32E-02	pCi/g	N/A	-0.3	-0.51	6/11/97	198.62	G	GAMMA	RICHRC5017
BI-210M.	7.17E-02U	4.3E-02	4.3E-02	7.17E-02	pCi/g	N/A	-0.17	-0.28	6/11/97	198.62	G	GAMMA	RICHRC5017
CO-60.	4.95E-02U	2.8E-02	2.8E-02	4.95E-02	pCi/g	N/A	-0.15	-0.26	6/11/97	198.62	G	GAMMA	RICHRC5017
CS-137DA.	5.64E-02U	3.0E-02	3.0E-02	5.64E-02	pCi/g	N/A	0.25	0.47	6/11/97	198.62	G	GAMMA	RICHRC5017
K-40.	9.22E+00	1.1E+00	1.5E+00	N/A	pCi/g	N/A	N/A	(8.1)	6/11/97	198.62	G	GAMMA	RICHRC5017
RA-226DA.	6.15E-01	1.1E-01	1.3E-01	N/A	pCi/g	N/A	N/A	(5.5)	6/11/97	198.62	G	GAMMA	RICHRC5017

Number of Results: 13

00014

Comments:

KT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/4/1997 3:35:00 PM
LAB SAMPLE ID:	70610210	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	F520000038	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.03E-01	5.4E-02	6.0E-02	2.48E-02	pCi/g	96.60%	(8.2)	(3.7)	6/13/97	2.11	G	ALPHA-SPEC	RICHRC5011
TH-230	3.97E-01	7.5E-02	8.9E-02	9.67E-03	pCi/g	96.60%	(41.)	(5.3)	6/13/97	2.11	G	ALPHA-SPEC	RICHRC5011
TH-232	2.03E-01	5.4E-02	5.9E-02	1.44E-02	pCi/g	96.60%	(14.2)	(3.8)	6/13/97	2.11	G	ALPHA-SPEC	RICHRC5011
PU-238	8.91E-03U	5.3E-04	5.5E-04	8.91E-03	pCi/g	40.40%	-0.06	-1.	6/14/97	11.33	G	ALPHA-SPEC	RICHRC5010
PU239/40	6.71E-03U	2.7E-04	2.7E-04	6.71E-03	pCi/g	40.40%	-0.02	-0.5	6/14/97	11.33	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.31E-01U	2.6E-01	3.0E-01	3.31E-01	pCi/g	N/A	-(4.3)	-(5.4)	6/11/97	195.66	G	GAMMA	RICHRC5017
AM-241	8.51E-02U	4.9E-02	4.9E-02	8.51E-02	pCi/g	N/A	0.31	0.54	6/11/97	195.66	G	GAMMA	RICHRC5017
BI-207.	4.99E-02U	2.7E-02	2.7E-02	4.99E-02	pCi/g	N/A	0.33	0.61	6/11/97	195.66	G	GAMMA	RICHRC5017
BI-210M.	7.02E-02U	4.3E-02	4.3E-02	7.02E-02	pCi/g	N/A	0.	-0.01	6/11/97	195.66	G	GAMMA	RICHRC5017
CO-60.	6.52E-02U	3.0E-02	3.0E-02	6.52E-02	pCi/g	N/A	0.47	(1.)	6/11/97	195.66	G	GAMMA	RICHRC5017
CS-137DA.	5.07E-02U	3.3E-02	3.3E-02	5.07E-02	pCi/g	N/A	-0.66	-(1.)	6/11/97	195.66	G	GAMMA	RICHRC5017
K-40.	9.94E+00	1.3E+00	1.7E+00	N/A	pCi/g	N/A	N/A	(7.5)	6/11/97	195.66	G	GAMMA	RICHRC5017
RA-226DA.	6.45E-01	1.3E-01	1.5E-01	N/A	pCi/g	N/A	N/A	(4.9)	6/11/97	195.66	G	GAMMA	RICHRC5017

Number of Results: 13

00015

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 11:45:00 AM
LAB SAMPLE ID:	70610211	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	F601000011	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.86E-01	7.6E-02	8.5E-02	3.77E-02	pCi/g	90.10%	(7.6)	(3.8)	6/13/97	2.03	G	ALPHA-SPEC	RICHRC5011
TH-230	3.32E-01	8.1E-02	9.2E-02	1.97E-02	pCi/g	90.10%	(16.9)	(4.1)	6/13/97	2.03	G	ALPHA-SPEC	RICHRC5011
TH-232	3.57E-01	8.4E-02	9.6E-02	1.32E-02	pCi/g	90.10%	(27.)	(4.3)	6/13/97	2.03	G	ALPHA-SPEC	RICHRC5011
PU-238	2.49E-01	3.9E-02	6.3E-02	4.03E-03	pCi/g	45.90%	(61.7)	(6.5)	6/14/97	11.19	G	ALPHA-SPEC	RICHRC5010
PU239/40	7.43E-03U	5.2E-03	5.2E-03	7.43E-03	pCi/g	45.90%	0.55	0.79	6/14/97	11.19	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.80E-01U	3.4E-01	4.2E-01	3.80E-01	pCi/g	N/A	-(6.5)	-(7.2)	6/11/97	195.07	G	GAMMA	RICHRC5017
AM-241	1.96E-01U	1.1E-01	1.1E-01	1.96E-01	pCi/g	N/A	0.32	0.55	6/11/97	195.07	G	GAMMA	RICHRC5017
BI-207.	4.88E-02U	2.7E-02	2.7E-02	4.88E-02	pCi/g	N/A	0.26	0.48	6/11/97	195.07	G	GAMMA	RICHRC5017
BI-210M.	6.66E-02U	4.3E-02	4.3E-02	6.66E-02	pCi/g	N/A	-0.46	-0.72	6/11/97	195.07	G	GAMMA	RICHRC5017
CO-60.	7.41E-02U	4.0E-02	4.1E-02	7.41E-02	pCi/g	N/A	0.07	0.13	6/11/97	195.07	G	GAMMA	RICHRC5017
CS-137DA.	7.85E-02U	4.3E-02	4.4E-02	7.85E-02	pCi/g	N/A	0.49	0.88	6/11/97	195.07	G	GAMMA	RICHRC5017
K-40.	1.43E+01	1.3E+00	2.0E+00	N/A	pCi/g	N/A	N/A	(10.7)	6/11/97	195.07	G	GAMMA	RICHRC5017
RA-226DA.	4.52E-01	1.0E-01	1.1E-01	2.12E-01	pCi/g	N/A	(2.1)	(4.4)	6/11/97	195.07	G	GAMMA	RICHRC5017

Number of Results: 13

00016

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/3/1997 8:31:00 AM
LAB SAMPLE ID:	70610212	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	E215000024	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.39E-01	6.1E-02	6.9E-02	3.35E-02	pCi/g	98.40%	(7.1)	(3.9)	6/13/97	2.55	G	ALPHA-SPEC	RICHRC5011
TH-230	4.58E-01	8.3E-02	1.0E-01	1.52E-02	pCi/g	98.40%	(30.1)	(5.5)	6/13/97	2.55	G	ALPHA-SPEC	RICHRC5011
TH-232	1.82E-01	5.3E-02	5.8E-02	1.03E-02	pCi/g	98.40%	(17.7)	(3.5)	6/13/97	2.55	G	ALPHA-SPEC	RICHRC5011
PU-238	4.45E-03U	3.3E-03	3.3E-03	4.45E-03	pCi/g	40.70%	0.37	0.5	6/14/97	11.39	G	ALPHA-SPEC	RICHRC5010
PU239/40	9.29E-03U	9.3E-04	9.4E-04	9.29E-03	pCi/g	40.70%	-0.07	-0.71	6/14/97	11.39	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	2.66E-01U	1.8E-01	1.8E-01	2.66E-01	pCi/g	N/A	-(1.)	-(1.5)	6/11/97	199.31	G	GAMMA	RICHRC5017
AM-241	2.46E-01U	1.5E-01	1.5E-01	2.46E-01	pCi/g	N/A	0.13	0.21	6/11/97	199.31	G	GAMMA	RICHRC5017
BI-207.	4.92E-02U	2.7E-02	2.7E-02	4.92E-02	pCi/g	N/A	0.07	0.13	6/11/97	199.31	G	GAMMA	RICHRC5017
BI-210M.	6.34E-02U	3.6E-02	3.6E-02	6.34E-02	pCi/g	N/A	0.27	0.48	6/11/97	199.31	G	GAMMA	RICHRC5017
CO-60.	5.58E-02U	2.6E-02	2.6E-02	5.58E-02	pCi/g	N/A	0.23	0.49	6/11/97	199.31	G	GAMMA	RICHRC5017
CS-137DA.	5.21E-02U	3.1E-02	3.1E-02	5.21E-02	pCi/g	N/A	-0.07	-0.11	6/11/97	199.31	G	GAMMA	RICHRC5017
K-40.	8.94E+00	1.2E+00	1.5E+00	N/A	pCi/g	N/A	N/A	(7.2)	6/11/97	199.31	G	GAMMA	RICHRC5017
RA-226DA.	6.07E-01	1.3E-01	1.4E-01	N/A	pCi/g	N/A	N/A	(4.7)	6/11/97	199.31	G	GAMMA	RICHRC5017

Number of Results: 13

00017

KT 6/17/97

Comments:

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/3/1997 7:45:00 AM
LAB SAMPLE ID:	70610213	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	E320000022	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.94E-01	7.2E-02	8.1E-02	3.64E-02	pCi/g	99.10%	(8.1)	(4.1)	6/13/97	2.44	G	ALPHA-SPEC	RICHRC5011
TH-230	3.23E-01	7.4E-02	8.5E-02	1.14E-02	pCi/g	99.10%	(28.5)	(4.4)	6/13/97	2.44	G	ALPHA-SPEC	RICHRC5011
TH-232	3.02E-01	7.1E-02	8.2E-02	1.14E-02	pCi/g	99.10%	(26.6)	(4.2)	6/13/97	2.44	G	ALPHA-SPEC	RICHRC5011
PU-238	3.93E-03U	4.1E-03	4.1E-03	3.93E-03	pCi/g	49.80%	0.74	0.71	6/14/97	10.79	G	ALPHA-SPEC	RICHRC5010
PU239/40	3.93E-03U	0.0E+00	4.4E-03	3.93E-03	pCi/g	49.80%	0.	N/A	6/14/97	10.79	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.06E-01U	2.4E-01	2.7E-01	3.06E-01	pCi/g	N/A	-(3.4)	-(4.3)	6/11/97	207.06	G	GAMMA	RICHRC5017
AM-241	1.43E-01U	8.9E-02	9.0E-02	1.43E-01	pCi/g	N/A	-0.4	-0.65	6/11/97	207.06	G	GAMMA	RICHRC5017
BI-207.	4.50E-02U	2.3E-02	2.3E-02	4.50E-02	pCi/g	N/A	0.43	0.84	6/11/97	207.06	G	GAMMA	RICHRC5017
BI-210M.	5.94E-02U	3.8E-02	3.8E-02	5.94E-02	pCi/g	N/A	-0.43	-0.67	6/11/97	207.06	G	GAMMA	RICHRC5017
CO-60.	6.08E-02U	2.8E-02	2.8E-02	6.08E-02	pCi/g	N/A	0.4	0.86	6/11/97	207.06	G	GAMMA	RICHRC5017
CS-137DA.	5.56E-02U	3.2E-02	3.2E-02	5.56E-02	pCi/g	N/A	-0.07	-0.12	6/11/97	207.06	G	GAMMA	RICHRC5017
K-40.	9.46E+00	1.2E+00	1.5E+00	N/A	pCi/g	N/A	N/A	(8.1)	6/11/97	207.06	G	GAMMA	RICHRC5017
RA-226DA.	6.46E-01	9.9E-02	1.2E-01	2.29E-01	pCi/g	N/A	(2.8)	(6.5)	6/11/97	207.06	G	GAMMA	RICHRC5017

Number of Results: 13

OCC18

Comments:

KT
6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/3/1997 9:50:00 AM
LAB SAMPLE ID:	70610214	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	E416000027	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.29E-01	6.6E-02	7.2E-02	4.05E-02	pCi/g	96.20%	(5.7)	(3.5)	6/13/97	2.18	G	ALPHA-SPEC	RICHRC5011
TH-230	3.43E-01	7.9E-02	9.1E-02	1.82E-02	pCi/g	96.20%	(18.9)	(4.4)	6/13/97	2.18	G	ALPHA-SPEC	RICHRC5011
TH-232	1.53E-01	5.3E-02	5.6E-02	1.82E-02	pCi/g	96.20%	(8.4)	(2.9)	6/13/97	2.18	G	ALPHA-SPEC	RICHRC5011
PU-238	8.17E-03U	3.3E-04	3.3E-04	8.17E-03	pCi/g	34.70%	-0.02	-0.5	6/14/97	11.04	G	ALPHA-SPEC	RICHRC5010
PU239/40	1.48E-02U	1.1E-03	1.2E-03	1.48E-02	pCi/g	34.70%	-0.13	-(1.7)	6/14/97	11.04	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.06E-01U	2.9E-01	3.3E-01	3.06E-01	pCi/g	N/A	-(5.5)	-(5.8)	6/11/97	202.37	G	GAMMA	RICHRC5017
AM-241	2.83E-01U	1.8E-01	1.8E-01	2.83E-01	pCi/g	N/A	0.19	0.31	6/11/97	202.37	G	GAMMA	RICHRC5017
BI-207.	4.86E-02U	2.9E-02	2.9E-02	4.86E-02	pCi/g	N/A	-0.2	-0.33	6/11/97	202.37	G	GAMMA	RICHRC5017
BI-210M.	6.48E-02U	4.4E-02	4.4E-02	6.48E-02	pCi/g	N/A	-0.68	-1.	6/11/97	202.37	G	GAMMA	RICHRC5017
CO-60.	7.71E-02U	4.4E-02	4.4E-02	7.71E-02	pCi/g	N/A	0.06	0.11	6/11/97	202.37	G	GAMMA	RICHRC5017
CS-137DA.	5.86E-02U	3.4E-02	3.5E-02	5.86E-02	pCi/g	N/A	0.12	0.2	6/11/97	202.37	G	GAMMA	RICHRC5017
K-40.	1.03E+01	1.2E+00	1.5E+00	N/A	pCi/g	N/A	N/A	(8.9)	6/11/97	202.37	G	GAMMA	RICHRC5017
RA-226DA.	6.60E-01	1.4E-01	1.5E-01	N/A	pCi/g	N/A	N/A	(4.8)	6/11/97	202.37	G	GAMMA	RICHRC5017

Number of Results: 13

OC019

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/4/1997 11:30:00 AM
LAB SAMPLE ID:	70610215	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	E525000034	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.49E-01	6.3E-02	7.1E-02	3.16E-02	pCi/g	95.80%	(7.9)	(3.9)	6/13/97	2.44	G	ALPHA-SPEC	RICHRC5011
TH-230	4.00E-01	7.9E-02	9.5E-02	1.58E-02	pCi/g	95.80%	(25.3)	(5.)	6/13/97	2.44	G	ALPHA-SPEC	RICHRC5011
TH-232	3.02E-01	6.9E-02	7.9E-02	1.58E-02	pCi/g	95.80%	(19.1)	(4.4)	6/13/97	2.44	G	ALPHA-SPEC	RICHRC5011
PU-238	6.63E-03U	3.7E-04	3.7E-04	6.63E-03	pCi/g	52.00%	-0.05	-0.87	6/14/97	10.59	G	ALPHA-SPEC	RICHRC5010
PU239/40	3.60E-03U	0.0E+00	4.0E-03	3.60E-03	pCi/g	52.00%	0.	N/A	6/14/97	10.59	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	4.07E-01U	3.6E-01	4.1E-01	4.07E-01	pCi/g	N/A	-(5.)	-(5.7)	6/11/97	205.89	G	GAMMA	RICHRC5017
AM-241	5.44E-01U	3.4E-01	3.4E-01	5.44E-01	pCi/g	N/A	0.11	0.17	6/11/97	205.89	G	GAMMA	RICHRC5017
BI-207.	4.78E-02U	2.8E-02	2.8E-02	4.78E-02	pCi/g	N/A	0.16	0.27	6/11/97	205.89	G	GAMMA	RICHRC5017
BI-210M.	6.90E-02U	4.2E-02	4.2E-02	6.90E-02	pCi/g	N/A	-0.15	-0.24	6/11/97	205.89	G	GAMMA	RICHRC5017
CO-60.	6.55E-02U	3.7E-02	3.7E-02	6.55E-02	pCi/g	N/A	-0.11	-0.19	6/11/97	205.89	G	GAMMA	RICHRC5017
CS-137DA.	5.90E-02U	3.7E-02	3.7E-02	5.90E-02	pCi/g	N/A	-0.67	-(1.1)	6/11/97	205.89	G	GAMMA	RICHRC5017
K-40.	1.24E+01	1.3E+00	1.8E+00	N/A	pCi/g	N/A	N/A	(9.8)	6/11/97	205.89	G	GAMMA	RICHRC5017
RA-226DA.	6.35E-01	1.1E-01	1.2E-01	2.35E-01	pCi/g	N/A	(2.7)	(5.9)	6/11/97	205.89	G	GAMMA	RICHRC5017

Number of Results: 13

00020

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/4/1997 4:40:00 PM
LAB SAMPLE ID:	70610216	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	E619000039	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	1.33E+00	1.5E-01	2.3E-01	3.35E-02	pCi/g	96.20%	(39.7)	(8.8)	6/13/97	2.01	G	ALPHA-SPEC	RICHRC5011
TH-230	4.42E-01	8.7E-02	1.0E-01	1.71E-02	pCi/g	96.20%	(25.8)	(5.1)	6/13/97	2.01	G	ALPHA-SPEC	RICHRC5011
TH-232	9.65E-01	1.3E-01	1.8E-01	1.94E-02	pCi/g	96.20%	(49.7)	(7.5)	6/13/97	2.01	G	ALPHA-SPEC	RICHRC5011
PU-238	1.93E-02	1.0E-02	1.1E-02	3.73E-03	pCi/g	34.10%	(5.2)	(1.9)	6/14/97	10.5	G	ALPHA-SPEC	RICHRC5010
PU239/40	8.16E-03U	3.9E-03	4.0E-03	8.16E-03	pCi/g	34.10%	0.26	0.53	6/14/97	10.5	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	1.96E+00	3.3E-01	3.9E-01	N/A	pCi/g	N/A	N/A	(5.9)	6/11/97	212.6	G	GAMMA	RICHRC5017
AM-241	1.77E-01U	1.1E-01	1.1E-01	1.77E-01	pCi/g	N/A	0.39	0.65	6/11/97	212.6	G	GAMMA	RICHRC5017
BI-207.	5.07E-02U	2.7E-02	2.7E-02	5.07E-02	pCi/g	N/A	0.39	0.73	6/11/97	212.6	G	GAMMA	RICHRC5017
BI-210M.	6.92E-02U	4.3E-02	4.3E-02	6.92E-02	pCi/g	N/A	-0.19	-0.31	6/11/97	212.6	G	GAMMA	RICHRC5017
CO-60.	5.03E-02U	2.3E-02	2.4E-02	5.03E-02	pCi/g	N/A	0.27	0.59	6/11/97	212.6	G	GAMMA	RICHRC5017
CS-137DA.	6.72E-02U	3.7E-02	3.7E-02	6.72E-02	pCi/g	N/A	0.46	0.82	6/11/97	212.6	G	GAMMA	RICHRC5017
K-40.	1.07E+01	1.2E+00	1.6E+00	N/A	pCi/g	N/A	N/A	(8.8)	6/11/97	212.6	G	GAMMA	RICHRC5017
RA-226DA.	3.47E-01	1.1E-01	1.1E-01	N/A	pCi/g	N/A	N/A	(3.2)	6/11/97	212.6	G	GAMMA	RICHRC5017

Number of Results: 13

00021

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/4/1997 10:20:00 AM
LAB SAMPLE ID:	70610217	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	D627000033	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	4.57E-01	8.8E-02	1.1E-01	3.31E-02	pCi/g	92.60%	(13.8)	(5.2)	6/13/97	2.31	G	ALPHA-SPEC	RICHRC5011
TH-230	3.57E-01	7.7E-02	9.0E-02	1.69E-02	pCi/g	92.60%	(21.1)	(4.6)	6/13/97	2.31	G	ALPHA-SPEC	RICHRC5011
TH-232	4.07E-01	8.3E-02	9.8E-02	1.69E-02	pCi/g	92.60%	(24.1)	(4.9)	6/13/97	2.31	G	ALPHA-SPEC	RICHRC5011
PU-238	3.55E-03U	2.6E-03	2.6E-03	3.55E-03	pCi/g	37.40%	0.37	0.5	6/14/97	10.51	G	ALPHA-SPEC	RICHRC5010
PU239/40	5.27E-03U	2.1E-04	2.1E-04	5.27E-03	pCi/g	37.40%	-0.02	-0.5	6/14/97	10.51	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.74E-01U	3.2E-01	3.9E-01	3.74E-01	pCi/g	N/A	-(6.)	-(7.1)	6/11/97	193.38	G	GAMMA	RICHRC5017
AM-241	9.03E-02U	5.6E-02	5.6E-02	9.03E-02	pCi/g	N/A	-0.38	-0.61	6/11/97	193.38	G	GAMMA	RICHRC5017
BI-207.	5.19E-02U	2.9E-02	2.9E-02	5.19E-02	pCi/g	N/A	0.32	0.58	6/11/97	193.38	G	GAMMA	RICHRC5017
BI-210M.	7.38E-02U	4.3E-02	4.3E-02	7.38E-02	pCi/g	N/A	0.63	(1.1)	6/11/97	193.38	G	GAMMA	RICHRC5017
CO-60.	7.65E-02U	3.6E-02	3.6E-02	7.65E-02	pCi/g	N/A	0.49	(1.)	6/11/97	193.38	G	GAMMA	RICHRC5017
CS-137DA.	6.09E-02U	3.1E-02	3.1E-02	6.09E-02	pCi/g	N/A	0.47	0.91	6/11/97	193.38	G	GAMMA	RICHRC5017
K-40.	1.26E+01	1.4E+00	1.9E+00	N/A	pCi/g	N/A	N/A	(9.2)	6/11/97	193.38	G	GAMMA	RICHRC5017
RA-226DA.	5.95E-01	1.2E-01	1.3E-01	N/A	pCi/g	N/A	N/A	(5.)	6/11/97	193.38	G	GAMMA	RICHRC5017

Number of Results: 13

000022

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/3/1997 10:45:00 AM
LAB SAMPLE ID:	70610218	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	D525000029	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	3.55E-01	7.0E-02	8.2E-02	2.10E-02	pCi/g	91.50%	(16.9)	(5.1)	6/13/97	2.2	G	ALPHA-SPEC	RICHRC5011
TH-230	3.62E-01	7.0E-02	8.3E-02	1.68E-02	pCi/g	91.50%	(21.6)	(5.2)	6/13/97	2.2	G	ALPHA-SPEC	RICHRC5011
TH-232	3.43E-01	6.8E-02	8.0E-02	1.35E-02	pCi/g	91.50%	(25.3)	(5.)	6/13/97	2.2	G	ALPHA-SPEC	RICHRC5011
PU-238	1.09E-02U	4.4E-03	4.4E-03	1.09E-02	pCi/g	22.70%	0.15	0.38	6/14/97	10.29	G	ALPHA-SPEC	RICHRC5010
PU239/40	9.98E-03U	4.4E-03	4.4E-03	9.98E-03	pCi/g	22.70%	0.18	0.42	6/14/97	10.29	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	2.64E-01U	1.9E-01	1.9E-01	2.64E-01	pCi/g	N/A	-(1.9)	-(2.6)	6/11/97	205.91	G	GAMMA	RICHRC5017
AM-241	2.59E-01U	1.5E-01	1.5E-01	2.59E-01	pCi/g	N/A	0.24	0.42	6/11/97	205.91	G	GAMMA	RICHRC5017
BI-207.	4.73E-02U	2.6E-02	2.6E-02	4.73E-02	pCi/g	N/A	0.16	0.29	6/11/97	205.91	G	GAMMA	RICHRC5017
BI-210M.	6.03E-02U	3.5E-02	3.5E-02	6.03E-02	pCi/g	N/A	0.05	0.09	6/11/97	205.91	G	GAMMA	RICHRC5017
CO-60.	5.22E-02U	2.9E-02	2.9E-02	5.22E-02	pCi/g	N/A	-0.24	-0.42	6/11/97	205.91	G	GAMMA	RICHRC5017
CS-137DA.	5.58E-02U	3.4E-02	3.4E-02	5.58E-02	pCi/g	N/A	-0.11	-0.18	6/11/97	205.91	G	GAMMA	RICHRC5017
K-40.	1.04E+01	1.2E+00	1.6E+00	N/A	pCi/g	N/A	N/A	(8.6)	6/11/97	205.91	G	GAMMA	RICHRC5017
RA-226DA.	4.58E-01	9.7E-02	1.1E-01	2.10E-01	pCi/g	N/A	(2.2)	(4.7)	6/11/97	205.91	G	GAMMA	RICHRC5017

Number of Results: 13

000023

Comments:

RT 6/19/97

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/3/1997 10:15:00 AM
LAB SAMPLE ID:	70610219	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	D419000028	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	1.86E-01	5.3E-02	5.8E-02	1.87E-02	pCi/g	95.70%	(10.)	(3.5)	6/13/97	2.02	G	ALPHA-SPEC	RICHRC5011
TH-230	3.92E-01	7.6E-02	9.0E-02	1.85E-02	pCi/g	95.70%	(21.2)	(5.1)	6/13/97	2.02	G	ALPHA-SPEC	RICHRC5011
TH-232	1.51E-01	4.7E-02	5.1E-02	1.85E-02	pCi/g	95.70%	(8.2)	(3.2)	6/13/97	2.02	G	ALPHA-SPEC	RICHRC5011
PU-238	3.88E-03U	1.9E-03	1.9E-03	3.88E-03	pCi/g	57.40%	0.23	0.46	6/14/97	10.38	G	ALPHA-SPEC	RICHRC5010
PU239/40	4.41E-03U	2.2E-04	2.2E-04	4.41E-03	pCi/g	57.40%	-0.04	-0.71	6/14/97	10.38	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	2.95E-01U	2.5E-01	2.7E-01	2.95E-01	pCi/g	N/A	-(3.8)	-(4.5)	6/11/97	196.08	G	GAMMA	RICHRC5017
AM-241	1.59E-01U	9.7E-02	9.7E-02	1.59E-01	pCi/g	N/A	-0.04	-0.07	6/11/97	196.08	G	GAMMA	RICHRC5017
BI-207.	5.48E-02U	2.8E-02	2.8E-02	5.48E-02	pCi/g	N/A	0.52	(1.)	6/11/97	196.08	G	GAMMA	RICHRC5017
BI-210M.	6.17E-02U	3.8E-02	3.8E-02	6.17E-02	pCi/g	N/A	-0.13	-0.22	6/11/97	196.08	G	GAMMA	RICHRC5017
CO-60.	6.13E-02U	3.9E-02	3.9E-02	6.13E-02	pCi/g	N/A	-0.64	-(1.)	6/11/97	196.08	G	GAMMA	RICHRC5017
CS-137DA.	6.13E-02U	3.8E-02	3.8E-02	6.13E-02	pCi/g	N/A	-0.31	-0.5	6/11/97	196.08	G	GAMMA	RICHRC5017
K-40.	1.01E+01	1.3E+00	1.6E+00	N/A	pCi/g	N/A	N/A	(7.8)	6/11/97	196.08	G	GAMMA	RICHRC5017
RA-226DA.	6.20E-01	1.0E-01	1.2E-01	2.35E-01	pCi/g	N/A	(2.6)	(6.)	6/11/97	196.08	G	GAMMA	RICHRC5017

Number of Results: 13

00024

RT
6/19/97

Comments:

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 5:00:00 PM
LAB SAMPLE ID:	70610220	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	D320000020	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.20E-01	5.2E-02	5.8E-02	2.00E-02	pCi/g	97.40%	(11.)	(4.3)	6/13/97	2.4	G	ALPHA-SPEC	RICHRC5011
TH-230	3.56E-01	6.5E-02	7.8E-02	1.19E-02	pCi/g	97.40%	(29.8)	(5.5)	6/13/97	2.4	G	ALPHA-SPEC	RICHRC5011
TH-232	1.15E-01	3.7E-02	4.0E-02	1.36E-02	pCi/g	97.40%	(8.5)	(3.1)	6/13/97	2.4	G	ALPHA-SPEC	RICHRC5011
PU-238	7.21E-03U	4.0E-04	4.1E-04	7.21E-03	pCi/g	47.20%	-0.05	-0.87	6/14/97	10.85	G	ALPHA-SPEC	RICHRC5010
PU239/40	3.91E-03U	0.0E+00	4.3E-03	3.91E-03	pCi/g	47.20%	0.	N/A	6/14/97	10.85	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	3.16E-01U	2.8E-01	3.2E-01	3.16E-01	pCi/g	N/A	-(4.5)	-(5.1)	6/11/97	191.84	G	GAMMA	RICHRC5017
AM-241	2.81E-01U	1.9E-01	1.9E-01	2.81E-01	pCi/g	N/A	-0.35	-0.52	6/11/97	191.84	G	GAMMA	RICHRC5017
BI-207.	5.02E-02U	2.9E-02	2.9E-02	5.02E-02	pCi/g	N/A	0.	0.	6/11/97	191.84	G	GAMMA	RICHRC5017
BI-210M.	6.30E-02U	4.2E-02	4.2E-02	6.30E-02	pCi/g	N/A	-0.77	-(1.2)	6/11/97	191.84	G	GAMMA	RICHRC5017
CO-60.	7.56E-02U	4.1E-02	4.1E-02	7.56E-02	pCi/g	N/A	0.24	0.44	6/11/97	191.84	G	GAMMA	RICHRC5017
CS-137DA.	6.24E-02U	3.8E-02	3.8E-02	6.24E-02	pCi/g	N/A	-0.28	-0.46	6/11/97	191.84	G	GAMMA	RICHRC5017
K-40.	9.52E+00	1.2E+00	1.6E+00	N/A	pCi/g	N/A	N/A	(7.6)	6/11/97	191.84	G	GAMMA	RICHRC5017
RA-226DA.	4.59E-01	1.2E-01	1.3E-01	N/A	pCi/g	N/A	N/A	(3.7)	6/11/97	191.84	G	GAMMA	RICHRC5017

Number of Results: 13

00025

RT
6/19/97

Comments:

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 9:00:00 AM
LAB SAMPLE ID:	70610221	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	D215000025	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.60E-01	5.8E-02	6.7E-02	2.29E-02	pCi/g	89.50%	(11.3)	(4.4)	6/13/97	2.55	G	ALPHA-SPEC	RICHRC5011
TH-230	3.19E-01	6.4E-02	7.5E-02	1.71E-02	pCi/g	89.50%	(18.7)	(5.)	6/13/97	2.55	G	ALPHA-SPEC	RICHRC5011
TH-232	2.63E-01	5.8E-02	6.7E-02	1.29E-02	pCi/g	89.50%	(20.4)	(4.5)	6/13/97	2.55	G	ALPHA-SPEC	RICHRC5011
PU-238	5.41E-03U	2.2E-04	2.2E-04	5.41E-03	pCi/g	54.50%	-0.02	-0.5	6/14/97	10.2	G	ALPHA-SPEC	RICHRC5010
PU239/40	7.18E-03U	4.3E-04	4.4E-04	7.18E-03	pCi/g	54.50%	-0.06	-1.	6/14/97	10.2	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	4.14E-01U	3.5E-01	4.0E-01	4.14E-01	pCi/g	N/A	-(4.5)	-(5.2)	6/11/97	210.0	G	GAMMA	RICHRC5017
AM-241	5.27E-01U	3.3E-01	3.3E-01	5.27E-01	pCi/g	N/A	0.15	0.23	6/11/97	210.0	G	GAMMA	RICHRC5017
BI-207.	5.02E-02U	2.5E-02	2.5E-02	5.02E-02	pCi/g	N/A	0.85	(1.7)	6/11/97	210.0	G	GAMMA	RICHRC5017
BI-210M.	6.88E-02U	4.5E-02	4.5E-02	6.88E-02	pCi/g	N/A	-0.53	-0.81	6/11/97	210.0	G	GAMMA	RICHRC5017
CO-60.	6.63E-02U	4.1E-02	4.1E-02	6.63E-02	pCi/g	N/A	-0.49	-0.79	6/11/97	210.0	G	GAMMA	RICHRC5017
CS-137DA.	5.42E-02U	3.3E-02	3.3E-02	5.42E-02	pCi/g	N/A	-0.28	-0.47	6/11/97	210.0	G	GAMMA	RICHRC5017
K-40.	1.18E+01	1.2E+00	1.7E+00	N/A	pCi/g	N/A	N/A	(9.9)	6/11/97	210.0	G	GAMMA	RICHRC5017
RA-226DA.	4.77E-01	1.2E-01	1.3E-01	N/A	pCi/g	N/A	N/A	(3.9)	6/11/97	210.0	G	GAMMA	RICHRC5017

Number of Results: 13

92000

Comments:

RT
6/19/97

FORM II

Date: 6/17/1997

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 3:40:00 PM
LAB SA ID/ORIG ID:	R0610202 / 70610202	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	F201000017	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	ORIG RESULT	RPD	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
AC-227DA.	3.76E-01U	3.5E-01	4.1E-01	3.76E-01	pCi/g	N/A	-2.08E+00	4.24%	6/11/97	208.35	G	GAMMA	RICHRC5017
AM-241	4.85E-01U	3.0E-01	3.0E-01	4.85E-01	pCi/g	N/A	1.29E-02	167.44%	6/11/97	208.35	G	GAMMA	RICHRC5017
BI-207.	5.01E-02U	2.8E-02	2.8E-02	5.01E-02	pCi/g	N/A	1.71E-03	147.96%	6/11/97	208.35	G	GAMMA	RICHRC5017
BI-210M.	6.87E-02U	4.2E-02	4.2E-02	6.87E-02	pCi/g	N/A	-1.97E-03	141.50%	6/11/97	208.35	G	GAMMA	RICHRC5017
CO-60.	6.55E-02U	3.9E-02	3.9E-02	6.55E-02	pCi/g	N/A	3.39E-02	876.73%	6/11/97	208.35	G	GAMMA	RICHRC5017
CS-137DA.	5.73E-02U	3.2E-02	3.2E-02	5.73E-02	pCi/g	N/A	-1.86E-02	635.30%	6/11/97	208.35	G	GAMMA	RICHRC5017
K-40.	1.03E+01	1.2E+00	1.6E+00	N/A	pCi/g	N/A	1.16E+01	11.40%	6/11/97	208.35	G	GAMMA	RICHRC5017
RA-226DA.	5.57E-01	1.2E-01	1.3E-01	N/A	pCi/g	N/A	7.03E-01	23.15%	6/11/97	208.35	G	GAMMA	RICHRC5017

Number of Results: 8

00028

Comments:

FORM II

Date: 6/17/1997

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/3/1997 9:25:00 AM
LAB SA ID/ORIG ID:	R0610201 / 70610201	REPORT NBR:	3023	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	F316000026	ORDER NBR:		MATRIX:	SOIL

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	ORIG RESULT	RPD	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	1.63E-01	4.2E-02	4.6E-02	1.74E-02	pCi/g	98.40%	2.30E-01	34.01%	6/13/97	2.93	G	ALPHA-SPEC	RICHRC5011
TH-230	2.74E-01	5.3E-02	6.3E-02	1.39E-02	pCi/g	98.40%	2.85E-01	3.99%	6/13/97	2.93	G	ALPHA-SPEC	RICHRC5011
TH-232	1.45E-01	3.9E-02	4.3E-02	1.04E-02	pCi/g	98.40%	1.10E-01	27.89%	6/13/97	2.93	G	ALPHA-SPEC	RICHRC5011
PU-238	1.07E-02U	4.7E-03	4.7E-03	1.07E-02	pCi/g	30.30%	2.26E-03	13.60%	6/14/97	10.78	G	ALPHA-SPEC	RICHRC5010
PU239/40	6.35E-03U	4.7E-03	4.7E-03	6.35E-03	pCi/g	30.30%	-9.41E-04	467.86%	6/14/97	10.78	G	ALPHA-SPEC	RICHRC5010

Number of Results: 5

000027

Comments:

FORM II

BLANK RESULTS

Date: 6/17/1997

LAB NAME: QUANTERRA, Richland SDG: 8359 ORDER NBR:

LAB SAMPLE ID: T061021B REPORT NBR: 3023 MATRIX: SOIL

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.26E-02U	1.4E-03	1.4E-03	2.26E-02	pCi/g	95.80%	-0.06	-1.	6/13/97	2.0	G	ALPHA-SPEC	RICHRC5011
TH-230	1.93E-02U	1.7E-02	1.7E-02	1.93E-02	pCi/g	95.80%	0.84	0.96	6/13/97	2.0	G	ALPHA-SPEC	RICHRC5011
TH-232	1.70E-02U	6.8E-04	6.8E-04	1.70E-02	pCi/g	95.80%	-0.02	-0.5	6/13/97	2.0	G	ALPHA-SPEC	RICHRC5011
PU-238	2.71E-03U	2.0E-03	2.0E-03	2.71E-03	pCi/g	84.10%	0.37	0.5	6/14/97	10.0	G	ALPHA-SPEC	RICHRC5010
PU239/40	5.66E-03U	5.7E-04	5.7E-04	5.66E-03	pCi/g	84.10%	-0.07	-0.71	6/14/97	10.0	G	ALPHA-SPEC	RICHRC5010
AC-227DA.	4.03E-01U	2.4E-01	2.4E-01	4.03E-01	pCi/g	N/A	0.03	0.04	6/11/97	100.0	G	GAMMA	RICHRC5017
AM-241	2.27E-01U	1.4E-01	1.4E-01	2.27E-01	pCi/g	N/A	-0.22	-0.37	6/11/97	100.0	G	GAMMA	RICHRC5017
BI-207.	7.11E-02U	4.2E-02	4.2E-02	7.11E-02	pCi/g	N/A	-0.19	-0.32	6/11/97	100.0	G	GAMMA	RICHRC5017
BI-210M.	8.05E-02U	5.2E-02	5.2E-02	8.05E-02	pCi/g	N/A	-0.37	-0.58	6/11/97	100.0	G	GAMMA	RICHRC5017
CO-60.	8.42E-02U	5.5E-02	5.5E-02	8.42E-02	pCi/g	N/A	-0.56	-0.86	6/11/97	100.0	G	GAMMA	RICHRC5017
CS-137DA.	8.91E-02U	3.9E-02	4.0E-02	8.91E-02	pCi/g	N/A	0.8	(1.8)	6/11/97	100.0	G	GAMMA	RICHRC5017
K-40.	2.47E+00	7.8E-01	8.2E-01	1.87E+00	pCi/g	N/A	(1.3)	(3.2)	6/11/97	100.0	G	GAMMA	RICHRC5017
RA-226DA.	1.68E-01U	8.8E-02	8.8E-02	1.68E-01	pCi/g	N/A	0.26	0.5	6/11/97	100.0	G	GAMMA	RICHRC5017

Number of Results: 13

00028

Comments:

FORM II

Date: 6/17/1997

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: 8359 ORDER NBR:

LAB SAMPLE ID: T061021S REPORT NBR: 3023 MATRIX: SOIL

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	Expected	Expected Uncert	Recovery	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-230	7.22E-01	1.1E-01	1.4E-01	2.30E-02	pCi/g	91.60%	9.10E-01	0.0E+00	79.33%	6/13/97	2.0	G	ALPHA-SPEC	RICHRC5011
PU239/40	1.03E-01	2.2E-02	2.8E-02	3.17E-03	pCi/g	74.80%	9.13E-02	0.0E+00	112.71%	6/14/97	10.0	G	ALPHA-SPEC	RICHRC5010
CS-137DA.	5.60E-01	1.1E-01	1.3E-01	N/A	pCi/g	N/A	4.55E-01	0.0E+00	123.05%	6/11/97	100.0	G	GAMMA	RICHRC5017

Number of Results: 3

00030

Comments:

FORM II

Date: 6/17/1997

MATRIX SPIKE RESULTS

LAB NAME: QUANTERRA, Richland SDG: 8359 ORDER NBR:

LAB SA ID/ORIG ID: V0610209 / 70610209 REPORT NBR: 3023 MATRIX: SOIL

ISOTOPE	SPIKE RESULT*	COUNTING ERROR (2 s)	TOTAL ERROR (2s)	MDA	RPRT UNIT	YIELD	SAMPLE RESULT	EXPECTED	EXPECT UNCERT	RECOVERY	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-230	7.79E-01	1.1E-01	1.7E-01	1.58E-02	pCi/g	96.30%	2.28E-01	7.34E-01	0.0E+00	106.24%	6/13/97	2.47	G	ALPHA-SPEC	RICHRC5011
PU239/40	6.34E-02	1.9E-02	2.3E-02	3.90E-03	pCi/g	48.40%	-1.54E-04	8.25E-02	0.0E+00	76.89%	6/14/97	11.07	G	ALPHA-SPEC	RICHRC5010
CS-137DA.	2.04E-01	5.3E-02	5.7E-02	N/A	pCi/g	N/A	1.42E-02	2.31E-01	0.0E+00	88.36%	6/11/97	196.37	G	GAMMA	RICHRC5017

Number of Results: 3

00031

Comments:

*Spike Result Corrected For Sample Result

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/3/1997 7:20:00 AM
LAB SAMPLE ID:	70610401	REPORT NBR:	3025	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	A500000021	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.63E-01U	1.3E-01	1.3E-01	2.63E-01	pCi/L	86.50%	0.26	0.53	6/15/97	0.2	L	ALPHA-SPEC	RICHRC5011
TH-230	1.76E-01U	1.2E-01	1.2E-01	1.76E-01	pCi/L	86.50%	0.48	0.68	6/15/97	0.2	L	ALPHA-SPEC	RICHRC5011
TH-232	2.00E-01U	9.9E-03	1.0E-02	2.00E-01	pCi/L	86.50%	-0.04	-0.71	6/15/97	0.2	L	ALPHA-SPEC	RICHRC5011
PU-238	1.13E-01U	8.4E-02	8.4E-02	1.13E-01	pCi/L	74.20%	0.37	0.5	6/15/97	0.2	L	ALPHA-SPEC	RICHRC5010
PU239/40	2.69E-01U	1.9E-02	1.9E-02	2.69E-01	pCi/L	74.20%	-0.1	-(1.4)	6/15/97	0.2	L	ALPHA-SPEC	RICHRC5010
BI-207.	1.01E+01U	5.8E+00	5.8E+00	1.01E+01	pCi/L	N/A	0.1	0.17	6/10/97	0.5	L	GAMMA	RICHRC5017
BI-210M.	1.23E+01U	8.1E+00	8.1E+00	1.23E+01	pCi/L	N/A	-0.68	-(1.)	6/10/97	0.5	L	GAMMA	RICHRC5017
CO-60.	1.38E+01U	6.3E+00	6.4E+00	1.38E+01	pCi/L	N/A	0.58	(1.3)	6/10/97	0.5	L	GAMMA	RICHRC5017
CS-137DA.	1.20E+01U	6.8E+00	6.8E+00	1.20E+01	pCi/L	N/A	0.14	0.25	6/10/97	0.5	L	GAMMA	RICHRC5017
K-40.	1.33E+02	1.4E+02	1.4E+02	N/A	pCi/L	N/A	N/A	0.98	6/10/97	0.5	L	GAMMA	RICHRC5017

Number of Results: 10

000005

RCT 6/19/97

Comments:

FORM I

Date: 6/17/1997

SAMPLE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/2/1997 10:54:00 AM
LAB SAMPLE ID:	70610402	REPORT NBR:	3025	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	E800000005	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.77E-01U	1.8E-02	1.8E-02	2.77E-01	pCi/L	84.90%	-0.08	-(1.2)	6/15/97	0.2	L	ALPHA-SPEC	RICHRC5011
TH-230	1.85E-01U	9.2E-02	9.3E-02	1.85E-01	pCi/L	84.90%	0.23	0.46	6/15/97	0.2	L	ALPHA-SPEC	RICHRC5011
TH-232	1.85E-01U	7.4E-03	7.4E-03	1.85E-01	pCi/L	84.90%	-0.02	-0.5	6/15/97	0.2	L	ALPHA-SPEC	RICHRC5011
PU-238	1.92E-01U	1.1E-02	1.1E-02	1.92E-01	pCi/L	79.50%	-0.05	-0.87	6/15/97	0.2	L	ALPHA-SPEC	RICHRC5010
PU239/40	1.75E-01U	8.7E-03	8.7E-03	1.75E-01	pCi/L	79.50%	-0.04	-0.71	6/15/97	0.2	L	ALPHA-SPEC	RICHRC5010
BI-207.	8.62E+00U	5.9E+00	6.0E+00	8.62E+00	pCi/L	N/A	-0.95	-(1.4)	6/10/97	0.5	L	GAMMA	RICHRC5017
BI-210M.	1.55E+01U	9.1E+00	9.1E+00	1.55E+01	pCi/L	N/A	-0.07	-0.12	6/10/97	0.5	L	GAMMA	RICHRC5017
CO-60.	1.42E+01U	6.7E+00	6.7E+00	1.42E+01	pCi/L	N/A	0.43	0.91	6/10/97	0.5	L	GAMMA	RICHRC5017
CS-137DA.	1.27E+01U	6.6E+00	6.6E+00	1.27E+01	pCi/L	N/A	0.48	0.92	6/10/97	0.5	L	GAMMA	RICHRC5017
K-40.	6.56E+02	1.2E+02	1.4E+02	3.04E+02	pCi/L	N/A	(2.2)	(5.3)	6/10/97	0.5	L	GAMMA	RICHRC5017

Number of Results: 10

000008

RCT 6/19/97

Comments:

FORM II

Date: 6/17/1997

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG: 8359 ORDER NBR:

LAB SAMPLE ID: T061041B REPORT NBR: 3025 MATRIX: WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	RST/MDA	RST/CNTERR	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	2.65E-01U	1.0E-01	1.0E-01	2.65E-01	pCi/L	82.10%	0.13	0.34	6/15/97	200.0	ML	ALPHA-SPEC	RICHRC5011
TH-230	2.25E-01U	9.9E-02	9.9E-02	2.25E-01	pCi/L	82.10%	0.18	0.42	6/15/97	200.0	ML	ALPHA-SPEC	RICHRC5011
TH-232	1.98E-01U	7.9E-03	7.9E-03	1.98E-01	pCi/L	82.10%	-0.02	-0.5	6/15/97	200.0	ML	ALPHA-SPEC	RICHRC5011
PU-238	3.15E-01U	1.7E-01	1.7E-01	3.15E-01	pCi/L	71.20%	0.31	0.59	6/15/97	200.0	ML	ALPHA-SPEC	RICHRC5010
PU239/40	5.21E-01	3.5E-01	3.6E-01	2.69E-01	pCi/L	71.20%	(1.9)	(1.5)	6/15/97	200.0	ML	ALPHA-SPEC	RICHRC5010
BI-207.	1.02E+01U	6.2E+00	6.2E+00	1.02E+01	pCi/L	N/A	-0.16	-0.26	6/10/97	0.5	L	GAMMA	RICHRC5017
BI-210M.	1.22E+01U	7.4E+00	7.4E+00	1.22E+01	pCi/L	N/A	0.06	0.1	6/10/97	0.5	L	GAMMA	RICHRC5017
CO-60.	1.16E+01U	6.8E+00	6.8E+00	1.16E+01	pCi/L	N/A	-0.14	-0.24	6/10/97	0.5	L	GAMMA	RICHRC5017
CS-137DA.	1.12E+01U	6.3E+00	6.3E+00	1.12E+01	pCi/L	N/A	0.17	0.3	6/10/97	0.5	L	GAMMA	RICHRC5017
K-40.	3.14E+02	1.2E+02	1.2E+02	2.46E+02	pCi/L	N/A	(1.3)	(2.7)	6/10/97	0.5	L	GAMMA	RICHRC5017

Number of Results: 10

00003

Comments:

FORM II

Date: 6/17/1997

DUPLICATE RESULTS

LAB NAME:	QUANTERRA, Richland	SDG:	8359	COLLECTION DATE:	6/3/1997 7:20:00 AM
LAB SA ID/ORIG ID:	R0610401 / 70610401	REPORT NBR:	3025	RECEIVED DATE:	6/6/1997 10:30:00 AM
CLIENT ID:	A500000021	ORDER NBR:		MATRIX:	WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	ORIG RESULT	RPD	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-228	3.21E-01U	2.2E-01	2.2E-01	3.21E-01	pCi/L	87.40%	6.74E-02	101.63%	6/15/97	0.2	L	ALPHA-SPEC	RICHRC5011
TH-230	2.55E-01U	1.5E-02	1.5E-02	2.55E-01	pCi/L	87.40%	8.41E-02	288.70%	6/15/97	0.2	L	ALPHA-SPEC	RICHRC5011
TH-232	1.92E-01U	7.6E-03	7.6E-03	1.92E-01	pCi/L	87.40%	-7.01E-03	58.98%	6/15/97	0.2	L	ALPHA-SPEC	RICHRC5011
PU-238	1.22E-01U	0.0E+00	1.4E-01	1.22E-01	pCi/L	66.00%	4.19E-02	200.00%	6/15/97	0.2	L	ALPHA-SPEC	RICHRC5010
PU239/40	1.81E-01U	7.2E-03	7.2E-03	1.81E-01	pCi/L	66.00%	-2.68E-02	152.65%	6/15/97	0.2	L	ALPHA-SPEC	RICHRC5010
BI-207.	1.09E+01U	5.5E+00	5.5E+00	1.09E+01	pCi/L	N/A	1.00E+00	154.19%	6/10/97	0.5	L	GAMMA	RICHRC5017
BI-210M.	1.13E+01U	6.8E+00	6.8E+00	1.13E+01	pCi/L	N/A	-8.36E+00	117.27%	6/10/97	0.5	L	GAMMA	RICHRC5017
CO-60.	1.21E+01U	6.9E+00	6.9E+00	1.21E+01	pCi/L	N/A	7.98E+00	378.42%	6/10/97	0.5	L	GAMMA	RICHRC5017
CS-137DA.	1.13E+01U	6.5E+00	6.5E+00	1.13E+01	pCi/L	N/A	1.71E+00	8.27%	6/10/97	0.5	L	GAMMA	RICHRC5017
K-40.	5.72E+02	1.2E+02	1.3E+02	2.94E+02	pCi/L	N/A	1.33E+02	124.67%	6/10/97	0.5	L	GAMMA	RICHRC5017

Number of Results: 10

00002

Comments:

FORM II

Date: 6/17/1997

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: 8359 ORDER NBR:

LAB SAMPLE ID: T061041S REPORT NBR: 3025 MATRIX: WATER

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	Expected	Expected Uncert	Recovery	ANALYSIS DATE	ALIQUOT SIZE	ALQ UNIT	DETECTOR ID	METHOD NUMBER
TH-230	8.54E+00	1.3E+00	1.7E+00	2.73E-01	pCi/L	81.60%	9.08E+00	0.0E+00	93.97%	6/15/97	200.0	ML	ALPHA-SPEC	RICHRC5011
PU239/40	3.30E+00	8.6E-01	1.0E+00	2.80E-01	pCi/L	78.20%	4.55E+00	0.0E+00	72.54%	6/15/97	200.0	ML	ALPHA-SPEC	RICHRC5010
CS-137DA.	1.00E+02	1.7E+01	2.0E+01	N/A	pCi/L	N/A	9.05E+01	0.0E+00	110.94%	6/10/97	0.5	L	GAMMA	RICHRC5017

Number of Results: 3

60000

Comments:

ATTACHMENT IV

DATA COMPLETENESS CHECKLIST

DATA PACKAGE COMPLETENESS CHECKLIST
EG&G MOUND PROJECT

Prepared by: Richard Thurman	WESTON Work Order:
Date: 6-23-97	Mound Project Name:
Laboratory Batch Number: 8359 water/soil	Operable Unit: NA
Laboratory Name/Location: Quantera - Richland, WA	Collection Date: 6/2-3/97

RADIOISOTOPES

- [x] Table of Contents (Check List)
  - I. Case Narrative
    - [x] Cover Page
    - [x] Case Narrative
    - [x] Cross Reference of Sample ID to Laboratory ID
    - [x] Description of Data Qualifiers used in the Report
    - [x] Applicable Laboratory SOP and Revision Date
    - [x] Summary of Sample Results
    - [x] Summary of Quality Control Results
    - [x] Summary of Analysis and Preparation Dates
  - II. Raw Data
    - IIA. Sample Data
      - [x] Example Calculation Page
      - N/A [ ] Tritium Calculation and Result Sheet (Raw Data Part of Standards Data)
      - [x] Gamma - Spectrometry (Results followed by Raw Data)
      - [x] Alpha - Spectrometry (Results followed by Raw Data)
      - N/A [ ] Sr-90 (Raw Data part of Standards Data)
      - N/A [ ] Ra-226 (Raw Data part of Standards Data)
      - N/A [ ] Am-241 (Raw Data part of Standards Data)
      - [x] Sample Preparation / Extraction / Digestion Logs
      - [x] Percent Solids Determination
      - [x] Instrument Run Logs
    - IIB. Standards Data

      MONTHLY COMPILATION PROVIDED SEPARATELY
    - IIC. Raw QC Data
      - [x] Quality Control Results (Blanks, MS/MSD, Replicate)
      - [x] Quality Control Raw Data (Behind Each Result)
  - III. Sample Receipt
    - [x] Traffic Reports
    - [x] Sample Log In Record
- [ ] IV. Nonconformance Records / Correspondence / Telephone Communications Records / ETC.[1]

~~Laboratory~~ QLI Reviewer: Richard Thurman	Date: 6/23/97
WESTON Verified by:	Date:
Comments:	

[1] Any records not specified, but pertaining to the sample analysis.

ATTACHMENT V

CASE NARRATIVE

Quanterra
Environmental Services

Quanterra Incorporated
2800 George Washington Way
Richland, Washington 99352

509 375-3131 Telephone
509 375-5590 Fax

June 16, 1997

Terran Corporation
4080 Executive Drive
Beavercreek, OH 45430-1051

Attention: Roger McCready

Date Received In Lab	:	June 6, 1997
Sample Type	:	Soil
SDG Number	:	8359

I. Introduction

On June 6, 1997, 21 soil samples were received by the Quanterra Environmental Services Richland (QTESRL) laboratory for radiochemical analysis. Upon receipt, these samples were assigned QTESRL identification numbers as described on the cover page of the Analytical Data Package report forms. These samples were assigned to work order 706102.

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical uncertainties.

The analyses requested were:

Alpha Spectroscopy
- Plutonium-238, -239/240 (PUISO) by method QUANTERRA RICHRC5010
- Thorium-228, -230, -232 (THISO) by method QUANTERRA RICHRC5011

Gamma Spectroscopy
- Gamma Scan (GAMMA) by method QUANTERRA RICHRC5017

III. Comments

Alpha Spectroscopy

Plutonium-238, -239/240

The LCS, batch blank, sample replicate and matrix spike results are within contractual requirements. The Pu-239 MDA values for samples D101000018, E801000006, E701000008, H501000015, E416000027 and D525000029 were slightly greater than the contractual requirement of 0.01 pCi/gram and the results were less than the MDA's.

Thorium-228, -230, -232

The LCS, batch blank, sample replicate, matrix spike and sample results are within contractual requirements.

Gamma Spectroscopy

Gamma Scan

The LCS, batch blank, sample replicate, matrix spike and sample results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager of a designee, as verified by the following signature.

Reviewed and approved:

Andy Kopriva
Project Manager

Quanterra Environmental Services

Quanterra Incorporated
2800 George Washington Way
Richland, Washington 99352

509 375-3131 Telephone
509 375-5590 Fax

June 17, 1997

Terran Corporation
4080 Executive Drive
Beavercreek, OH 45430-1051

Attention: Roger McCready

Date Received In Lab	:	June 6, 1997
Sample Type	:	Soil
SDG Number	:	8359

I. Introduction

On June 6, 1997, 21 soil samples were received by the Quanterra Environmental Services Richland (QTESRL) laboratory for radiochemical analysis. Upon receipt, these samples were assigned QTESRL identification numbers as described on the cover page of the Analytical Data Package report forms. These samples were assigned to work order 706103.

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical uncertainties.

The analyses requested were:

Alpha Spectroscopy
- Plutonium-238, -239/240 (PUISO) by method QUANTERRA RICHRC5010
- Thorium-228, -230, -232 (THISO) by method QUANTERRA RICHRC5011

Gamma Spectroscopy
- Gamma Scan (GAMMA) by method QUANTERRA RICHRC5017

III. Comments

Alpha Spectroscopy

Plutonium-238, -239/240

The LCS, batch blank, sample replicate and matrix spike results are within contractual requirements. The Pu-239 MDA values for samples D101000018, E801000006, E701000008, D701000004, D801000003, C203000042, A501000044, A501000023, B303000043, C801000001 and C715000040 were slightly greater than the contractual requirement of 0.01 pCi/gram and the results were less than the MDA's. The Pu-238 and Pu-239 MDA values for samples C318000019, C421000013, C625000032, B625000031, B524000007, B420000010 and A614000002 were slightly greater than the contractual requirement of 0.01 pCi/gram and the results were less than the MDA's.

Thorium-228, -230, -232

The LCS, batch blank, sample replicate, matrix spike and sample results are within contractual requirements.

Gamma Spectroscopy

Gamma Scan

The LCS, batch blank, sample replicate and matrix spike results are within contractual requirements. The Cs-137 and Ac-227 MDA values for samples C625000032 and B303000043 were slightly greater than the contractual requirements of 0.1 and 0.5 pCi/gram respectively. The results for these samples were less than the MDA's.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager of a designee, as verified by the following signature.

Reviewed and approved:

Andy Kopriva
Project Manager

Quanterra Environmental Services

Quanterra Incorporated
2800 George Washington Way
Richland, Washington 99352

509 375-3131 Telephone
509 375-5590 Fax

June 17, 1997

Terran Corporation
4080 Executive Drive
Beavercreek, OH 45430-1051

Attention: Roger McCready

Date Received In Lab	:	June 6, 1997
Sample Type	:	Water
SDG Number	:	8359

I. Introduction

On June 6, 1997, two water samples were received by the Quanterra Environmental Services Richland (QTESRL) laboratory for radiochemical analysis. Upon receipt, these samples were assigned QTESRL identification numbers as described on the cover page of the Analytical Data Package report forms. These samples were assigned to work order 706104.

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical uncertainties.

The analyses requested were:

Alpha Spectroscopy
- Plutonium-238, -239/240 (PUISO) by method QUANTERRA RICHRC5010
- Thorium-228, -230, -232 (THISO) by method QUANTERRA RICHRC5011

Gamma Spectroscopy
- Gamma Scan (GAMMA) by method QUANTERRA RICHRC5017

III. Comments

Alpha Spectroscopy

Plutonium-238, -239/240

The LCS, batch blank, sample replicate and sample results are within contractual requirements.

Thorium-228, -230, -232

The LCS, batch blank, sample replicate and sample results are within contractual requirements.

Gamma Spectroscopy

Gamma Scan

The LCS, batch blank and sample replicate results are within contractual requirements. The Bi-210 MDA value for sample E800000005 was slightly greater than the contractual requirement of 15.0 pCi/L and the result was less than the MDA.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager of a designee, as verified by the following signature.

Reviewed and approved:

Andy Kopriva
Project Manager

ATTACHMENT VI

CHAIN-OF-CUSTODY/TRAFFIC REPORT

[redacted]

Chain of [redacted] Custody Record

SDG 8359

[redacted] 6/9/97 TCM

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TERRAN CORP.	ROGER McCREADY	6-5-97	14298
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 3**
4090 EXECUTIVE DR.	(937) 320-3601		
City / State / Zip Code	**Site Contact**		
BEAVERCREEK / OH / 45430			
Project Name	**Carrier/Waybill Number**		
EGG797			
Contract/Purchase Order/Quote No.			
706102			

	Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Gamma Spec (A-15)	Thorium 232 Alpha Spec (A-12)	Plutonium 239 Alpha Spec (A-12)
01	PRS86-0-F3-16-000026	6-3-97	0925	S	1L	P	1	NONE		✓	✓	✓
02	PRS86-0-F2-01-000017	6-2-97	1540	S	↓	↓	1	↓		✓	✓	✓
03	PRS86-0-G6-01-000012	6-2-97	1330	S			1			✓	✓	✓
04	PRS86-0-G5-20-000037	6-4-97	1500	S			1			✓	✓	✓
05	PRS86-0-G4-15-000036	6-4-97	1415	S			1			✓	✓	✓
06	PRS86-0-G3-01-000016	6-2-97	1515	S			1			✓	✓	✓
07	PRS86-0-H5-01-000015	6-2-97	1435	S			1			✓	✓	✓
08	PRS86-0-H4-01-000014	6-2-97	1400	S			1			✓	✓	✓
09	PRS86-4-F4-17-000035	6-4-97	1350	S			1			✓	✓	✓
10	PRS86-0-F5-20-000038	6-4-97	1535	S			1			✓	✓	✓
11	PRS86-0-F6-01-000011	6-2-97	1145	S			1			✓	✓	✓
12	PRS86-0-E2-15-000024	6-3-97	0831	S			1			✓	✓	✓
13	PRS86-0-E3-20-000022	6-3-97	0745	S			1			✓	✓	✓
14	PRS86-0-E4-16-000027	6-3-97	0950	S			1			✓	✓	✓
15	PRS86-0-E5-25-000034	6-4-97	1130	S			1			✓	✓	✓
16	PRS86-0-E6-19-000039	6-4-97	1640	S	↓	↓	1	↓		✓	✓	✓

Special Instructions

PRS86-4-F4-17-000035 RUN AN MS/MSD ON ACSO

Possible Hazard Identification

[X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal

[ ] Return To Client [ ] Disposal By Lab [ ] Archive For _____ Months

Turn Around Time Required

[ ] Normal [X] Rush

QC Level

[ ] I. [ ] II. [ ] III.

Project Specific (Specify)

	Date	Time		Date	Time
1. Relinquished By	6-5-97	1700	1. Received By	6/6/97	1030
2. Relinquished By			2. Received By <1000pm		
3. Relinquished By			3. Received By		

Comments

01282

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TERRAN CORP.	ROGER McCREADY	6-5-97	14291
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 2 of 3**
4080 EXECUTIVE DR.	(937) 320-3601		
City / State / Zip Code	**Site Contact**		
BEAVERCREEK / OH / 45430			
Project Name	**Carrier/Waybill Number**		
EGG797			
Contract/Purchase Order/Quote No.			

	Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Gamma Spec (A-15)	Thorium by Alpha Spec (A-12)	Plutonium by Alpha Spec (A-12)
17	PRS86-0-D6-27-000033	6-4-97	1020	S	1L	P	1	NONE		✓	✓	✓
18	PRS86-0-D5-25-000029	6-3-97	1045	S			1			✓	✓	✓
19	PRS86-0-D4-19-000028	6-3-97	1015	S			1			✓	✓	✓
20	PRS86-0-D3-20-000020	6-2-97	1700	S			1			✓	✓	✓
21	PRS86-0-D2-15-000025	6-3-97	0900	S			1			✓	✓	✓
1	PRS86-0-D1-01-000018	6-2-97	1610	S			1			✓	✓	✓
2	PRS86-0-E8-01-000006	6-2-97	1100	S			1			✓	✓	✓
3	PRS86-0-E7-01-000008	6-2-97	1121	S			1			✓	✓	✓
4	PRS86-1-E7-01-000009	6-2-97	0800	S			1			✓	✓	✓
5	PRS86-0-D7-01-000004	6-2-97	1032	S			1			✓	✓	✓
6	PRS86-0-D8-01-000003	6-2-97	1005	S			1			✓	✓	✓
7	PRS86-0-C2-03-000042	6-4-97	1815	S			1			✓	✓	✓
8	PRS86-0-C3-18-000019	6-2-97	1620	S			1			✓	✓	✓
9	PRS86-0-C4-21-000013	6-2-97	1350	S			1			✓	✓	✓
10	PRS86-0-C5-25-000030	6-3-97	1135	S			1			✓	✓	✓
11	PRS86-0-C6-25-000032	6-3-97	1135	S			1			✓	✓	✓

Special Instructions

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [ ] Disposal By Lab [ ] Archive For _____ Months

Turn Around Time Required: [ ] Normal [X] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: Chris Ruf	6-5-97	1700	1. Received By: [signature]	6/6/97	1030
2. Relinquished By			2. Received By: 2100CPM		
3. Relinquished By			3. Received By		

Comments: 01283

DISTRIBUTION: WHITE - Stays with Samplo; CANARY - Returned to Client with Report; PINK - Field Copy

Chain of Custody Record

Quanterra Environmental Services

QUA-4124

Client	Project Manager	Date	Chain Of Custody Number
TERRAN CORP.	ROGER McCREADY	6-5-97	14298
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 3 of 3**
4020 EXECUTIVE DR.	(937) 320-3601		

City	State	Zip Code	Site Contact
BEAVERCREEK	OH	45430	

Project Name: EGG797

Carrier/Waybill Number:

Contract/Purchase Order/Quote No.:

	Sample I.D. No. and Description	Date	Time	Sample Type	Total Volume	Containers Type	Containers No.	Preservative	Condition on Receipt	Gamma Spec (A-05)	Thorium 232 Alpha Spec (A-12)	Plutonium 239 Alpha Spec (A-12)
706103 12	PRS86-1-A5-01-000044	6-3-97	0700	S	1L	P	1	NONE		✓	✓	✓
13	PRS86-0-A5-01-000023	6-3-97	0820	S			1			✓	✓	✓
14	PRS86-0-B7-17-000041	6-4-97	1800	S			1			✓	✓	✓
15	PRS86-0-B6-25-000031	6-3-97	1330	S			1			✓	✓	✓
16	PRS86-0-B5-21-000007	6-2-97	1100	S			1			✓	✓	✓
17	PRS86-0-B4-20-000010	6-2-97	1139	S			1			✓	✓	✓
18	PRS86-0-B3-03-000043	6-4-97	1839	S			1			✓	✓	✓
19	PRS86-0C8-01-000001	6-2-97	0940	S			1			✓	✓	✓
20	PRS86-0-C7-15-000040	6-4-97	1753	S			1			✓	✓	✓
21	PRS86-0-A6-14-000002	6-2-97	1000	S			1			✓	✓	✓
706104 01	PRS86-2-A5-00-000021	6-3-97	0720	W	1G	P	1	HNO_3		✓	✓	✓
02	PRS86-2-E8-60-000005	6-2-97	1054	W	1G	P	1	HNO_3		✓	✓	✓
	~~PRS86~~											

Special Instructions:

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown

Sample Disposal: [ ] Return To Client [ ] Disposal By Lab [ ] Archive For ____ Months

Turn Around Time Required: [ ] Normal [X] Rush

QC Level: [ ] I. [ ] II. [ ] III.

Project Specific (Specify):

	Date	Time		Date	Time
1. Relinquished By: Chris Reed	6-5-97	1700	1. Received By: [signature]	6/6/97	1030
2. Relinquished By			2. Received By: [signature] 4:00pm		
3. Relinquished By			3. Received By		

Comments:

DISTRIBUTION: WHITE - Stays with Sample; CANARY - Returned to Client with Report; PINK - Field Copy

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